

The Antiseptic

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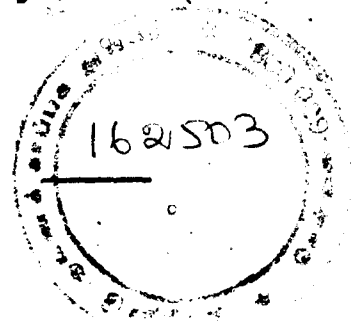
of Contributors to "The Antiseptic."

VOL. IV—1907.

Edmund C., M.A., M.B., B. CH. (Oxon) M.R.C.S., (Eng.)
 met, James, M.A., M.D., M.R.C.P. (Edin.)
 niel, G.W., Bampfylde.
 Davidson, James, M.D. (Edin.)
 Drueck, Charles, J., M.D.
 Dunlop, Lickley, J., M.D.
 Harris, Thomas, J., M.D.
 Hughes, E. Lucas, M.R.C.S. (Eng.) L.R.C.P. (Lond.)
 ardine, Robert, M.D., F.R.S.E.
 Keyes, Thomas Bassett, M.D.
 Kumarasami Pillai, M.
 Lakshmanan, Peter, M., B.A., M.B.C.M., (Mad.) M.R.C.S., (Eng.)
 L.R.C.P., (Lond.)
 Langmead, Frederick, M.D., M.R.C.P.
 Ramachandra Iyer, P. S.
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 Watson, F.T., L.M.S.
 Williams A. Winkelried, M.B., & C.M., (Edin.) D.P.W. (Lond.)
 Williams, Edward Cecil, M.B., (Cantab.)
 Wrafter, R.E., Surgeon-Major, B.M.S. (Retd.)

INDEX to Vol. IV.

	PAGE
Abdominal cavity—A pair of forceps in it for ten years	518
—————Tumours—The differential diagnosis of	382
Abuse of drugs	190
Accouchement Force	353
Acknowledgments	45, 178, 240, 298, 364, 422, 486, 672, 742
Acaine	525
Actinomycosis of the Lung	462
Adenitis (Syn.) Inflammation of the Lymphatics and their glands	248
Adrenal extractives—Physiological action and uses of	269
Adrenalin	525, 600
————in Diabetes Insipidus	542
————in unilateral renal hæmaturia	576
Albumens—The therapeutic action of glycono-phosphates in combination with	225
Alcoholic neuritis (sciatica)	323
Alopecia areata—Case illustrating the effect of pregnancy on	346
Alphozone	526
Aspin	524
————A new local Anæsthetic	711
Amniotic sac—Twins in one—Cords twisted and knotted	658
Amylene chloral	529
Anæsthetics—Points to be kept in mind in connection with the administration of	536
chloroform and ether as	344
Anal fissure	185
Anal sphincters—Dilatation of	459
Aneurysm—Treatment of	457
Angina Pectoris	227
————Digitalin in	577
Angular pregnancy and its relation to ectopic gestation	707
Aorta—Compression of it for Post-Partum Hæmorrhage	626
Aphonia—A suggested treatment for functional	507
Aphorisms—Prognosis	891
Appendectomy—The treatment of the stump in	18
Appendicitis and Mucous Colitis	238
Argyll Robertson symptom	525
Argyrol	153
————Silver nitrate and Protargol—The comparative efficiency of	155
Argyrosis—including a preliminary note on the action of silver salts	509
Arterial degeneration	332
Asleep two years	712
Atoxyl	



SL

1907, Nov

1907, Nov

B

Baldness, Prevention of	19
Barnes, Robert, M. D.—Obituary	467
Base of the skull—Fractures of the	343
Betula oleum	113
Bladder and Urethral Irrigation—A comparative study of drugs commonly used in ———drainage <i>versus</i> complete suture in supra-pubic cystotomy	571 89
———Total extirpation of	464
Blindness eclipse	27
Blood Vessels—The suture of	400
Breast feeding—Contra-indications against	657
Bright's Disease—Treatment of	414
Bromocarpin	529
Bromural	529
Buttermilk	662
Butyl-chloral	528

C

Cæsarean section	354
———A successful case of	465
Calcium salts in epilepsy	282
Camphor and carbonic acid in the treatment of suppuration	278
Chest—Some observations on the topography of	79
Child—On the relation of the frequency of the foetal heart beat to the sex and weight of	514
Children—Examination of the rectum of	592
Child's eyes—Method of examination of	594
Chloralamide	357
Chlorate of Potash—Death from an overdose of	227
Chloride of Ethyl	279
———as a general anæsthetic in Dental surgery	3
Chloride of Sodium or Salt has many virtues	542
Chloroform and ether as anæsthetic—Points to be kept in mind in connection with the administration of	536
Cleft Palate—a new method of operating for	643
Cobra venom	416
Cocaine—Regulations regarding the sale and private possession of it in Madras	360
Colica Mucosa	568
Congress of German Surgical Society, April 1907	457
———Second International, on School Hygiene	731
Conjunctivitis—Granular or Trachoma—Some notes upon	519
Consumption—Nutrition in the prevention and cure of	300
Consumptive—Dieting and cooking for them and for the thin and under-nourished	299, 365
Cool water without ice	667
Copper Sulphate in the treatment of Typhoid fever	534
Cornea—Diseases of the	547, 607, 673
Correspondence	298, 486, 740
Cramp—Writer's—Treatment of	464
Craniotomy	352
Criminal Lunatic His Status and disposition	598

3

D

Decentralisation commission	738
Defects in development—A clinical lecture on their significance	121
Delivery—A case of Paralysis of Intestines regurgitant peristalsis following it	409
———When to get up after	474
Dental Pain—Tannin in	542
———Surgery—Chloride of ethyl as a general anæsthetic in	3
Diabetes	631
———Insipidus—Adrenalin in	542
———Mellitus	319
———On the treatment of it with secretin	417
———Senility and presenile states—The role of internal secretions in	144
———The Etiology of	483
———Traumatic	702
Diarrhoea of Infants, or Infantile Diarrhoea properly so called	54
Dieting and cooking for the consumptive and for the thin and under-nourished	299, 365
Digitalin in Angina Pectoris	227
Dionin	524, 530
Diuretin and Urea as a desirable Diuretic	281
Doctor—The autocratic	374
Drainage method—Some remarks on it in the treatment of acute middle ear disease	477
Drugs—Abuse of	190
Duodenal ulcer	140
Dysmenorrhœa some practical consideration of	705

E

Ear—Syringing	719
Ears—Examination of	596
Eclampsia and Toxæmia—The urine in	579
———Six consecutive cases of it treated in the Glasgow Maternity Hospital between 13th September and 20th October '06	47
———The treatment of	412
Eclipse Blindness	27
Ectopic gestation—Angular Pregnancy and its relation to	577
———Two cases of early—with some unusually misleading symptoms	647
Eczema—The treatment of	423, 491
Elephantiasis of the sheath of the penis and scrotum	171
Empyema and Pleural effusions in children—The diagnosis of	323
———The surgical Treatment of	204
Enteritis—The character and treatment of membranous	568
Epidemic catarrh or Influenza	380
Epilepsy—Calcium salts in	282
Episiotomy	350
Erysipelas—Treatment of	404
Esophagus—Foreign bodies in the—with report of a case	148
Ether and chloroform as anæsthetic—Points to be kept in mind in the administration of	536
Ethyl Chloride	279
———as a general anæsthetic in Dental Surgery	3
Eucaine	524

	PAGE
Euthalmine	525
Exophthalmic goitre—The surgery of	396
Extra-Uterine Pregnancy—On the treatment of advanced cases of	96
Eye—The Spirochæta Pallida with special reference to affection of	284
Eyes—Method of examination of a child's	594
F	
Fever—Shall we reduce temperature and how?	263
Fibroid disease of the Uterus and its treatment	101
Fibrositis—Various forms of	452
Fibro-Myomatous Uterus weighing over Seven Pounds removed from a woman aged 22	646
Filtering cicatrix—on the production of it in chronic glaucoma	580
Fistula anal	344
Fœtal heart-beat—On the relation of the frequency of it to the sex and weight of the child	514
Fœtus—Determining the sex of	356
Fœtus in Fœtu	659
Forceps	350
—A pair of—in the abdominal cavity for ten years	518
Foreign bodies in the œsophagus with report of a case	148
Fractures of the base of the skull	343
Functional Aphonia—A suggested treatment for	626
G	
Gall bladder—Enlargements of the	393
Gastropathies—Menthol in	281
Gonorrhea of sex	219
Gonorrhea—Urinary clinic—Its relation to sanitary and moral prophylaxis	634
Gonorrhea—The action of the X-rays on the	710
German Surgical Society—Congress of April '07	459
Glasses, yellow	476
Glaucoma, chronic—on the production of a filtering cicatrix in	580
Glycero-phosphates—The Therapeutic action of them in combination with Albumens	225
Goitre and its treatment	441
—exophthalmic—The surgery of	396
Gonorrhœa—The treatment of	644
Granular conjunctivitis or Trachoma—Some notes upon	519
Grave's Disease	443
—on the treatment of it with Thymus	193
Gumma-form	39, 298
H	
Hæmaturia in infants and young children	254
—Renal—Adrenalin in Unilateral	576
Hæmorrhage—The treatment of it by the use of drugs	159
Hair—The cause of white hair	20
Headaches—The treatment of	701
Health of school children	35
Heart Disease—chronic—Some observations on the therapeutics of	200
—The treatment of	259
—stimulants	331

	PAGE
Heart Suture of	459
Heat—dry—applied to wounds	641
Hernia, Strangulated—Three cases of it with resection of the intestine	243
Heroin	532
Hirschsprungs' Disease	460
Hoarseness	720
Hodgkin's disease of the glands	252
Horsehair—On the cure of Hypopyon by drainage of the anterior chamber with	282
Hygiene—Second International Congress on School	731
Hydrogen Peroxide (Hydroxyl)	277
Hospital Assistants—Promotion of	740
Hyoscine in obstetric practice	968
Hyperemesis as an indication for the interruption of pregnancy	23
Hypopyon—On the cure of it by drainage of the anterior chamber with a horsehair	282

I

Ichthargan	526
Ichthyol	663
Incompatibilities of some of the newer remedies	27
Induction of Labour	352
Infancy and childhood—Respiratory affections of	500
Infantile Diarrhœa or Diarrhœa of infants	54
—Paralysis—Recumbency in the treatment of	629
—Scurvy	552
Infants—Some observations on the feeding of	430
Influenza or Epidemic Catarrh	380
Injuries—ocular	583
Inoculation for Small Pox	174
Insanity—A few words about	15
Intra-nasal operation—Toxœmia following it, with report of four cases	51
Intra-ocular pressure—On the rupture of the Membrane Descemetii, due to high	474
Iron in neurasthenia	228

J

Japan—Combating Plague in	604
Jequiritol	526
Judgment in the Court of Appeal for Ontario as to the meaning of the words "To Practice Medicine"	287

K

Kidney and Ureter—Surgery of	84
—Tumours of the	394
—Undetected cancer of it ; death during pregnancy	414

L

Labour, Normal	348
—Painless	355
—The induction of it in prolonged pregnancies	404
—The relation of it and labour pains to the Nose	709
—The use of sugar in	709
Lachrymal Sac—Extirpation of	712

Larynx—A case of Perichondritis of it occurring during the course of Typhoid	590
Fever	590
Leading articles	42, 115, 174, 238, 292, 360, 419, 483, 544, 604, 670, 738
Lithopædion in a woman aged 85	658
Lung development in proportion to nutrition	365
Liver—Hydatids of	392
—Resection of	463
—Tumours of	391
Lumbo—Sacral pain—On some varieties of	179
Lunatic—Criminal—His status and disposition	593
Lung—Actinomycosis of	462
Lupus—Treatment of Tubercular	612, 679
—Vulgaris—Eighty cases of	584
Lymphatics—Inflammation of them and their glands (<i>Syn</i>) Adenitis	248

M

Malaria—When to give Quinine and when Methylene Blue in	509
Mastitis—A contribution to the prophylaxis and treatment of	411
Mastoiditis—The preventive and abortive treatment of	29
Measles, <i>convulsiæ</i>	265
Medical Profession—The business aspect of	115
—witnesses expert, and their fees	670
Medico-Legal case	287
Membrana—Descemetii—On the rupture of it due to high intra-ocular pressure	474
Membranous Enteritis—The character and treatment of	568
Menstruation and the allied processes—The comparative Physiology of	704
Menthol in Gastropathies	281
Mercuriol	526
Methylene Blue—when to give it and Quinine in Malaria	509
Middle Ear disease, acute—Some remarks on the drainage method in the treatment of	477
Milk Pasteurizing	663
Miol	418
Modern Civilization—The influence of it on personal cleanliness	419
—Obstetric Technique	348
Morphine and retention of urine	710
Mucous Collitis and Appendicitis	18

N

Nasal Deformities—Neuroses due to	33
—Mucosa—Psorospermiosis of	292
—Reflexes	504
Naso-pharyngeal Tumour—A case of	170
Nephritic type of pneumonia	633
Nerve Tonic—An eminent	356
Neurasthenia—Iron in	228
Neuritis Alcoholic (Sciatica)	323
Neuronal	110
Neuroses due to nasal deformities	33
Neurosis and Psychosis of urethral origin	197
Nocturnal Enuresis—Treatment of	829

Nose—The relation of labour and labour pains to	709
Notes on Remedies Old and New	113

O

Obituary—Robert Barnes, M. D.	467
Obstetric practice—Hyoscine in	268
—Technique—Modern	348
Ocular injuries	583
—Therapeutics—Recent advances in	524
Old Age	633
Operation on minor—Necessity of patient's consent to	543
Oponic Theory and Serum Therapy	42
Orient—A voice from the	667

P

Paraldehyde	531
Paralysis of the intestines with Regurgitant Peristalsis following delivery—A case of	409
Paraphimosis	576
Parathyroids	441
Pasteur Institute for Southern India, Coonoor—Circular soliciting contributions to wards the fund of	297, 176
Pasturizing milk	663
Pediatric practice—Tannigen in	664
Penis and scrotum—Elephantiasis of the sheath of	171
Percussion of vertebra—Diagnostic value of sounds produced by	570
Pericarditis	65
Perichondritis of the larynx occurring during the course of typhoid fever—A case of	590
Personal cleanliness—The influence of modern civilization in	419
Phenalgine	228
Phenol Camphor	666
Phosphorus—The percentage of it in various foods	359
Phthisis—History of	306
Physicians and surgeons—Necessity of patient's consent to operation on minors	543
Pine apples—a very valuable digestive	417
Placenta Prævia	510
Plague—Combating it in Japan	604
—Recent advance of our knowledge thereof	434
Pleural effusion and empyema in children—The diagnosis of	328
Pleurisies—The treatment of	507
Pneumonia—The nephritic type of	633
—The etiology, pathology and treatment of	557
Pneumotomy	461
Post—Mortem Examination—How to perform	723
Post—Partum Hæmorrhage and its treatment	703
—Compression of the aorta for	707
Pregnancy—Angular, and its relation to ectopic gestation	577
—Case illustrating the effect of it on Alopecia-Areata	346
—Death during—Undetected cancer of kidney	414
—Extra Uterine—On the treatment of advanced cases of	96
—Hyperemesis as an indication for the interruption of	23

	PAGE
Pregnancy Internal diseases as indications for the interruption of	287
—The induction of labour in prolonged	404
—The Toxæmia of	578
—The urine in	472
—Veronal in the vomiting of	229
Prescription writing—The important art of	165
Prescriptions	429
Prognosis Aphorisms	507
Prolapse of the Umbilical Cord—Its treatment	656
Prostate—Extirpation of	463
Protargol, Silver Nitrate and Argyrol—The comparative efficiency of	153
Psoriasis of the nasal mucosa	292
Psychosis and Neurosis of urethral origin	197
Pubiotomy; case report	212
Puerperal Eclampsia—treatment of	517
—Infection—Practical suggestion for the limitation of	652
Puerperium—Rises of temperature of	470
Pulmonary diseases—Surgery of	480
—Edema—Acute	510
Rupture	358
Pyloric end of the stomach—Malignant disease at	142
—Narrowing—Gastric dilatation and Ptoxis	137
—Stenosis in infant	241

Q

Quadruplets—A case of	658
Quinine—When to give it and when Methylene Blue in malaria	509

R

Rectal exploration—The technic of	11
—Fistula—Treatment of	127
Rectum of children—Examination of	592
Recumbency in the treatment of Infantile Paralysis	629
Remedies—newer—Incompatibilities of some of them	27
—Old and New—Notes on	113, 277
Renal and Ureteral Surgery—Modern methods in	333
—Hæmaturia—Adrenalin in Unilateral	576
Respiratory affections of infancy and childhood	500
Retention of Urine and Morphine	710
Rheumatism—The diagnosis and treatment of some of the forms of so called	448
Ringworm and its treatment	251

S

Salt has many virtues	542
School children—The health of	35
School Hygiene—Second International Congress on	731
Sciatica—Alcoholic neuritis	323
—Therapeutic points	326
Scopolamine	525
Scurvy—Infantile	552

Secretin—On the treatment of diabetes with	417
Sedatives—Some new—Their value compared with that of older drugs	527
Senility—The premenstrual states and diabetes—The role of the internal secretions in	144
Serum Disease	117
—Therapy—The Opsonic theory and	42
Sex—The genesis of	219
Silver nitrate—Protargol and Argyrol—The comparative efficiency of	153
Singer's voice—On the necessity of taking care of	544
Sleeplessness—Treatment of	266
Small Pox—Inoculation for	174
—The diagnosis of	487
Somatose	664
Spirochæta Pallida with especial reference to affections of the eye	284
Sterility in the male—The surgical treatment of	211
Stomach—Acute dilatation of	457
—cases—Three, from the Physicians stand-point, a postgraduate clinic	135
Storaine	524
Strangulated Hernia—Three cases of it with resection of the intestine	243
Stye—The treatment of	714
Styptol in uterine Hæmorrhage	707
Sugar—The use of it in Labour	706
Suppuration—Carbolic Acid and Camphor in the treatment of	278
Supra-public Cystotomy—Bladder drainage <i>versus</i> complete suture in	89
Supra-renal	659
Surgery of the kidney and the ureter	81
Symphysiotomy and Hebotomy	355
Syringing the ear	719

T

Tannigen in Pediatric practice	664
Tannin in dental pain	542
Tea—Action of	661
Temperature—Rises of, during puerperium	420
—Shall we reduce it in fevers and how	263
Thigh—Operative treatment of fracture of	462
Thumb—Substitution of it by the great toe	345
Thymus—On the treatment of Grave's Disease with	193
Tinnitus Aurium—The treatment of	714
Topography of the chest—Some observations on	79
Toxæmia and Eclampsia—The urine in	579
—following intra-nasal operation with report of four cases	51
—of Pregnancy	579
Trachoma or granular conjunctivitis—Some notes upon	519
—Treatment of	519
Traumatic diabetes	702
Trional	531
Tumours abdominal—The differential diagnosis of	382
Twins in one amniotic sac—Cords twisted and knotted	658
Typhoid Fever—A case of Perichondritis of the Larynx occurring during the course of	590
—Sulphate of copper in the treatment of	534
—The early diagnosis of	576

	PAGE
U	
Umbilical Cord—Prolapse of—Its treatment	656
Unconsciousness, Sudden—Differential diagnosis in cases of	695
Urea and diuretin as desirable diuretic	281
Ureter and Kidney—Surgery of	84
Ureteral and Renal surgery	383
Urethral and Bladder Irrigation—A comparative study of drugs commonly used in	571
—origin—Psychoses and Neuroses of	197
Urethroscope—The various gross Pathological conditions of the urethra as revealed by it	20
Urine—Examination of	267
—in pregnancy	472
—in Toxæmia and Eclampsia	579
—Retention of, and morphine	710
Uterine fibro—Myoma due to hæmorrhage—disintegration of it and resulting necrobiosis.. .. .	22
—Hæmorrhage—Styptol in	707
Uterus—A new method of performing Ventri-suspension of	345
—Fibro—Myomatous weighing over seven pounds removed from a woman aged 22.. .. .	646
—Fibroid, disease of, and its treatment	101
V	
Ventri Suspension of the Uterus—A new method of performing it	345
Veronal	582
—in the vomiting of pregnancy	229
Version	351
Vertebra—Diagnostic value of sounds produced by percussion of	570
Vomiting—Its importance as a symptom	1
—of Pregnancy—Veronal in	229
W	
Wounds—Dry heat applied to	645
Writer's Cramp—Treatment of	464
X	
X-rays—The action of—on the genital gland	710
Y	
Yeast Therapy	220
Yellow Glasses	476

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Original Articles.

* VOMITING: ITS IMPORTANCE AS A SYMPTOM.

BY

JAMES BURNET, M. A. M. D., M. R. C. P., EDIN.

Registrar, Royal Hospital for Sick Children, Edinburgh, &c.

IT is a good thing sometimes to consider a single symptom by itself and try to catalogue the various conditions which may give rise to it. In this way much useful information may be gleaned by any one who will take the trouble to collect together all the cases that have come under his own personal observation in which some one symptom was a common feature. At present we shall concentrate our attention on vomiting. It is not our intention to mention all the conditions in which vomiting may occur as a symptom, but merely to refer to some interesting cases in which it was the one thing the patient complained of when seeking advice.

Mrs. T., æt 32.—Complained of vomiting which had lasted for several weeks. She was pale and wasted-looking. The vomiting was not associated with any marked pain after food or other discomfort pointing to the presence of marked gastric trouble. Examination of the chest revealed at the left apex harsh vesicular breathing with prolonged expiration, and the presence of a few moist sounds. The note on percussion was found to be impaired. On further questioning it was discovered that this patient had suffered from cough and expectoration for nearly a year, and that she was sweating pretty profusely at night. Here, then, is a case in which vomiting was but a superadded symptom to those of pulmonary tuberculosis. Failure to examine the chest in a case such as this has led to very awkward consequences.

Mrs. S., æt 29.—This patient was seen in bed. She was evidently acutely ill and complained of vomiting which had lasted for 24 hours but was becoming more severe. There was pain over the epigastrium. She

* Specially contributed to "The Antiseptic."

had been delivered of a still born illegitimate child six months previously. He was found to be suffering from acute pancreatitis and died two days later. This case calls to our recollection another in which the symptoms were very similar.

Mr. B., aet 67.—This old man, when seen, complained of almost persistent vomiting, and had severe pain in the abdomen which was very much distended. No hernia could be made out, but the rectum was found packed with hard scybalous masses. Relief was obtained by removal of the latter.

Miss F., aet 21.—This lady when first visited was found to be vomiting. She had been ill for nearly a week. On examination little could be made out. There was no headache, very slight pain (if any) in the epigastrium. The bowels were regular and had always been so. Examination of the urine, however, showed the presence of a definite amount of albumen, and the sequel proved that the patient was suffering from nephritis. She had previously had an attack after scarlet fever eight or nine years before. This case well illustrates the importance of carefully examining the urine in every case where the diagnosis is uncertain. Sometimes this sheds a light on cases which to the practitioner must otherwise remain in darkness so far as the diagnosis is concerned.

Mr. M., aet 41.—This patient came complaining of vomiting. Its duration was nearly three weeks. There was at times troublesome diarrhoea. A hasty investigation might have led one in this case to suppose that the patient had eaten something of an indigestible nature. This was not the case, however, for the heart was really found to be the cause. The left ventricle in this case was dilated, and there was a well marked mitral regurgitant bruit conducted into the axilla. Treatment was accordingly directed to the cardiac condition, and marked improvement rapidly followed.

Jane C., aet. 6 years.—This little girl was brought on account of supposed "indigestion." She had been vomiting for two or three days. There was no diarrhoea. She was pale, and had a hacking cough which had been going on for nearly ten months. She had never been the same since an attack of pertussis eighteen months previously. This case turned out to be one of tuberculous meningitis secondary to pulmonary tuberculosis, no doubt superadded to a broncho-pneumonia supervening on the attack of whooping cough already mentioned. Vomiting in children, therefore, as in adults, is by no means always indicative of gastric trouble.

Mr. R., aet. 43.—This man had always been healthy until nine months before he was seen. He had suffered from vomiting at different times for nearly three months. He was extremely pale, and worn-looking. He was so wasted that it was thought he might be the subject of gastric carcinoma. It was only after an examination of the blood had been made that the diagnosis was made absolutely certain. The patient was actually suffering from pernicious anæmia. It very often happens in cases of this

1907.]

THE ANTISEPTIC.

disease that the patient is treated for dyspepsia without the real nature of his complaint being realised. If the blood were examined, of course, such mistakes would cease to occur.

These few cases will perhaps suffice to prove that vomiting of itself may be a very important symptom, and one which often leads the unwary astray. It is a good general rule to avoid making a diagnosis of simple gastric trouble before having made a minute examination of the patient. When physical examination of the patient is negative, then other means should be employed, and it will often be found that by examination of the urine or of the blood a clue to the correct diagnosis is obtained. Cerebral vomiting is the variety which perhaps, in children at all events, is apt to pass for a sign of indigestion, but it should be carefully borne in mind that vomiting is often, in such cases, but an early feature of meningitis or other grave cerebral disease. In pulmonary tuberculosis vomiting may prove a misleading symptom, more especially when the patient does not complain of cough. It is only after a very thorough examination of the chest that we are thereby enabled to diagnose the presence of pulmonary disease. We could multiply instances in which vomiting has been the leading symptom, but these few remarks must at present suffice to direct attention to the necessity for careful examination of every patient coming before us, no matter how easily we may be able apparently to interpret his symptoms to our own satisfaction.

CHLORIDE OF ETHYL AS A GENERAL ANÆSTHETIC IN DENTAL SURGERY.* . .

BY

G. W. BAMPFYLDE DANIELL,

*Formerly Anæsthetist to the Tottenham Hospital, London, and
Lecturer on, and Instructor in Anæsthetics to the Edinburgh Royal
Infirmary.*

In the study of the history and literature in connection with general anæsthesia one cannot help being struck by the fact that many of the great advances which have been made in the art of the administration of these drugs bear a close relation with their use in dental surgery. Moreover, was it not a dental surgeon, Horace Wells, who first used nitrous oxide with success for the extraction of a tooth, in the year 1844? Was it not also in connection with dental surgery that the administration of nitrous oxide and oxygen, in mixture, was perfected, enabled the anæsthetist to recognize the anæsthetic properties of the former as distinguished from those of asphyxia, and, there is little doubt that the necessities of your branch of the medical profession have taught us the use of that valuable sequence-nitrous oxide gas and ether.

* Being a paper read before the Capetown Dental Society, September 28th, 1906, and sent to 'The Antiseptic' for publication.

When we consider these facts it will not surprise us to find that for some time past the chief activity in relation to the anæsthetic properties of chloride of ethyl has been centred to a large degree in the immediate neighbourhood of the dental chair. We all feel proud of this, and, although not a prophet, yet venture to think that some day there will be established a chair of dentistry in recognition of services rendered to suffering humanity and for the advancement of science.

When working in London, and later, in Edinburgh, in my speciality, there was ample opportunity of making a study of this drug and also of seeing the work of others, reading all that has to be read, and attending meetings.

As a result I published an article in the "South African Medical Record," December 1904 and January 1905. I have reason to think this was the most complete of its kind at the time. Since then, the literature on the subject has vastly increased, and as to not a few, distinctly confusing; much will perhaps have to be re-written. After having given, now, over two thousand administrations of chloride of ethyl alone or in conjunction with ether or nitrous oxide, I venture to think that I am in a way entitled to present to you a few remarks to-night, and will crave your pardon if from time to time I have to speak of personal experience.

We all know that the anæsthetic properties of chloride of ethyl were recognized long ago. According to Koppeler the anæsthetic properties were recognised by Flourens and others, and in the year 1848, Heyfelder successfully used it as a general anæsthetic in the human subject. Clover used it in 1851, and the late Sir Benjamin Richardson in 1867. We may conclude that these results were not to their satisfaction and it is only within recent years that it has been taken up again by anæsthetists and later by the general body of the profession. Here I would remark that I think that, unfortunately, the enthusiasm was and is out of all proportion to the advantages the drug offers. But for all that, we have in ethyl chloride a valuable adjunct to our test of anæsthetic agents. I say *adjunct*, for I think that in the near future its place will be found more in conjunction with nitrous oxide or ether than alone. The reason for this we will refer to later. Its chemical and physical properties are now so well known to require mention; needless would it be to remark that the employment of the purest quality obtainable is absolutely essential. A reliable, but rough test, is that of its smell; if allowed to evaporate on the hand, no unpleasant smell should be detected. Hydrochloric acid should be in contact with it for at least fifteen minutes. Two points of practical interest; one is that the vapour is inflammable, the other that it has a softening effect on black rubber but under ordinary conditions none on red rubber. Our time will not permit of many details of interest, so with your permission we will now pass on to subjects of practical importance to you. The first question you have put

to yourselves is as to the safety of this drug as compared with other anæsthetics, and, I think, the second will be its relative available anæsthesia for one inhalation after the mark has been withdrawn. In making reply to the first question I would preface my remarks by stating that chloride of ethyl has only recently—if it has, even now—been relieved of its anæsthetic apprenticeship. One administrator has recorded thousands of administrations without one single instance to cause him alarm.

A friend of mine, for instance—and at one time we worked much together—has given about 15,000 administrations alone with ether and no fatality. But, be it remembered, he is an old hand at gas and ether which is an excellent training for the drug under review. As time went on, a few fatalities occurred and thus, a little later, rather an alarming number. He must, however, remember that this drug has been taken up by the general body of the profession in a way that no other anæsthetic has ever been. A practitioner would record in glowing terms his experience of, let us say, 50 or a couple of hundred cases as if that was any help to us. On the contrary, such reports may have done actual harm, stimulating the inexperienced—*especially* those who were brought up only to give chloroform—to try this rapidly anæsthetising drug in a way which the reader would almost call reckless. In reply to a question in the British Medical Journal of August 1903 I took the opportunity of sounding a warning note. An extract I now give as follows:—"As with the administration of other anæsthetics so with chloride of ethyl, etc., caution and experience are required in their administration to produce good results in regard to a satisfactory anæsthesia, a minimum of after effects, with safety to the patient. I would strongly recommend intending administrators to see it given by an experienced anæsthetist first and to administer it under his guidance several times and to several types of patients before attempting to give it to his own patients. This will be an advantage to all concerned, and the drug may not have to bear the blame which really may be due to faulty administration."

In looking through 24 fatalities we are at first struck by the number of cases quite unsuitable for this drug. As instances—a child suffering from diphtheria; alcoholic and cardiac disease; hernia operation, vomited and died of asphyxia; advanced dropsy; and swelling in neck. Some of these have been fully reported, and about eight out of the 24 were dental cases *i.e.*, one-third. It is difficult to say at this stage how chloride of ethyl stands in relation to chloroform and to ether, but in my opinion it is rather less safe than ether but by no means so dangerous as chloroform in dental operations. Of course for safety there is nothing to compare with nitrous oxide, alone, with air, or oxygen, but unfortunately the available anæsthesia is so brief that it is not suitable for operations requiring any length of time except nitrous oxide given by Patterson method and this would be very expensive. I would like now in a few words to enumerate some of the advantages of chloride of ethyl. It is not unpleasant

inhale if properly given and by means of a suitable inhaler. The loss of consciousness is extremely rapid. The very young, the aged, and those suffering from anæmia take it extremely well, *i.e.*, cases not suitable for gas. The cost of the fluid is not high, the apparatus is simple and portable. It leaves little or no smell in the room. The patient can generally leave the operating room within a few minutes of recovery, comparing favourably with ether but unfavourably with nitrous oxide gas. There is an absence of cyanosis so alarming to the patient; friends who *will* occasionally intrude themselves into the extracting room. No sterterous breathing or jactitations of the limbs or body. But, that which appeals to us most of all is the long available anæsthesia as compared with nitrous oxide, and, on this subject I would like to dwell more fully.

In the "Lancet" of October last year I published a series of four hundred times, anæsthesias performed carefully by myself in the dental department of the Edinburgh Royal Infirmary. The time and notes were taken by Dr. William Guy, Dean of the Dental School, and Dr. Gibbs, one of the dental surgeons to this department of the Royal Infirmary. Both gentlemen happen to be skilled anæsthetists as far as dental work is concerned, if not in general work. I knew nothing of the results until the work was completed, as the papers were kept by Dr. Guy who handed me a copy some time after. I confined myself entirely to the administrations, and gave a hundred each of chloride of ethyl and of chloride of ethyl and gas, and the same with somnoform. The following is a summary of the ethyl chloride. Sex. Females 80. Males 19. One not recorded. Oldest patient 52 years. Youngest 8 years. Average period of induction 46 secs. and a fraction. Longest 105 secs. Shortest 30 secs. Average available time of anæsthesia 75 secs. The longest 205 secs. The shortest 20 secs.

To continue this record as it is of interest to us. The amount of ethyl chloride administered. The largest dose 6 c. c. m. the smallest 2 c. c. m. the average dose being 3 c. c. m. and a fraction.

The greatest number of teeth extracted 25, and one in two instances. The average No. 7.24.

As to symptoms.—Phonation was noticed in 13 per cent. The pupil was normal in 13; 4 m. m. in 43; 3 m. m. in 24; 5 m. m. in 15; and 2 m. m. in 4. One not recorded.

Cyanosis occurred in 3 per cent.; stertor in 19; involuntary micturition in 1. All females. One child, the others adults. Vomiting 5, (on recovery). Hysteria, on recovery one. Struggling and excitement on going under 3, on recovery 4.

Slight movement on recovery but complete analgesia 4. Movements while deeply under, one.

The pathological conditions recorded in this series are as follows:—Epileptic with enlarged tonsils; specific cirrhosis of liver; anæmia and

faint before, colour improved and felt better after operation; lips blue and cold extremities before (shock); alveolar abscess; tuberculous knee, and anæmia 4; cardiac disease; syphilis.*

The patients were unselected, unprepared, and taken in the order handed in by the nurse in charge of the waiting room. How does chloride of ethyl compare with nitrous oxide and nitrous oxide mixed with oxygen? The table which I show will help us to see the advantages of chloride of ethyl in point of time.

It will be seen at once the short period of induction of ethyl chloride alone (C) and the strikingly prolonged period of available anæsthesia (F) as compared with the nitrous oxide group. I have inserted my friend Dr. M. C. Cardie's results as confirmatory evidence, he being a well-known authority; in fact it is through his writings that the re-introduction of this drug has today taken the place it holds in general anæsthesia. You will observe our results are slightly different—only a few seconds—due I think to my using a smaller bag and perhaps giving the vapour rather slower by means of a graduated glass tube. You will also notice the comparative economy in the amount used (Z). Nitrous oxide and oxygen give the best results in the nitrous oxide group, but it takes on average 110.5 seconds for an average induction and we can easily imagine that a considerable quantity of nitrous oxide is used to produce an average anæsthesia of 44 seconds. I have given it a great number of times and had kept it up for 40 minutes for a surgical operation at the special request of a London Surgeon, but I fail to see any advantage over ether or chloroform, but we are diverging. We must not lose count of the greater safety of nitrous oxide alone or in mixture with oxygen in comparison with ethyl chloride alone. In giving chloride of ethyl alone, with gas, or in mixture or sequence with ether, it is extremely desirable that the patient abstains from food for at least three hours before and 12 hours before, the usual preliminary purge. It is not necessary to mention that all constricting articles of apparel be loosened and mouth wash directed to be freely used for a few days previously. Mention was made just now that the patients were unprepared, but seeing that the operations took place between the hours of twelve and two, all patients to be in attendance at twelve, it is presumed that the last meal was breakfast. This may partly account for the low percentage of vomiting, *viz.* 5 per cent. I find in private there is more vomiting, due to want of preparation—a mistaken idea that the body requires fortifying—and doubtless the free liver will vomit after anæsthesia unless prepared a day or two beforehand. I think my late colleague Dr. Luke errs when he states that nausea and vomiting take place in 20 per cent. Anyhow this is very far from my experience, ten per cent. being nearer the mark.

Chloride of Ethyl and Nitrous Oxide in mixture.—Dr. Hewitt was the first to give this mixture which he demonstrated to the Brighton

* The inhaler used all through was the one designed by myself.

eting of the British Dental Association. He used his own nitrous oxide apparatus and introduced the chloride of ethyl through an opening in the bottom of the bag, employing a thick glass tube into which he first measures the ethyl chloride. After the patient has inhaled the gas for a few seconds tips in the chloride of ethyl all at once, the valves being of course worn out so that there is continuous rebreathing almost from the first. The results are undoubtedly good—available anaesthesia about 60—but I think rather better results are obtained by employing a one gallon bag, and giving the vapour gradually. The writer of this paper has had his apparatus to be accurately marked in c. c. m., one to give graduations, and the base of the tube made flat so that it will stand; these little details have been universally adopted. The advantages of this mixture are well worthy of consideration. A few patients object to the odour of ethyl chloride even if given gradually; nitrous oxide is therefore an excellent anaesthetic to begin with, also those who are very nervous and have taken nitrous oxide before with satisfaction and confidence, but in whom a longer anaesthesia than nitrous oxide can give is required.

With this mixture, as with chloride of ethyl alone there is a prolonged period of analgesia and in alcoholic and neurotic subjects better results are generally obtained than with nitrous oxide alone. But there are striking exceptions to this and the after effects such as nausea, headache, dizziness, are more frequent than after gas alone, but less than after ethyl chloride given alone, and of course considerably less than after ether. Referring to the table again you will see that nitrous oxide and chloride of ethyl, mixed more nearly resemble the nitrous oxide and oxygen mixture as far as columns C. D. and F. are concerned, and, as yet, no fatality has been reported.

My hundred cases, again condensed for this occasion is rather complicated, for the idea was to find out as to what period the ethyl chloride should be introduced, how much gas, how much chloride of ethyl, how long to give the mixture, etc., in order to secure the best results. The entire subject fully discussed would embrace the whole time occupied by this paper. As a result I submit the best results are obtained by using a one gallon bag almost filled with nitrous oxide, rebreathing from the first—for ten seconds, and the mixture for 50 seconds—sixty in all.

The longest period of available anaesthesia 120 secs.; the shortest largest dose 5 c. c. m.; the smallest 1.5 c. c. m. There was slight or very slight in 13; stertor in 9; slight or very slight in 4. Voluntary micturition in one. Prolonged recovery (phthisical patients) 6. Went under quietly but violent struggling on recovery, two. Great excitement during administration, one. Vomiting one. A breath of air in five cases. Vertical nystagmus in one case. Excitement on recovery complete analgesia, three. Marked stertor in nine, slight or very slight four. Phonation on going under, eleven.

Pathological conditions under this series.—Exophthalmic goitre Epithelioma of neck. Anæmia. Large abscess in neck. Chronic Bright disease, two; and very anæmic women, two.

Up to now there has been no recorded fatality as mentioned before and why? In my opinion it is because the vapour has not been administered in too concentrated a form due to the bag of the inhaler having first been filled with gas. The ethyl chloride had to be inhaled gradually, that is the point; it is not the nitrous oxide that altogether makes chloride of ethyl safer than when given alone; air would be just as well. I hold the danger is in a concentrated vapour, such as is given on lint or a sponge in a closed inhaler, a broken capsule, or projected through some hole in the inhaler, directly from a cylinder.

We know that a concentrated dose of chloroform will kill with astonishing rapidity, and the strength of chloroform vapour is being reduced less and less, with satisfactory results, and it is now more understood that chloride of ethyl has something of the same physiological effects, so that it is not unreasonable to suggest, as I have done years ago, that the dose should be given gradually. It cannot be so lethal as chloroform, otherwise why could we be able to give it with nitrous oxide, without air? The whole point of my argument is—Give it gradually with air or with nitrous oxide gas if you will, but the all-important point in the matter of safety is not to overpower the cardiac and respiratory centres with too concentrated a dose. Being highly volatile and readily absorbed this forms a source of danger.

Ethyl Chloride and Ether, mixed, or in sequence.—This is of particular interest, and for some years I have been devoting much time and attention to both. There has, up to now, no death been recorded from either the mixture or sequence.

One of the most convenient and best methods of giving the mixture that is to say, a true mixed anaesthesia is by the employment of an ordinary Clover's inhaler with measure glass attached to large tap on anglemount, the widebore ether inhaler designed by Hewitt and modified by myself for the purpose of being able to give in a simple way chloride of ethyl, gas and oxygen.

With this mixture we are enabled to get an available period of anaesthesia varying from two to three minutes and even longer. I mention that I have had no symptoms of alarm in many hundreds of cases.

Lately there has been rather an alarm in connection with ethyl chloride given alone, and although personally I have had no real trouble, on the score of caution I have been giving the mixture, now under consideration, more frequently than that of chloride of ethyl alone.

Many of us who have had ample opportunities of observing the physiological effects of this drug have been struck by its similarity to that of deep chloroform anaesthesia.

With that in view, it occurred to the reader of this paper to mix the ethyl chloride with ether in the glass tube. The idea evolved in this way. I was told that in using my inhaler occasionally the glass tube was blown in the top on an angle mount. This has not occurred in my experience; I cannot say if this was due to faulty construction or to want of familiarity in the technique; nevertheless, it was observed that during the hot rather there was a little loss of fluid by evaporation when introduced to the measure glass.

With this in view I put into the said measure glass a few drops of ether with the object of cooling the tube. It then occurred to me to add more, in fact make a mixture using the ether as a stimulant much in the same way as it is employed in the A.C.E. or C.E. mixture, not on account of its anæsthetic properties but to counteract any vaso-motor depressing action of the chloride of ethyl. To make a long story short I am now giving equal parts, 2½ c. c. m. of ether and chloride of ethyl, and the results are quite good. You will say at once that the evaporating index is unequal. This is true to a large extent, and further it is desirable, and why? The chloride of ethyl, will, and does come off largely at first, producing the anæsthesia, and later when the depressing action of the ethyl chloride may become manifest, the stimulating properties of the ether will be shown. This will be readily understood when I remind you that at the later stages of chloride of ethyl anæsthesia the respirations are deeper and more frequent, permitting, of course, a free intake of ether. The anæsthesia is good; a rather longer anæsthesia in some cases, than chloride of ethyl alone and the general conditions of the patient is now on the side of stimulation than otherwise.

The Ethyl Chloride-Ether sequence.—This has largely supplanted the gas and other sequence because the patient is more rapidly plunged into forgetfulness; there is little or no cyanosis, and the apparatus is much more ready. Up to now there has been no fatality recorded. It is of course used when a longer time is required than any of the abovementioned drugs or their mixtures can give.

The patient should be prepared the same as for a major surgical operation. I sometimes think that, if convenient to all parties concerned, dental operations of any magnitude should be done in the patients' own homes. Firstly, there is less risk of the patient contracting any pulmonary infection, and secondly, these long dental operations entail often a considerable amount of shock and a delicate patient is better put to bed. Also there is less vomiting if the patient keeps quiet for some time. His last remark of course applies to all general anæsthetics.

THE TECHNIC OF RECTAL EXPLORATION.

BY

CHARLES J. DRUECK, M.D., CHICAGO,

Professor of Abdominal and Pelvic Surgery at National Medical University; Professor of Rectal Diseases at Jenner Medical College; Rectal Surgeon to People's Hospital; Attending Surgeon to Lakeside and Emergency Hospitals; Member of the American Medical Association and Chicago Medical Society.

The examination comprises inspection, digital and instrumental examination. Inspection may reveal the conditions which produce various neurasthenic or anæmic conditions. The shape of the anus is sometimes important, whether normal, protruded, or drawn in (funnel-shaped), and the amount of pigmentation about the parts. Evidences of abrasion, scratches, pedicular worms may be seen on the skin about the anus, also signs of inflammation or scars. A prolapsed rectum may be the cause of prolonged vomiting or pertussis. An ulcer, fissure or pruritis may excite rectal tenesmus and also produce a scybalous stool. Protruding tumours, condylomata, such as hæmorrhoids, polypi or malignant growths may all be seen and their characteristics noted. Very often a distinct fullness or bulging of the anus is seen where internal hæmorrhoids are present, even if they do not protrude. Where epithelioma exists at or outside the anus, a small piece may be clipped off for microscopic examination without any discomfort to the patient by using a little local anæsthetic. After carefully inspecting the anus and perineum, the field may be widened by gently pulling the anus open, a hand being placed on each buttock, the finger tips pointing toward the anus. If the patient bears down at the same time, a considerable portion of the mucous membrane will be everted to the extent depending on the relaxation of the sphincters. In this way, the lower inch or more of the bowel may be inspected without the use of a speculum, and a fissure, fistulous opening, gonorrhœa in women, syphilitic erosions, eczematous excoriations, or pinworms may be brought into view. In many instances the internal opening of a fistula is situated immediately within the external sphincter, and, in such a case, it may be seen by the procedure. During this manoeuvre, any tender or indurated areas may be mapped out. Fistulous tracts are easily followed up without the use of the probe. In women who have relaxed sphincters, a portion of the interior of the rectum may be everted by introducing the index finger into the vagina and pressing the rectal walls out through the anus. The presence of a discharge issuing from the anus indicates disease within the rectum while the sunken ischio-rectal fossæ and retracted anus surrounded by profuse growth of soft hair would immediately suggest malignant disease or tuberculosis within the rectum with general systemic involvement.

Digital examination of the interior of the rectum follows inspection and it is the most important of all methods. The practitioner who

iliar with the digital examination of these parts can diagnose better with his finger than by any other way. Fully 80 per cent. of all rectal diseases may be diagnosed with the finger and the other 20 per cent. by the history of the case and a specular examination. Digital examination not only confirms the opinion regarding the local conditions found by inspection, but also determines other conditions to which the attention may have been directed. The finger should first be swept around outside of the anus to detect any induration or tenderness, either superficial or deep, which might indicate abscess or fistula. For internal examination the finger should be well trimmed and the finger anointed with olive oil, which is not so easily rubbed off as is soap or vaseline by the sphincter. Whatever lubricant is used must be kept in collapsible tubes, as this is the only method of having clean, sterile lubricant at all times. The cost is little, the advantages great over the old-fashioned jar of vaseline into which fingers and instruments were repeatedly dipped, carrying infection from patient to another. For æsthetic reasons, the rubber tissue cot may be worn if desired, because it will not affect the sensibility of touch and may be washed and anointed. The finger is then gently insinuated through the anus with a rotary or boring motion, the patient being asked to bear down at the same time, and the rectum systematically palpated as high as the finger will reach. The introduction will be rendered much easier if the normal direction of the rectum is remembered and the finger is first directed up and forward toward the neck of the bladder, until the sphincter is passed, and then backward toward the sacrum. The sphincter is very sensitive, and any undue haste or roughness may induce spasm of that muscle, which will make the examination very painful and unsatisfactory. The iliac fossæ should be firmly explored to determine whether there is tenderness or tumor. The finger should be introduced its full length, not by passing the other fingers of the hand back into the intergluteal cleft instead of doubling them into the palm, an increased reach is obtained also if the patient bears down or strains during the examination, one or two inches more of the rectum can be examined.

The condition of the sphincter should be noted; whether it is relaxed, suggesting a debilitated system, cancer, or large internal hemorrhoids which latter weaken the muscle by frequently protruding, or contracted, suggesting acute disease in the anal canal, anal fissure, or a nervous subspasm. Whether hypertrophied, denoting chronic disease; or finally is it spastic? The spasmodic action should be overcome by slow, steady pressure. The sphincter is always forcibly contracted on attempting examination. Frequently the internal opening of a fistula is found just within the sphincter, as a rough, indurated, and sensitive spot which may be elevated or depressed (ulcerated); or the path of the sinus is felt by its cord-like resistance. If the tumor is felt, its size, shape, location, movability, and distance are to be ascertained and, if possible, a small piece removed later through the speculum for microscopic examination. Fœcal impaction

of the rectum or colon has often been mistaken for cancer. Polypi, stricture, abscesses, gall stones and other foreign bodies are occasionally found. The tumour of appendicitis is found in the right pelvis if the appendix is low, and rectal palpation should be practised in every case of suspected appendicitis. Malignant disease of the rectum or pelvis, the tumour of intussusception or an infected lymph gland may also be felt. Induration or constriction of the walls and the condition of the other pelvic organs is to be determined. Palpation of the prostate may reveal enlargement, induration, tenderness or soft points. The uterus and appendages should always be examined. Vesical irritation is a frequent source of reflex disturbance, and the bladder always should be examined. A stone may be found to be the origin of the trouble, although no symptoms were manifested. A digital examination through the rectum often assists considerably in diagnosing diseases of the urethra, Cowper's glands, seminal vesicles, bladder, vagina and pelvic bones; also tumors and abscesses of the parietal cavity, dislocation of the femur, ischial hernia and aneurysms of the gluteal artery. Very little information is gained by digital examination regarding hemorrhoids, except in rare cases, when much hypertrophy has occurred in the mucous membrane. Otherwise, the hemorrhoid being covered with nearly normal mucous membrane, gives no differential tactile sensation. Thus you see, a digital examination through the rectum is imperative in any case indicating disease below the pelvic brim. On withdrawing the finger it may be covered or streaked with blood, pus or mucus, each with its own significance. If a stricture is small as not to admit the passage of the finger, no force should be used, but if rupture of the bowel has followed such an attempt. The cervix, the fundus of the uterus, or the prostate may be mistaken for a tumor. In rare instances, it may be necessary to introduce the whole hand into the rectum, but as the walls are so crowded upon the fingers and the folds of the mucous membrane fall in between the fingers, very little knowledge is obtained, and there is always the danger of rupturing the bowel. Laparotomy and intra-abdominal palpation is preferable when disease is high in the rectum or in the sigmoid. A digital examination carefully performed is not painful unless a fissure is present.

Instrumental Examination:—Bougies.—That part of the rectum beyond the reach of the finger may be examined by means of bougies or sound, although their use is open to criticism and is often contraindicated. And soft, flexible rubber instruments should be used (Wales bougies) and they must be handled with great caution. They should be hollow, to permit the injection of fluid through them into the part beyond, thus dilating the rectum in advance and effacing any folds that might obstruct their introduction.

Cut of Wales Bougie:—Too great value must not be placed on bougies as their field of usefulness is limited, and even in a healthy bowel the sensations of obstruction often are obtained and may be misleading. I have never yet to see a student who did not find a stricture the first time he introduced

bougie, because the sound often impinges on the wall of the bowel between the folds of the gut, and a stricture is erroneously diagnosed; or it may strike the uterus of prostate, or the promontory of the sacrum. There is always danger of a metal or hard rubber sound penetrating the bowel, especially in cancer or ulcerations. Sometimes the so-called third sphincter, which is only semilunar, transverse fold of the anterior and right sides of the rectum about six to eight centimeters above the anus, may catch the bougie. Normally the bougie may be introduced with care to the middle of the sigmoid flexure. If the mesocolon of the sigmoid is very long, the bougie may be felt on the right side and lead the examiner to think it had perforated the bowel. **Probes**—The probe has no place in the diagnostics of rectal diseases and very little in the treatment, except in fistula. Even its value is very limited. Irrigations and injections are sometimes used for diagnostic purposes, and are best accomplished in the knee-chest or dorsal position. **Specula**—The speculum corroborates the digital finding and aids in the diagnosis where the finger fails, but by no means supersedes the latter. It is indicated where obscure hemorrhage, pain or discharge is an important symptom. The internal openings of fistula may be seen, especially if the discharge escapes during instrumentation. Internal hemorrhoids usually drop into the instrument and are easily seen. The decision as to which is the best speculum depends upon which one you are more familiar with. Each instrument is constructed differently, but in the more rectal examinations you make the less you will use the speculum. The smooth blade bivalve causes much less pain than the wire blades, but obstructs the field of vision and exposes only a small area at one time, and the speculum must therefore be rotated.

Cut of Bivalve Speculum.—The cylindrical speculum permits of the most thorough work. With the patient in the knee-chest position and a speculum five inches long and one inch in diameter the whole length of the rectum may be examined. Such a speculum is provided with an obturator to facilitate its introduction, which should be accomplished without much pain. When the obturator is withdrawn, the air rushes in and dilates the bowel, and the whole rectal wall may be inspected by moving the introduced and about at the same time gradually withdrawing the speculum. The mucous membrane directly in front of the speculum is flattened out and viewed easily by gently pushing the speculum up after the obturator has been removed. By putting the patient under the influence of a general anæsthetic, many of the obstacles to the examination are removed and the rectum may be explored thoroughly; the sphincter completely relaxes, pain is obviated, and in such cases it is well to be prepared to do any necessary surgical treatment in order to avoid a second anæsthetic. When the patient is anæsthetized an ordinary flat retractor frequently makes a very satisfactory speculum. A cylindrical speculum, ten to thirteen inches long, may be introduced, and the sigmoid explored, but as the great majority of rectal troubles are near the anus, a short and wide speculum is preferable.

Cut of Cylindrical Speculum :—When a patient is in the knee-chest position, the chest should be well down on the table and all constriction at the waist must be removed.

In many instances owing to local disease or reflex nervous excitement we find the sphincter abnormally contracted, making an examination very painful and often impossible without some previous preparation.

Our Contemporaries.

MEDICINE.

A Few Words About Insanity.

THE family doctor sees more of the beginning of insanity than does the alienist. The latter is usually called only when the disease is fully established or at least so far on its course that no doubt remains of the existence of mental aberration. Unfortunately, so little time can be given to the study of insanity in the medical colleges that physicians, for the most part, must teach themselves after they begin to practise, and it is only after years and after having made many mistakes that they begin to have any clear and accurate knowledge of how insanity manifests itself. Fortunately, the colleges have begun to rectify the evil of lack of instruction, but it will be years before proper training can be given, and in the meanwhile the average physician will be compelled to continue to learn in the rough school of personal experience. Hence errors in diagnosis and treatment are not infrequent. I am asked to write very briefly about a few important ones.

The following are among the common errors :—To regard the beginning of paresis as merely neurasthenia; to mistake the delirium of some acute febrile septic process for insanity; to think that what is really adolescent insanity is a mere manifestation of hysteria; and to look upon dangerous paranoiacs as mere harmless cranks.

It is the rarest thing for insanity to be sudden in onset. Paresis and paranoia never are. The insanity following the acute infectious fevers and childbirth is always rapid in oncoming, but even acute mania presents prodromal symptoms, extending, it may be, over many days. The physician, it is true, is usually called in a great hurry, but this is because he is rarely called until some sudden outburst has occurred, or the patient has committed some act entirely at variance with the common conduct of men and women. If now inquiry be made into his recent history, it will be found that there has been a gradual deterioration in both mind and morals. It is these changes that are often supposed to be mere neurasthenia, mere nervous prostration, in popular language. The differential diagnosis is, as a rule, not hard to make, provided one remembers some fundamental facts. In neurasthenia there is never decrease in the moral sense. Late in the disease there may be increase in selfishness, but that is all. In paresis moral defect begins as soon as, and sometimes appears before, any mental deficiency. In neurasthenia there is

er a loss of the sense of shame; in paresis, shamelessness in feeling, if not conduct, is present from the start. In paresis there is a rapid increase of egotism, and soon the world is egocentric. This never occurs in neurasthenia. In neurasthenia, power of continuous application decreases, there is no or little loss of intellectual good judgment. The neurasthenic cannot carry on a process of thought for any long time, but, though he may be able to think for only a few minutes, yet during those minutes of thought his processes of thought are carried on normally. The paretic has not only decrease in power of thought, but aberration of method. The neurasthenic never has delusions. He may be fearful of the future, have a sense of impending evil, but whether he may not go insane, but he will never be elated, never boast, and never have delusions of grandeur. The paretic, as a rule, has all these. He may, it is true, pass through the whole course of his disease to death with no delusions, with nothing but progressive dementia, and the physical signs; but such cases are rare, and in them, as in others, the physical signs are always present. In neurasthenia there are never signs of organic disease of the brain—no cord—never Argyll-Robertson pupil, absent or spastic knee-jerks, true clonus, scanning speech, ataxic, or paralytic or spastic gait, convulsive or epileptic attacks. Many and sometimes all of these appear in paresis. Some are almost always present as soon as any supposed neurasthenic symptoms are discovered. The common early physical signs are disturbances in the pupillary actions, marked changes in the knee-jerks, and slight difficulty in articulation, brought out, it may be, only on using some test word. Every supposed neurasthenic should be carefully examined for signs of organic nervous disease, and if such be found the diagnosis needs revision. The matter is important, because to send a paretic globe-trotting, to let him attend to business or take any responsibility, is indeed to let him be a free agent at all, means to hasten inevitable disaster to himself and possibly to his family. Fortunes have been lost, crimes committed, homes wrecked, because doctors have not been called, or doctors have not known.

The only evil that is likely to result from mistaking the delirium of fever for a septic process for insanity is that it may result in sending a patient to an insane asylum when there is no need, thus, in the present frame of mind of the public, casting a slur upon the patient's reputation and casting also a shadow on the patient himself, he having for the rest of his life the feeling that he has been insane and may hence again become so. These evils are not trifling. A working man or woman who has been in an asylum finds it difficult to get work when he comes out, and even the most broad-minded of people look a little askance on an acquaintance who has been in an asylum. The only way to avoid this is to remember that many acute fevers can produce mental symptoms, and that in type, from the start, and that these mental symptoms may mask an organic disease. Look always for the signs of typhoid fever or pneumonia for local foci of pus.

The differential diagnosis of hysteria and the insanity of adolescence is not always easy. Confounding one with the other would not lead to serious results, since the same treatment is required in both, if all physicians realized that hysteria is not a mere, trifling ailment, but one of the severest diseases.

Unfortunately there is quite a widespread opinion that hysteria is mere willfulness and is to be cured by neglect. Really, hysteria is the result of congenital defect producing aberrant mental and emotional development. This defect can often be overcome, or at least its results prevented, by wise education, but too often the training of a boy or girl predestined to hysteria is in the hands of a hysterical mother or degenerate father. Frequently a boy or girl at the beginning of an attack of acute insanity is talked at and scolded, and told there is nothing to be done, instead of being separated from the family and given an outdoor course of life or bed-rest, as one or the other may be needed. When a youth begins to show changes of manner and character, to be listless, to wish to be alone, to talk about not being treated right, to be vaguely suspicious of his parents, brothers and sisters, to make queer remarks, to sleep badly, and to lose appetite and manners, he needs to be treated as a seriously ill person. As always, it is the fact of the change in manners, conduct and thought, as much as the symptoms themselves, which is significant. Many youths are dull and stupid, easily annoyed, selfish, and hard to control from childhood on. Such are, of course, neither getting insanity nor hysteria. But if a boy or girl formerly of average character begins to change, it is a danger signal. As to the differential diagnosis of hysteria and adolescent insanity, the difficulty lies in the fact that neither condition has a clear-cut and definite boundary line, but each merges into the other. Really, hysteria is itself a mental disease. It is best to confine the term hysteria to cases in which there are hysteric palsies, anæsthesia of special sense disturbances and convulsions. As to treatment, both need first and complete separation from home and family, and, after a shorter or longer rest-cure, outdoor life and exercise and mental and emotional quiet. Even an adolescent who has survived and apparently recovered from an attack of hysteria or insanity needs the wisest care for years; needs the quiet, not the strenuous life.

No type of insanity leads to as serious and frequent legal trouble as paranoia. This arises from the popular opinion that the insane are and must be irrational in all their acts; that if a man does any sane thing, therefore he is sane, even if his other acts are irrational. Thus it is common to hear some one say so-and-so cannot be crazy, because he did thus and so, mentioning some sensible thing he did. As a matter of fact, many insane people do sane things every day of every hour; otherwise it would be impossible to manage hospitals for their care without employing as many or more attendants than patients. The evidence of a maniacal and entirely demented alone never show evidence of sane motives or conduct. The test is, is any of his conduct that of an insane man, not, is so much of his conduct normal? The paranoiac is particularly apt at deceiving an observer, because so much of his conduct and speech and manner is seemingly normal. I do not mean that he is a monomaniac or only partially insane. He is not. No man can be only partly insane, notwithstanding the dogmatic assertion of certain jurists who, knowing nothing of men and women, and still ignorant of psychology, are so enmeshed in the thick web of a traditional metaphysics that they cannot escape. The paranoiac is very prone to have one great delusion or a group of related delusions around which his mental life centers. Often early in the disease he knows that the world will regard him as insane.

about them, and he will therefore deny their existence. He may reason well on matters unconnected with his delusions, and it is this which gives the observer. A study of such a man will, however, always reveal these egotism and vanity and real mental weakness, though there may be apparent strength. He explains his delusions and reasons about them, in this way unlike the parietic. A safe rule is to confine every one who has delusions to a hospital, whether he has classical paranoia or not. The paranoiac is especially prone to criminal acts, because he knows no law save his own. He has no doubt of the correctness of his opinion, and is sure of the soundness of his own mental powers.—CHARLES W. BURR.—*The Monthly Medical Record*.

Appendicitis and Mucous Colitis.

The increased attention which has been accorded to appendicitis as a surgical disease, to be treated by operative measures at the earliest possible opportunity, has, no doubt, resulted in the performance of an operation in many instances in which the subsequent course of events showed that such a radical method of treatment was not indicated. This haste to operate is favored by an experience which has shown that the uncertainties connected with an acute attack of this disease make surgical interference the procedure of choice; but this haste which is often manifested also stands in the way of an accurate and careful diagnosis, and when a closely simulating condition is the cause of the patient's symptoms, the removal of the appendix naturally fails to accomplish the desired end. One of these conditions is mucous colitis. This was discussed recently by Professor Dieulafoy, who showed that it was a disease like appendicitis, but not to be confused with typical appendicitis. The patients have usually had one or more attacks of colitis; they are constipated; they may have from time to time attacks of slimy, bloody stools, and complain of pain in the region of the cecum or the ascending, transverse, or descending colon. As appendicitis is usually traced to a previous enterocolitis, the other clinical features of the case must be overlooked or underestimated, and the diagnosis of appendicitis given when the patient and operation advised. When the latter is done no evidence of enterocolitis is to be found, there are no adhesions, and the appendix is entirely normal, as is proved by later histological examination. Furthermore, the attacks of colitis which the patient has been subjected to come on again after the operation, and other symptoms of the colitis continue as before.

Dieulafoy is not inclined to attribute to the histological diagnosis of appendicitis the usual amount of faith with which this is ordinarily received. It has been found that in many cases when the gross appearance of the appendix was apparently normal the microscope showed bands of fibrous tissue, hypertrophy of the crypts, and a hæmorrhagic folliculitis. Dieulafoy claims that if the appendix of an adult be examined after death, no matter what the cause of death, such changes will always be found, particularly in the distal portion of the organ, and they are of no especial importance. The effusions of blood and follicular hæmorrhages are not, it seems, evidences of appendical inflammation, but are due to trauma produced during the operation.

Such diagnostic errors will not occur if greater weight is given to the clinical evidence of appendicitis as a whole, rather than to any one symptom. The

presence of pain in the right iliac fossa does not necessarily point to appendicitis, particularly if it is associated with an enterocolitis. Dieulafoy does not believe that appendicitis is one of the results of an enterocolitis, and it has been his experience that the presence of pain in the right iliac fossa in such cases points rather to a typhilitis than an appendicitis. The term typhilitis has not found much favour on this side of the water, heretofore, but there are evidences that the necessity of the distinction is being recognized. Appendicitis, particularly in its early stages, affords a variety which is likely to be confused with an attack of colitis, and it is a well marked, characteristic clinical picture. The patient is suddenly seized with pain, and there are no prodromal symptoms; whereas the individual suffering from colitis will give a history of intestinal disturbances extending over months and years. In both conditions there is tenderness in the right iliac fossa, but in the latter it is never so closely identified with Mc Burney's point; moreover, the muscular rigidity, the hyperæsthesia of the skin, nausea, vomiting, and a rise of temperature associated with true appendicitis are absent in mucous colitis.

There is no doubt that the feverish haste to operate in every suspected case of appendicitis is gradually abating, and greater efforts are made to establish the diagnosis firmly before subjecting the patient to a procedure which there must always be associated an element of risk. Dieulafoy's view, which regards the confusion of appendicitis with certain forms of colitis as line with the conservative views regarding appendicitis which are being universally adopted. This constitutes, however, in no way a restriction to the axiom that when we have to deal with an actual case of this disease, early operation is the best possible procedure for the welfare of the patient.—*Edinburgh Medical Record*, August 4, 1906).

Baldness, Prevention of.

In order to combat baldness successfully it is necessary to begin as soon as possible after it is first noticed that the hair is beginning to fall. Healthy hair does not come out, and if hairs are found on the pillow, on the clothing, or in the hair-brush, the indication is given for beginning treatment. One of the most important, yet very generally neglected, prophylactic measures consists in frequent ablution of the head, a measure that is still considered injurious by many people. On the contrary, frequent shampooing and rubbing of the head with a best preventative of baldness. Another feature on which the author lays stress is the necessity for cleanliness in all utensils used in the barber-shop or in private.

Actual baldness cannot be cured, but a great deal can be done to prevent its onset, by properly treating the tendency to falling of the hair. A complete treatment is outlined, of which the following are the most important features. Daily shampooing with soap and hot water, followed by drying and the application of a 1 to 1000 solution of bichloride of mercury. This is allowed to evaporate, and the scalp is then rubbed with a 1 to 400 solution of thymol in alcohol. Finally an ointment is applied, containing one part of salicylic acid, two of tincture of benzoin, and fifty of vaseline. In obstinate cases the treatment is begun by the application of tar liniment, which

ed ten minutes later with the soap. Lassar (*Deutsche medizinische Wochenschrift*, July 5, 1906; *Medical Record*, August 4, 1906) — *The Monthly Epædia*.

The Cause of White Hair.

METCHNIKOFF is said to have declared, in an address before the Académie des Sciences, May 7, that the whitening of the hair is due to cellular activity. Hair, he declares, is not an inert substance, but is composed of cells provided with prolongations which envelop and destroy the coloring matter. The cells which he calls chromophagic cells, gradually destroy the coloring matter of the hair, working from the centre toward the root and tip. He has observed that the hair of women does not become white as generally or as early in life as in men, and this he attributes to the general use of the curling iron by the former, the heat of which disables or destroys the chromophagic cells. He explains the sudden turning of the hair—in a night—as due to neural shock and resulting exciting of these cells, which by excessive activity destroy the pigment or coloring matter of the hair in a few hours. — *The Dietetic Hygienic Gazette*.

SURGERY.

The Various Gross Pathological Conditions of the Urethra as Revealed by the Urethroscope.*

BY

NOAH E. ARONSTAM, M. D.

Professor of Dermatology, Michigan College of Medicine and Surgery; Member, Wayne County Medical Society, Michigan State Medical Society, Medico-Legal Society (New York), etc.

The urethroscope is a valuable means in the diagnosis of the various pathological conditions affecting the male urethra. What may seem obscure on cursory examination, may, with facility, be recognized when the above instrument supplements our investigations. The affections of the urethral canal are not as uniform as was commonly believed heretofore, as a great number of them may give rise to identical symptoms. Should we fall into the routine of regarding the effects instead of the causes, the results will be far from successful. The rational and appropriate treatment of the different morbid states of the urethra presupposes, (1) a knowledge of the technique of urethroscopy anterior and posterior; (2) a familiarity with the normal and pathological conditions of the canal; and (3) the particular method of treatment suitable to each individual case.

To distinguish between anterior and posterior urethroscopy. The former is the examination of the anterior urethral segment, i. e., the first six inches of the canal; while the latter is directed towards the exploration of the remaining one inch and a half of the urethral tract.

The following is the technique of urethroscopy, both anterior and posterior. It is superfluous to say that the urethroscopic tube—the anterior of which was read by invitation before the Northern Tri-State Medical Association at Put-in-

is straight, while the posterior is somewhat curved, with a fenestra in the curve—must be scrupulously clean and thoroughly sterilized in boiling water. After having sufficiently cooled down, it is lubricated with a lubricant, composed of a decoction of Irish moss to which a small quantity of some antiseptic agent has been added. The patient is then put in the recumbent posture, the meatus and glans penis cleaned with a mild antiseptic, and the tube introduced gradually and slowly without much effort on part of the operator. No force should be used in inserting these tubes, save the most gentle propelling motion, taking care not to lacerate the delicate mucosa of the urethra. Should the canal prove impassable on account of an abnormally small calibre or the presence of strictures, it should be previously made patulous by gradual or forcible dilatation with sounds, until it admits number 24 (French), when the urethroscope will readily enter the canal; the obturator is then withdrawn, the little lamp inserted, the coil attached at both ends and the battery turned on, when the lumen of the canal will spring into view. If the patient is very nervous the canal may be anesthetized with a two per cent. solution of cocaine. The normal appearance of the urethra is that of a uniform pinkish hue, without any appreciable variation throughout its length.

The scope of this paper does not permit the author to enter into an exhaustive discussion of the different lesions elicited in the anterior portion of the urethra by urethroscopy. However, the most salient features of the different pathological conditions will be briefly enumerated below:—

(1) An abrupt change of the pinkish hue of the mucous membrane, that of an anæmic or colorless shade would suggest a stricture in its form or organized state.

(2) *Small puncta* studded here and there throughout its extent, indicate an acute or subacute inflammation.

(3) *Livid areas* denote a chronic inflammatory state of the urethra.

(4) *Granular spots* are not infrequently detected; they are of great significance, as they suggest an affection *sui generis*, termed *granular urethritis*, a malady very obstinate and resistant to treatment.

(5) *Lines or bands* of a dark red color, which may be regarded as a formative stage of the so-called linear stricture.

(6) *Superficial erosions*, commonly found within the first inch and a half of the urethra near the navicular fossa.

(7) *Ulcerations* of various type, both superficial or deep, may also be discerned by the urethroscope.

The tube is gradually withdrawn, when the fenestrated end has been thoroughly inspected, until the entire length of the urethra has been successively viewed. The small lamp causes but little irritation and occasions no irritation or sensation of burning. Should, however, the patient complain of a smarting or burning feeling, then the battery should be turned off for a moment, after which inspection may be resumed.

After the tube has been withdrawn, the meatus and glands are again washed with some antiseptic solution and the patient given a cathartic.

posed of two grains of quinine sulphate and five grains of urotropin, in order to prevent urethral chill, which is occasionally apt to set in in nervous individuals. *Urethroscopy should never be attempted in acute inflammatory conditions of the canal, lest a great deal of harm be created in doing so.*

Urethroscopy is a diagnostic means of special value in *chronic* inflammatory diseases of the *posterior* urethra, pre-eminently so in *granular inflammatory* involvement of the latter. To detect and properly interpret the particular morbid conditions affecting that part of the canal means, half of the cure secured. The lesions of the posterior urethral tract are nearly the same as already mentioned in dealing with the anterior urethra, with the exception of erosions and ulcerations, which are not so prone to appear in that particular location. Once the morbid condition is ascertained, the treatment readily suggests itself to the intelligent physician.

To enter into a full discussion of the latter will require more time and space than has been allotted to the author under the present circumstances. It is sufficient to state, however, that the eradication of certain pathological states determined by the urethroscope is but a question of time and perseverance on the part of both the patient and physician, so greatly is the treatment facilitated by the procedure above delineated.—*The Canada Lancet.*

OBSTETRICS AND GYNÆCOLOGY.

Disintegration of a Uterine Fibro-Myoma due to Hemorrhage and Resulting Necrobiosis.

BY

H. MACNAUGHTON JONES, M.D., M.A.O., &c.

The occurrence of any special pathological change in a myomatous tumour of the uterus is always of interest. The researches of recent years have clearly shown that degenerative changes—many of which must have a fatal termination—are much more frequent than was previously believed. Gynecological literature is now replete with evidence which proves not merely the number of such changes, but also their serious nature. Work in this field has been done at home by Cullingworth, Fairbairn, and others; on the Continent, more particularly by Martin, Frederick, Fraenkel and Prochownik. In America, James Noble has, on different occasions, brought the subject prominently to notice.

In the *Edinburgh Medical Journal* (Vol. VIII, No. 6, for Dec., 1900, p. 493) I discussed the subject of myoma and its degenerations, especially with regard to the bearing of the latter on the question of operation, classifying the various types of myoma which up to then had been recorded. In July, 1901, before reading his paper at the British Gynecological Society, I summarized the various examples of degeneration which were to be found in the Museum of the Royal College of Surgeons, and the museums of the large London hospitals. The results of that search, which I brought before that same meeting, proved that the question of degeneration had not sufficiently attracted the attention of pathologists, and that there had not been careful investigation of the

pathological condition present in the countless specimens of myoma which have been removed and exhibited. Our knowledge has now been enlarged, and much has been done towards determining the influence of such degeneration on the prognosis and treatment of myoma.

The tumour of which I furnish an illustration appears to me, from the clinical aspect and its pathology, to warrant my placing it on record. It shows the negative side in the symptomatology of such tumours, even when they are of a most serious character. That the absence of all the more usually prominent symptoms associated with their presence and growth may be compatible with the existence of most serious, if not fatal, complications, is undoubtedly true.

The patient from whom the tumour was removed was thirty-eight years of age. She had never complained of any pain, and when I saw her she distinctly stated that she had never suffered on account of the tumour. Her periods had always been regular, lasting about a week, and not in excess. There had been for a considerable time some leucorrhœal discharge. Her only complaint was that for the last eight or nine months she had felt more easily exhausted after exertion, and on lying down there had been some abdominal distress, which did not, however, amount to a decided pain. She followed her ordinary occupations, and had only noticed the increase in size a few weeks before I saw her. To this she drew the attention of her sister, who once felt the mass projecting at the left side.

On examination, I found the summit of the tumour was about one inch above the umbilicus; an irregular mass projected below the umbilicus at the left side, distending the skin at this part. At the operation, on exposing the tumour, this portion was found to be soft and fluid. On drawing off some of the latter, it proved to be of a dirty brown colour, inodorous, and evidently disintegrated blood. The abdomen being carefully protected, the cavity was freely opened, and some ten fl. oz. of this fluid escaped. The walls of the cavity were then seen to consist of broken down necrobiotic fibrous tissue, the parts of a pale yellow colour and covered with soft lymph. The appearance of the cavity after preservation with formalin is accurately shown in the drawing.

Dr. Cuthbert Lockyer, who examined the tumour, remarked on the density of its fibrous capsule, the presence of œdematous tissue, and the extreme hardness of the central portion of the growth.

The tumour was removed by supravaginal hysterectomy, and the patient has made an uninterrupted recovery.—*The Journal of Obstetrics and Gynecology.*

Hyperemesis as an Indication For the Interruption of Pregnancy.

BY

BERNARD W. MOORE, M. D., St. LOUIS.

Hyperemesis gravidarum is a condition which has been recognized since the earliest days of medicine. Reliable statistics as to its frequency are lacking. The figures obtainable in literature show wide discrepancies, so that the conclusion is inevitable, that the condition is more frequent in some countries

in others. As shown by Horwitz, it is more frequent in France, England America than in Germany or Russia. The incidence varies also with the local condition, being more frequent among the well-to-do than among the poor. To this fact are due the low figures from some of the large clinics in Europe and America. Piek gives the incidence of severe vomiting as once in 100 cases. At the Johns Hopkins Hospital, Williams saw only two cases in 100, but finds the disease very much more frequent in his private work. This variability of occurrence is attended by an equal variability in mortality, which has resulted in many discrepant views as to the management of the condition, especially as regards the interruption of pregnancy. Some men of large experience are opposed to therapeutic abortion in hyperemesis, upon the ground that it is not a fatal malady when properly managed. Thus Frank, from his large experience in Schanta's clinic, records that he has never seen a case in which abortion was indicated. On the other hand, in France, Gueniot collected 72 cases, in which 72 terminated fatally, and Merle gives a mortality of about 50 per cent. in cases treated medically. In this country recently fatal cases have been recorded by Williams, Stone, Ewing, Strauss and others, so that it may be regarded as unquestionable that the disease is fatal in a certain number of cases. In all the statistics available, the mortality from hyperemesis is less in those cases in which abortion has occurred spontaneously or has been induced.

For the purposes of the present discussion, it is assumed that certain cases of hyperemesis are inevitably fatal, in spite of the best possible management, and that pregnancy is not spontaneously or artificially interrupted, and that therapeutic abortion is absolutely indicated whenever the continuation of pregnancy seems certain to end in the death of the pregnant woman. As the indications for the interruption of pregnancy are so closely related to the etiology of the condition, the main theories as to the cause of hyperemesis will be briefly considered, following the classification adopted by Williams, who recognizes three classes: reflex vomiting, neurotic vomiting, and toxemic vomiting. Reflex vomiting is said to be due to various abnormalities of the uterus or its contents, existing prior to, or arising in pregnancy, or to abnormalities of the ovum. The reflex origin of hyperemesis was the earliest to obtain general credence, and for a long time dominated the literature upon this subject. Almost every abnormality to which the pregnant uterus is subject has been invoked to explain reflex vomiting, the most important being displacements. Among other causes may be mentioned ovarian tumors, Hydramnios, hydatidiform mole and placental abnormalities. The theory, however, does not seem to rest upon any sound anatomical basis. The various abnormalities which are supposed to cause reflex vomiting frequently exist in patients who do not vomit at all. In many cases upon patients dying of hyperemesis, in which abnormalities of the digestive tract were found, the condition of the other viscera seems to have been overlooked or disregarded, so that it cannot be positively asserted that reflex vomiting is due to these causes. The chief ground upon which this theory rests is that relief from vomiting follows relief of the abnormal condition: in other words, the theory is measured by a therapeutic test. When it is realized that many cases of vomiting cease after the use of the most irrational remedies, it will be seen how uncertain the theory is.

It is not denied that striking results sometimes follow the correction of local abnormalities of the generative tract. In all cases of hyperemesis, the local condition should be carefully looked into, and abnormalities corrected. It does not appear, however, that vomiting of such a nature as to endanger life is ever due to local disease. Therefore, the induction of abortion is never to be considered in such cases.

In 1890, in an important paper read before the Berlin Obstetrical Society, Kaltenbach expressed the view that those cases of vomiting in pregnancy which diseases of the digestive tract, kidney or sexual organs can be shown to exist, should not be included under the head of hyperemesis gravidarum, but only those cases due to pregnancy itself. Considering hyperemesis in this limited sense, he reaches the conclusion that it is to be considered a functional neurosis, in which reflex irritability is increased and reflex control decreased, a condition allied to hysteria. In support of this view, he cites the unconstant and unimportant findings at autopsy, and the remarkable results frequently obtained by unusual and bizarre remedies. He concludes that hyperemesis should be treated as a neurosis, by isolation of the patient in suitable conditions, and that the induction of abortion is never indicated. Other writers before Kaltenbach had directed attention to the neurotic origin of hyperemesis, but to him is undoubtedly due the credit of first directing general attention to the condition. Following Kaltenbach's address, the neurotic origin of hyperemesis received wide acceptance.

Unquestionably a great many cases of hyperemesis are of neurotic origin, but it would be an extreme view to hold that all cases are such, even within the limitations adopted by Kaltenbach. With proper management, this type of vomiting should never result fatally. By isolation from her family in charge of a competent nurse, suggestion, proper feeding by mouth, or rectum if necessary, such a patient usually promptly recovers. One patient with this type of vomiting, who had to be fed for 18 days by the rectum, finally promptly recovered upon the sudden death of her mother, who had been a constant companion.

It should be borne in mind that, in cases where pregnancy is unwelcome, this type of vomiting frequently exists. Fritsch reports a case in which the patient lost 37 pounds in four weeks from constant vomiting. After the induction of abortion, which seemed necessary to save her life, she confessed that she had vomited at will, in order that the pregnancy might be ended.

The toxemic nature of certain cases of hyperemesis has been recognized for a number of years, but it is only since 1892, when Lindemann reported a case of hyperemesis complicated by multiple neuritis, that a definite pathological basis for this belief has existed. At autopsy Lindemann found evidences of neuritis, fatty degeneration and cloudy swelling of the liver and kidneys, and similar lesions in the liver and kidneys of the foetus. In 1893 Champetier de Ribes and Bouffe de Saint Blaise reported definite lesions of the liver in a woman dying of convulsions after vomiting throughout pregnancy. Later, other cases were reported, so that Williams has recently been able to collect twelve fatal cases of hyperemesis, including one of his own, in which lesions of the liver were found resembling those of acute yellow atrophy.

more recently two cases have been reported by Strauss. The uniformity of these findings is in marked contrast to the negative or indefinite findings in other cases, and justifies the belief that there is a close relationship between hyperemesis and acute yellow atrophy. Microscopically the liver shows degenerative changes, beginning about the central vein of the lobule, and advancing towards the periphery. Degenerative changes are also found in the kidneys. The origin of the toxic materials which produce these lesions has been variously sought. Dirmoser believes that they arise from the gastrointestinal tract, and Veit has applied his syncytiotoxin theory. Stone considers the liver as the source of the poisons, and he, Ewing, Edgar and others believe hyperemesis and eclampsia are similar conditions. Williams has pointed out, however, that the hepatic lesions of the conditions are entirely different.

The symptoms of toxemic vomiting present nothing characteristic at all. The differentiation from neurotic vomiting by ordinary clinical methods is impossible. The loss of weight and prostration is no greater in the one than in the other. The character of the vomited matter is the same. In toxemic vomiting, the pulse may be of good character, and the temperature normal. In a case which I saw, the pulse was 86 when it was decided to end pregnancy, although the skin and conjunctivæ were icteric, and the liver dullness apparently much decreased. The ordinary chemical examination of the urine may be entirely negative. In the terminal stage, however, the symptoms are very characteristic. Blood appears in the vomitus, which takes on a coffee-ground appearance. The skin may become icteric. Epigastric pain is sometimes intense. Death comes with coma or convulsions, or consciousness may be retained to the end. The urine shows the presence of albumen, blood and casts.

In a condition which has so great a resemblance to acute yellow atrophy clinically and pathologically, it would be reasonable to expect a similarity in the condition of the urine. In acute yellow atrophy the urea is constantly decreased and the ammonia constantly increased. To Williams of Baltimore belongs the great credit for first calling attention to similar changes in the urine of toxemic hyperemesis, and thereby furnishing a method of precision in the early diagnosis of this disease. In a series of carefully studied cases he has shown that in toxemic vomiting the urine shows constantly a practically normal total nitrogen output, a marked diminution in the urea, and an increase in ammonia from the normal 3 to 5 per cent. to 20, 30 or 40 per cent. or more.

These changes occur at a time when clinical diagnosis would be impossible, and furnish an early indication for the induction of abortion, which greatly increases the chances of the recovery of the patient. In neurotic vomiting, on the other hand, the nitrogen partitions of the urine show no change from the normal. Such examinations of the urine have to be made by a skilled chemist, and to this disadvantage may be added the length of time required. Williams' work has not yet been confirmed, and has met with various theoretical objections from Dirmoser, Wolf, McDonald and Strauss. Stone has recently published four cases of toxic vomiting, in which careful analyses of the urine were made, and in which a high ammonia co-efficient was not constantly found. He concludes from the large quantity of amido-acids present, that a study

of the nitrogen partitions of the urine furnishes a valuable means of prognosis in hyperemesis.

In conclusion it may be said that with our present knowledge we are justified in recognizing but one form of hyperemesis in which therapeutic abortion is indicated,—toxemic hyperemesis,—and that a careful chemical examination of the urine furnishes an early and certain means of diagnosing the condition.—*Interstate Medical Journal*.

THERAPEUTICS.

Incompatibilities of some of the Newer Remedies.

The following substances attract moisture and thus soften wafers: sodium bromid, calcium chlorid, strontium chlorid, chloral, the glycerophosphates, piperazin, and the dry vegetable extracts. Iodides decompose or change color. Antipyrin liquefies sodium salicylate, chloral, betanaphthol, salol, resorcin, phenol, pyrogallol, thymol, and urethane. Acetanilid is incompatible with chloral, thymol, resorcin, or menthol. Betanaphthol is incompatible with antipyrin, camphor, menthol, phenol, or urethane. Chloral is incompatible with acetanilid, menthol, phenacetin, phenol, salol, thymol, and urethane. Menthol is incompatible with naphthol, pyrogallol, resorcin, salol, thymol, and urethane. Sodium salicylate is incompatible with antipyrin and phenol. Phenacetin is incompatible with naphthol, chloral, phenol. Phenol decomposes antipyrin, naphthol, camphor, chloral, menthol, sodium salicylate, pyrogallol, resorcin, salol, thymol, and urethane. Pyrogallol is incompatible with antipyrin, camphor, menthol, and phenol. Resorcin forms new compounds and is therefore incompatible with acetanilid, camphor monobromid, naphthol, phenol, and urethane. Salol shows chemical change when brought in contact with antipyrin, camphor, chloral, phenacetin, pyrogallol, and thymol. Thymol is incompatible with acetanilid, antipyrin, camphor, chloral, menthol, phenol, salol, and urethane. Urethane shows changes and is therefore incompatible with antipyrin, naphthol, camphor, chloral, phenol, pyrogallol, resorcin, salicylic acid, salol, and thymol. Acacia, the syrup, gives a blue color with resin of guaiac; a pinkish color with phenol, a grayish color with betanaphthol, and a yellowish-brown color with pyrocatechin and a deposit of crystals of oxymorphin with morphin hydrochlorid. It is also incompatible with eserin, adrenalin, syrup of tar, and liquid preparations of aloes.—*Pharm. Record*, abstracted in *Jr. Amer. Med. Assoc.*, September 29, 1906.—*Medical Notes and Queries*.

OPHTHALMOLOGY.

Eclipse Blindness.

(1) Menacho.—Ocular accidents following observation of the eclipse of the sun of August 30, 1905. (Trastornos oculares originados por la observación del eclipse solar.) *Archivos de Oftalmología Hisp.-Amer.*, Mayo, 1906.

(2) Beauvois, A.—Ocular accidents from watching eclipses of the sun. (Accidents oculaires consécutifs à l'observation des éclipses de soleil.) *Recueil d'ophtalmologie*, mai et juin, 1906.

(1) The eclipse of 1905 was not followed, in Spain at least, by so many distressing accidents as was the case in 1900. Menacho attributes this, in part at least, to the press, which has striven to make the danger of unguarded observation known to all the people, but even more to the fact that the sun was, for the greater part, shrouded in clouds during the totality. He has collected the notes of four cases which are equally divided between the group of retinal disturbance, and that of material lesion. Two showed partial scotoma which gradually disappeared, two presented acute conjunctivitis, which likewise yielded to time and to treatment. As to the former group, "the knowledge which we have of the action of light on the elements which take part in the visual act, although incomplete, allows us, nevertheless, to clear up the mechanism of its production. We know that the pigmented epithelium acts as an insulator of the neuro-epithelial elements, to absorb the excess of light and to produce the erythropsin; we know that erythropsin alters under the action of light, that it regenerates in darkness, that in the presence of its fluorescences it allows adaptation to rays of short wave length (ultra-violet), and that its decomposition provokes the reflex descent of the pupil; we know, further, that the action of light provokes retraction of the ciliary muscles and cones, diminishes the colorability of the nuclei of the cones, and excites an acidification in the retina, similar to that which muscular work produces in the muscular fibre. Angelucci thinks that the perception of light is transmitted to the cortical centres, and that the scotoma is also a purely central phenomenon, due to the abrupt changes which the cells of the centres experience when the peripheral neurones undergo so rapid physico-chemical modifications as a result of exposure to direct sunlight." Letamendi thinks that it is merely a matter of retinal fatigue and retention of fatigue-products. — *Ed. Grimsdale.*

(2) Beauvois gives an historical review of eclipse blindness and describes cases which were under his care. It appears, from the writings of Aristotle, Ptolemy and Galen, that the Greeks and Romans were more or less acquainted with blindness from exposure of the eyes to the rays of the sun and retinal lesions from snow. Little is recorded after that until the 17th and 18th centuries when it is evident, from the writings of Gillemeau, Hoffman, Saint-Yves, Buffon, and others, that the condition was well recognised. Since then it has been frequently described under the synonyms of retinal dazzling, retinitis, retinal dazzling, scotoma heliocliticum, and retinal solar erythema.

The classical symptoms of eclipse blindness are fairly constant and characteristic, viz., positive central scotoma of varying intensity, with frequently some rotary or rotatory movements in or at the periphery of the scotoma. Visual acuity is always diminished, and often remains so permanently. Near vision and visual fields are not affected. Photopsia, erythropsia, photophobia, lacrymation, and periorbital pains have been recorded in some cases. Ophthalmoscopically, there is nothing to be seen that can be regarded as pathognomonic. The macula often presents a greyish or reddish appearance and the reflex from it is not modified by movements of the ophthalmoscopic mirror as it is normally. Pigmented oval spots, bright and yellow dots, have been recorded by different observers, and a grey central spot in the middle

a highly coloured macula has been noted and regarded as an optogram of the sun. Ferentinos saw a thin red line round the macula in all his cases and thought it characteristic.

It is doubtful whether true inflammatory disease can be produced by the action of the sun's rays, although Czerny and Deutschmann produced retinitis and choroiditis in animals' eyes by that means. It has been found that chemical rays are the most harmful and that parallel rays are most potent for evil, at any rate in emmetropic eyes.

Pathological anatomical changes have been seen only in animals' eyes. The part of the retina affected showed some shrivelling of the outer part of the rods, and the pigment in the epithelial cells was closely aggregated towards the external limiting membrane. When the action of the light had been intense the external part of the rods were converted into irregular corpuscular masses and were mixed into a conglomerate layer with distorted pigment epithelial cells and blood corpuscles. These appearances were regarded as being due to coagulation of the nervous elements of the retina.

The prognosis, although generally supposed to be good, ought to be guarded. Vision is often defective for months, and it may be even permanently reduced to $\frac{1}{2}$ or $\frac{1}{3}$.

The treatment consists of rest in semi-darkness, which is essential. Low glasses have been recommended to counteract the effects of the chemical rays. If headache is severe and local congestion intense, leeches should be applied to the temple or mastoid process. Strychnine, either internally or externally, is indicated as a retinal stimulant. The galvanic current has been of value in some hands. The moral depression and neurasthenia resulting from the sudden loss of sight requires general treatment. As a prophylactic measure the public should be warned of the danger of looking direct at the sun and advised to make short intermittent observations through one or more pieces of well-smoked glass. — J. JAMESON EVANS. — *The Ophthalmoscope.*

OTOLOGY.

The Preventive and Abortive Treatment of Mastoiditis

BY

W. SOHIER BRYANT, A.M., M.D.

Adjunct Professor, Department of Diseases of the Ear, New York Post-Graduate Medical School and Hospital; Otologist on the Consulting Board of the Manhattan Eye, Ear and Throat Hospital; Assistant Surgeon, Aural Department, New York Eye and Ear Infirmary; Physician in the Class of Nose, Throat and Ear Diseases, Presbyterian Hospital.

Experience warrants us in assuming that the conditions which predispose to mastoiditis have their origin in the early years of life, when the majority of naso-pharyngeal abnormalities have their beginning. The pathological conditions which bear most directly on our subject are those which interfere with the normal respiratory current, or, if not sufficient to do this, may, nevertheless, impede the ventilation and function of the Eustachian tubes. Such conditions,

* Read before the Clinical Society of the New York Post Graduate Medical School and Hospital, October 19, 1906.

while the general health remains good, may interfere only with the proper movement of the air currents; in case of disease they may prevent the drainage of the middle ear through the natural channel, and cause the retention of toxins and allow the undisturbed multiplication of bacteria in the drum cavity. The obstruction may also interfere with the blood currents, and cause passive congestion and edema, which bring about a weakened resistance of the mucous membrane to the invasion of bacteria. The advantages of a clear nasopharyngeal tract have been well demonstrated by Leland at the Boston City Hospital, where it was found that children infected with the exanthemata were not likely to have middle ear complications when the nasopharyngeal tract was clear, and still less liable to have middle ear infections develop into mastoiditis. In our experience we do not remember a case of mastoiditis, either in the young or adult subject, where there was not some glaring departure from the normal in the nasopharynx.

The reason why all individuals who have impeded circulation of air in the Eustachian tubes or nasal fossæ do not have mastoiditis is probably that their general immunity is sufficient to protect them against the primary inroad of bacteria. This immunity is naturally lowered under any disadvantageous condition, especially when there is a coincident diminution of the secretion or an abnormal viscosity of the mucus.

From the foregoing general remarks I trust it is apparent that the prophylaxis of mastoiditis should direct our attention primarily to the condition of the Eustachian tube and to the physiological ventilation of the middle ear through the Eustachian tube. The orthopedic prevention and treatment of these causes predisposing to mastoiditis is of special importance because of its comparative safety and the security which it gives the patient.

Prophylaxis requires, further, the avoidance of the lowering of the general resistance and the loss of immunity. The gouty condition is of special importance with reference to the lowered resistance of the mucous membranes because of the decreased antiseptic properties of the mucous excretion.

From a clinical point of view acute mastoiditis arises from infection which enters up the Eustachian tube and through the middle ear cavity, and in this condition is coexistent with acute tympanitis. Acute middle ear infections are usually associated with some degree of mastoiditis. This may quickly undergo resolution or increase in severity till the mastoid symptoms become predominant. In the primary stage of the mastoid inflammation the condition of the tympanum is what first attracts our attention. If this is successfully combatted the mastoid inflammation usually disappears with it. The chronic form of mastoiditis with its complications is dependent upon the pre-existent chronic middle ear suppuration. It is preventable through the cure of the predisposing middle ear suppuration. In the patient is seen during the absence of acute symptoms the mastoiditis may be averted and suppuration cured by cleansing or a minor operation. The writer has not seen an exception to this in his private practice.

The art of mastoid surgery has notably advanced in the last few years, lessening the risk from the operation and shortening the time of convalescence. This amelioration of the gravity of the operation is naturally conducive to the encouragement of the surgeon, with whom this mode of treatment is becoming

more and more popular in the early stages of mastoid disease. We may well ask ourselves whether we are not inclined to sit down in the presence of mastoid symptoms, and wait until the patient consents to a mastoid extirpation, rather than to bestir ourselves for the prevention of the threatened operation. Before the days when our technic had reached its present perfection much importance was laid on the abortive management of the case, and the practitioner was expected to use his utmost effort to bring about resolution without the necessity of operation, which at that time, was considered uncertain and dangerous.

The mastoid symptoms require our special attention in the abortive treatment of mastoiditis yet the first indication is to relieve the coexistent middle ear inflammation; the next is to combat the local mastoid manifestations. The most effective means at our disposal for controlling the coexistent middle ear infection is complete drainage of the middle ear through an extensive myringotomy and by frequent douching with a hot non-irritating antiseptic solution. Space will not allow a detailed description of the middle ear treatment.

The procedures which we have for combating localized infection of the mastoid region or similar to those for severe infections in other parts, as far as the general treatment is concerned. Our local measures are determined by the anatomical structure of the part we have under consideration. The means which we have at our disposal are heat and cold, blood-letting and incision. Of course it is taken for granted that the middle ear has been properly attended to, and that all the drainage possible has been provided.

The choice of heat or cold is still largely one of personal preference on the part of the attending surgeon, though the actions of these thermal agents are very dissimilar; cold lessens the blood supply, chills the part and possibly impedes the growth of the invading bacteria; heat on the other hand, stimulates the circulation and produces active hyperemia, which therefore permits the individual to offer more resistance to the invading organism. Personally, we prefer the latter method in all cases. In the writer's experience the active congestion produced by hot applications has been very beneficial. The question of artificially producing passive congestion of the part is important, but passive congestion does not appear to the author to be of any special value; dry cupping would undoubtedly be of some value also. Heat can be applied dry in the form of hot water bag, salt bag, hops, etc., or wet as douching frequently repeated.

Blood-letting is a very important part of our treatment. This may be accomplished by the living or artificial leech applied over the antrum, emissary vein and tip of the mastoid; by deep incision of the membrana flaccida; by incision of the posterior superior osseous wall of the auditory canal, and by incision of the soft parts covering the mastoid process. The choice of the particular method and location in a given case are determined by the means at our disposal and by the position of focus of inflammation. The most important of all the methods is incision of the integument and periosteum over the mastoid process, which allows free bleeding and seepage of serum for some time afterwards. This method of treatment, as you all know, is called Wilde's incision. To

many it appears a tradition rather than a fact. We think this very valuable though antique means of aborting mastoiditis does not receive the recognition which it deserves, for we consider it the most effective means of aborting the mastoid inflammation next after tympanic drainage.

The efficacy of abortive treatment is vouchsafed for by Dr. H. L. Morse of Boston, who states that mastoid operations are extremely rare in private practice when the patient comes under treatment in the inception of the attack. The writer has never had a private patient come to mastoid operation who had come under observation before the condition was advanced. All have recovered under abortive treatment.

We have not considered mastoiditis following chronic middle ear suppuration, because this condition is not amenable to abortive treatment, for the reason that this variety as seen clinically, is an exacerbation of a long-continued, less active process and is very resistant to abortive treatment while it is a constant menace to life.

It is very difficult to lay down an absolute rule as to when the abortive treatment of mastoiditis should be put aside and the operative treatment taken up. It is a matter which requires careful and especial consideration in every case. The rules must be modified to suit the special conditions of each case. Many fundamental questions are involved, namely, the resistance of the patient, the nature of the infection, and the extent of the inflammation, whether it involves mucous membrane, periosteum or bone. It is not necessary to wait for suppuration to appear before resorting to operative measures, because in some of the severest cases of infection no pus is formed in the bone, while it undergoes necrosis.

The following arbitrary table may be of service in deciding how long acute mastoid inflammation may be allowed to proceed before abortive measures are superseded by operative interference. The table considers one symptom only in detail in each case. Usually there are several symptoms present, which require a considerable shortening of the time allowed for the abortive measures. Example: tenderness at mastoid tip, temperature ranging up to 100 to 101, and sagging of inner posterior superior meatal wall. The table allows five days for tenderness of the tip and four days for either one of the other two symptoms. If we divide the total 5+4+4 (days)=13 by twice the number of symptoms we get two, which is fair period to allow for the abortive treatment under these circumstances.

SUMMARY.

1. Orthopedics of the nose occupy a basic and important position in regard to prevention of mastoid inflammation.
2. Localized occlusion of the nasopharyngeal tract and interference with the normal air currents of the head, are important predisposing causes of mastoiditis and prophylaxis demands their correction.
3. Disturbance of mucous membrane of the nasopharyngeal tract predisposes to mastoiditis and requires treatment.

4. Prophylaxis of mastoiditis in case of chronic middle ear suppuration is accomplished by cure of the suppuration which can be done before the involvement of bone is extensive.

5. Abortive treatment will succeed in the vast majority of acute cases if commenced early.

6. Care of the middle ear inflammation, and Wilde's incision are the most important abortive procedures for mastoiditis.

Conclusions.

1. Prophylactic treatment is successful in preventing mastoiditis.
2. Abortive treatment, if commenced before the inflammation is far advanced, will obviate the necessity of a mastoid operation.

AN ARBITRARY TABLE OF
EARLY INDICATIONS FOR THE
MASTOID OPERATION FROM THE
CHARACTER OF THE CHIEF SYMPTOMS.

	Less than 8 weeks after commencement of convalescence from an acute tympanic infection.	After 5th day of maintained tympanic drainage and other abortive treatment in acute tympanic infection.	After 4th day of drainage, etc.	After 3rd day of drainage, etc.	After 2nd day of drainage, etc.	After 1st day of drainage, etc.
Brain symptoms.....	O	O	O	O	O	O
Tenderness over mastoid antrum	O	O	O	W	W	W
Tenderness posterior to mastoid process*.....	O	O	O	O	O	O
Edema or bulging of deep tissues of mastoid region, outward displacement of auricle.	O	O	O	O	O	W
Tenderness of mastoid tip.....	O	W	W	W	W	W
Pain in mastoid region †.....	O	W	W	W	W	W
Pain in temporal region.....	O	O	O	O	O	W
Temperature over 102°.....	O	O	O	W	W	W
Temp. from 101° to 102°.....	O	O	W	W	W	W
Temp. from 100° to 101°.....	O	W	W	W	W	W
Temp. from 99° to 100°.....	O	W	W	W	W	W
Sagging of posterior superior meatal wall.....	O	O	W	W	W	W

(The temperature is either recurrent or continuous.)

O = Operate. W = Wait further developments.

—The Post Graduate.

RHINOLOGY.

Neuroses due to Nasal Deformities.

BY

CHARLES WALDO STICKLE, M.D.

Neurosis of nasal origin may be divided into two classes—sensory and reflex. The former consists of disturbances of olfaction, the latter of disturbances of sensation.

Anosmia (or total loss of smell) may be caused by some anterior nasal malformation deflecting the air current, preventing contact with the mucous membrane.

* Tenderness increasing on deep pressure.

† Pain only when severe.

brane, or by complete occlusion of anterior nares, or by disease of the epithelium whereby the nerves become diseased or destroyed, whether by septal spurs or deviations or turbinate vasomotor hypertrophy or degeneration from sinus involvement.

This condition may be congenital, but is a very common result of particularly ethmoidal sinusitis. Cases of anosmia have been reported resulting from fractures of the cranium through the ethmoid bone. Hyperosmia rarely occurs as an intra-nasal reflex, except as a forerunner of anosmia, but may occur from any excessive irritation of the olfactory filaments. Parosmia as an intra-nasal reflex occurs as a result of suppurative processes in the mucous membrane from infective hypertrophic changes as in influenza, from suppuration in the accessory sinuses, and in senile atrophy.

The sensory disturbances, anesthesia, hyperesthesia, and paresthesia may occur as a result of any intra-nasal malformation as suppuration. As a result of pressure on nerve endings we have a hyperesthetic state of the mucous membrane, with disturbance of pharynx and mouth, cough, sneezing, spasm of glottis, asthma, hay fever, hydrorrhæa.

• Hysteria is a common symptom occurring in paresthetic state with the sensation of closure of the nares.

Numerous cases of epilepsy as a result of intra-nasal pressure have been reported. An interesting case came under my observation in Halles' clinic in Berlin. This case gave a history of having three or four seizures daily for a number of years. After the removal of an ethmoidal suppuration and septal deviation, causing pressure on middle turbinate, he cleared up, reporting four months later that there had been no recurrence.

The most distressing reflexes of possible intra-nasal origin are asthma, hay fever and cough. These may occur as a result of any suppurative process either in the accessory sinuses or as a result of pressure from mucous membrane hypertrophy, or other intra-nasal malformations, excess of lymphoid tissue in pharynx, or the presence of pharyngeal oedema as that occurring in Bright's.

Many tabulated series of such cases have been reported. Let it suffice here to state that such conditions occur as a result of such intra-nasal sources, in addition to the many other multitude of etiological factors as neurotic, gouty or rheumatic diathesis, inherited or acquired, exposure to an atmosphere laden with the dust or pollen from some obnoxious plant. The description and treatment of the latter do not come within the scope of this paper; of the former the treatment is, first, local, then secondary attention to the restoration of the proper equilibrium of these particularly irritable nerves and nerve centers.

In conclusion I will quote from Schmiegelow in an article on the relation between the diseases of nose and eye, and from Fischer on additional symptoms caused by adenoid vegetations in the pharynx.

Schmiegelow gives a short resume of his personal experiences in the domain of orbital diseases of nasal origin. Among sixty-three patients suffering from disease of one or more of the accessory sinuses seventeen were found where the empyema was accompanied by eye symptoms, as excessive lachrimation, belfaro-conjunctivitis, ciliary neuralgia, violent orbital pain, strabismus convergens; five patients showed dislocation of the bulbus oculi. One

patient, a girl of eighteen years, suffered with acute exophthalmus and chemosis of the right eye, following an acute empyema of the right frontal sinus. She recovered without operation in the course of two weeks. Schmiegelow also saw two cases of orbital abscess and phlegmon develop after an acute inflammation of the frontal sinus in a ten and a fifteen-year old boy.

"The same material, five hundred cases, that Fischer used in an earlier communication (*Laryngoscope*, p. 163, 1903), is made the foundation of these investigations. Additional symptoms were found as follows. Epistaxis, 10 per cent; enuresis, 15 per cent; headache, 44 per cent; anemia, 34, 2 per cent; aprosexia, 35.8 per cent; only patients over eight years of age being considered. Most frequently the aprosexia was accompanied by nasal stenosis in 89 per cent; less frequently by difficulty of hearing, in 60 per cent; and more rarely by anemia in 31 per cent. 18 per cent. of the patients stammered and three patients had fault of articulation."—*Brooklyn Medical Journal*.

HYGIENE.

The Health of School Children.

Abstract by A. J. MACKENZIE, B.A., M.B., Toronto.

In *The Medical Record*, July 28th, there is an article by Dr. Gulick, Director of Physical Training for the New York Public Schools, on the endeavours of the Board of Education to conserve the health of the children under its care. The problem is one of intense interest for all as the conditions are so varied in every way that some example in the list may be found applicable to almost any town in the world. The population varies from a school with one room and 36 pupils to one 4,363 pupils.

Ventilation.—There has been appointed on the building committee an expert, Dr. Haupt; the plenum system is used, the air being forced into the rooms and finding its way out through vents near the floor; the system is planned on the basis of furnishing 30 cubic feet of air to each pupil per minute. The basis of calculation is 50 pupils per room of 9,000 cubic feet. Recently tests were made in 23 rooms in different buildings and actual measurement showed an income of 1,584 cubic feet per minute, the air being changed in 6 or 7 minutes; the only space where this failed was in corners of the room where no pupils are seated.

Heating.—In the plenum system the air strikes first a series of steam pipes, in use only when the temperature of the room is below 40; these bring the air to this temperature. The air is then passed through two series of steam coils, the upper one at 70, the lower at 68. When the air in the duct falls below 70 the steam is automatically turned into the upper coil; should it continue to fall below 68 the steam is automatically turned into the lower coil also, by means of a thermostat in the room.

Purification of Air.—In one of the new buildings there is installed a system which will be extended to others; the air is brought through a chamber where it is exposed to sprays of water, then drawn over plates where the excess of water is lost, 50 per cent humidity being retained, and in this way all dust and other impurities are washed away.

Accommodation.—There are 70,000 pupils who can attend only part time owing to inadequate accommodation. The reason for this is not so much the financial question or the rapid growth of population in general, but its irregularity. It takes about three years after the need of increased facilities is discovered to provide plans, choose site, have the land expropriated and the new building erected. The school population grows suddenly and enormously, in some districts unexpectedly, with the result of inadequacy.

Lighting.—The standard size of new rooms is 30 x 22 x 14; the unilateral system of lighting is adopted, except in corner rooms, and this is rendered possible by the adoption of the H shaped building. The amount of window space is never less than 20 per cent. of the floor area nor more than 25 per cent.; the top of the window is 13 feet, 6 inches from the floor, the distance across the room is never over 22 feet, which is less than twice the height.

Vision.—Examinations made in New York show that not less than 30 per cent. of all children in our elementary schools are suffering from ocular defects demanding correction, and not less than 17 per cent. have defects so severe as to be a menace to their progress. These defects are important because they interfere directly with the progress which all these means are taken to further. The treatment rests with the board of health.

Seating.—The largest sedentary class in the world is that of school-children and they are at the period when the greatest harm can result from this inactivity and from faulty position. The attempt is made to have every pupil in a seat that is suitable to his size and then to minimize the time that he sits. In the lower grades less than 50 per cent. of the time is spent sitting down, and only in the last grades is more than three-fifths of the time spent thus. Exercises specially adapted to correct the results of continued sitting are adopted and used at regular intervals during the day.

The adjustment of school furniture is a problem that has not yet been solved for New York City, there are in the rooms adjustable desks placed for taller pupils behind and shorter at the front, but the fact of myopia may interfere with this. It is impossible without very great expense and time to have each pupil specially fitted with a desk, and even were it so, the classes are promoted twice a year. In the congested districts the seats are occupied twice a day by different sets of pupils, and in the two highest grades the pupils go from room to room for different subjects. The proper adjustment would include the following measurements:—Height of knee to adjust the seat; height of elbow when seated to adjust the desk, and adjustment of separation.

Scoliosis.—Scoliosis may be caused by the carrying of greater weight on one side than on the other, and an investigation was made to discover whether the carrying of school-books had anything to do with producing this condition. It was found that 69 per cent. of the pupils carried on their left arm books of an average weight of 5½ pounds, and an attempt is made now to induce them to alternate the two sides.

Over-Study.—The time devoted to the various classes of work has been so arranged as to minimize the danger from over-study or too great time

spent in pure intellectual effort. Thus out of the 25 hours of school-time in the week, when we allow for time spent in physical exercise, music and the more mechanical subjects, there is a remainder of less than two hours per day in the first year class; and home work is interdicted. In the fourth year the time for actual study amounts to less than three hours per day, and home-work is restricted to one hour. In the highest grade three hours and forty-eight minutes a day is given to intellectual tasks, and home-work is limited to one and a half hours. Of course the very great difference in the intellectual abilities of the children makes it necessary to deal in averages, and some children from stupidity must as others from ambition will, exceed the limits and do themselves injury. To help the ambitious child skipping grades is encouraged. Then too, many of the children have to work after hours or for part of the day, and others suffer from mal-nutrition, so that often what seems over-work is traceable to one or other of these causes.

Malnutrition.—Many children suffer to such an extent from this cause that it is impossible that they should make any advance in school, but New York has not so far followed the example of European cities in the providing of food for starving scholars, though it may yet be adopted.

Feeble-Minded Children.—It is found that among the school population of every city there is from ¼ to 2 per cent of children so far below grade mentally that the attempt to educate them along with the others is unprofitable. These are sent to a specialist, who considers the cases separately and determines in each case what is the best method to pursue. This is the first step in what will become a larger scheme. Some arrangements are being made under the school board for the education of the deaf, blind and crippled.

Physical Training.—The amount of time that can be spent in physical training in a week of 1,500 minutes is in the different grades:—

I	II	III	IV	V	VI	VII	VIII
50	165	165	150	90	90	90	90 minutes.

This is quite inadequate to attempt any special muscle training, any method of development or any regular athletic exercise; all that must be got outside school.

What is done is to try to overcome the effect of the school-desk by such movements as are most suited and to keep the child in a fit state for his work. The "two-minute exercise" is the commonest, and is intended to emphasize deep breathing and to correct position, with movements of the spinal groups and of the hips and shoulders. This is given at the end of each hour in the morning and between the hours in the afternoon. The second series consists of exercises, the chief emphasis of which is placed on the great muscle groups rather than upon smaller and more complicated ones. These have to be taken in most cases in the school-room and with as little noise as possible; in 83 of the 500 buildings there are gymnasiums; in these apparatus can be used.

The necessity for athletic exercises has called into being an organization, unofficial in nature, called the "Public Schools Athletic League," which has

on its board of directors the President of the Board of Education, the Superintendent of schools, principals, teachers and citizens interested in this matter. Sports are held with contests in different forms of athletics, and an attempt is made to make these of general value by the introduction of "class athletics" in which the contest in, e. g., running is entered by all the pupils of a class and their aggregate performance is tested as against that of others, and in this way the inferior performers feel that they have a part in the representation.

Two forms of after-school activity are fostered by the board, the evening recreation centres and the afternoon and evening playgrounds.

Twenty-one schools in congested districts were opened in the evenings for games, dancing, gymnastics, etc., and there was an average attendance at these of 7,276 per evening; likewise in the afternoons a large number of gymnasiums and play-grounds were open to the children, with an average attendance of 38,566 per day. During the evenings 11 schools which had suitable roofs opened them to the public, provided bands and supplied supervision, while the seven schools having bath equipment gave a total of 288,387 baths last summer.

Instruction in Physiology and Hygiene.—Instruction is given as to the effects of alcohol and narcotics. A single point of view is taken each year rather than repeating the same matter with each class. In the fourth year the general topic of good health; the fifth year, emergencies; sixth, health from the standpoint of the dweller in towns, contagious disease, water supply, etc.; seventh year, the usual physiology and hygiene; eighth year, the question of personal habits, personal control and the like are discussed.

Ideals.—Dr. Gulick suggests the following as aims toward which we should strive :—

(1) There should be individual care, personal inquiry and knowledge of the home life of the lower tenth of every class; this includes those who for some reason fail twice of their promotion.

(2) We need to have the consecutive records of all children as to age, height, weight, eye, ear, nose, throat, heart, lungs, etc.

(3) The size of classes should be decreased so that the nervous strain upon teachers shall be lessened and greater possibility of individual interest and attention.

(4) There should be a minimum of 30 square feet of play-ground for each child.

(5) There should be an open-air play ground within walking distance of each child.

(6) Special classes should be organised for defective children of all kinds.—*The Canada Lancet.*

Cases and Comments.

Guinea-Worm.

BY

D. M. KUMARASAMI PILLAY,
Hospital Assistant, Bellary.

In the July number of "The Antiseptic" there appeared a short note on a case of Guinea-Worm by Mr. Arlend, in which he requested your readers to throw more light on this rather obscure but important disease, and also to suggest some effective method of treatment for it, both curative and prophylactic. Since this appeared, myself and some of my fellow-Hospital Assistants in this District have had considerable opportunities of studying this disease, which is widely prevalent here and in the other ceded districts, so much so that in certain places, in certain seasons of the year, almost every third person is affected. And this article, which embodies our observations, is contributed in the hope that though it may not contain anything strikingly new or original, it will not be altogether devoid of interest to our readers, and also because in the ordinary textbooks little mention is made of this disease worthy of its importance and beautifully less of its treatment.

The Parasite.—Of the two varieties of the Guinea-Worm (*Filaria Medinensis*), male and female, it is the female that infests man and occurs under the blister peculiar to this disease when it becomes mature. Very little is known about the male worm and its habits. The average length of the female worm is 25 inches. Lay people are generally under the idea that the worm burrows in the muscles, and even in deeper tissues. This is wrong, its habitat being the subcutaneous connective tissue.

Mode of Infection.—Regarding this, there are two theories. One is that the infection takes place through an intermediary host, *Cyclops Quadricornis*, an insect which lives in fresh water. The contact of water with the skin of a patient suffering from the disease causes the pregnant female worm to discharge her young, which, thus liberated, by some instinct transfer themselves into the interior of the body of the Cyclops. This, when swallowed in drinking water by man, is digested, thus setting free the parasite, which works its way out through the tissues. The other and less probable theory is that the embryo worm enters the human body directly through the skin without the intervention of an intermediary host.

Symptoms.—The female worm, when it becomes mature, bores its way through the subcutaneous tissue, and travelling downwards, generally presents in some part of the lower extremities. But it has been seen to present in the arms, scalp, scrotum, labia and even in the tongue. In one case, it was found on opening cautiously a large, diffused, flat abscess, measuring 6" x 5", with a number of minute openings on its surface through which pus

exuded, situated on the left side of the chest, which looked at first sight very much like a carbuncle. Having arrived at its destination, the worm begins to bore through the skin. A small blister forms at the presenting spot which gradually enlarges and ruptures, revealing a small, circular, superficial ulcer, at the centre of which there can be seen a minute hole through which the head of the worm may sometimes protrude, but as a rule the worm does not show at first. Two small whisker-like processes situated on either side of the worm's head, called the feelers, invariably appear at the opening before the head itself emerges. The onset of the symptoms is marked by a sudden attack of urticarial rash, which spreads quickly all over the body, causing intense itching and burning, and followed by fever which lasts two or three days. The part where the Guinea-Worm presents, usually the foot or leg, becomes swollen and painful, accompanied by the appearance of a blister and ulcer in the way described above.

Termination.—(1) The disease terminates, in the large majority of cases, in the formation of an ulcer with a central opening through which the worm comes out gradually in the course of a few days, as described above; (2) or the worm may fail to make an opening through the skin for its exit, in which case an abscess is formed; and if this abscess, whether acute or chronic is opened, the worm can be taken out alive—Mr. Arlend's case seems to be a chronic abscess of this kind—(3) or the worm may prematurely die, giving rise to no external symptoms at all, or producing an abscess in which it becomes disintegrated and absorbed in the pus matter.

Treatment.—Symptomatic:—For the preliminary urticaria and fever, nothing more is required than a brisk saline-purge (Mist: alba 3 ozs.) followed by diaphoretic mixture. The rash should be treated by alkaline bath, and after this, free dusting with Fuller's Earth, whose effect in relieving the itching and burning in some cases was almost magical. For the pain and swelling at the presenting part, poppy fomentation, freely smearing the part with a thick coating of an ointment made of Ichthyol and Vaseline in the proportion of 20 per cent. and applying over this a large, hot linseed poultice which should be renewed every 4 or 5 hours. Some use a poultice made of prickly pear leaves with a pinch of powdered asafoetida placed in the centre of it, opposite the ulcer, the smell of which, they claim, act as a bait to the worm, and materially hastens its extraction. The effect of Ichthyol ointment in controlling the pain and swelling in this and other inflammations is truly remarkable. When the blisters rupture and the worm appears, it may be gently and gradually extracted in the course of a week or ten days by the time-honoured practice of "winding out," which every villager knows. A warning is here necessary against using any force in pulling out the worm; for by pulling too much the worm may snap and the result will be disastrous. Myriads of embryo worms escape at the broken ends of the pregnant

worm, and these discarding the opening already formed, burrow in different other directions, causing enormous swelling, pain and suffering.

Operative.—Operative treatment, which has for its object the extraction of the whole worm as quickly as possible, if performed at the proper time, will prevent much unnecessary suffering, besides saving time. The best time for operation is before the blister appears. For at this time the worm can be easily felt and located, being immediately under the skin, and, besides, it is tough and elastic, and will bear any amount of careful pulling without snapping, whereas after the abscess has formed, the worm becomes difficult to feel and identify on account of the swelling and, what is more important still, it is rendered sudden and fragile by the inflammatory processes and will readily break at the slightest pulling. There are two methods of operation, which I found most successful in my experience. (1) Having first felt and identified the worm, an incision, an inch long, is made by the side of the worm at a suitable spot, previously anæsthetising the part with cocaine solution or ethyl chloride, if the patient be nervous and cannot bear the pain of this trivial operation. The worm, which can be readily recognised by its white, glistening colour, should be hooked with an aneurysm needle and drawn out. Having thus secured a loop, solution of perchloride of mercury (1 in 500) should be injected into the worm with a hypodermic syringe as much as the worm will contain, and then an aseptic ligature should be applied just above the insertion of the needle to prevent regurgitation of the injected fluid, the object being to kill the worm. The wound should be dressed antiseptically without closing it, and bandaged. After the lapse of 24 hours, the dressing should be removed and the worm should be pulled out, which, being dead, comes out easily. The resulting ulcer will heal in a few days. (2) The second method has for its object the extraction of the worm at one sitting. A small incision should be made by the side of the worm as in the first method, and having secured a loop of the worm, careful traction with some force should be used with a view to pull out the whole worm, by doing which, as explained above, there is no danger of its snapping. In the case of small, unentangled worms, they can be extracted with ease; but in the case of long, tortuous and knotted worms, much resistance will be experienced. In such cases, the worm should be felt all over its length, and wherever a knot is found likely to offer resistance, it should be freed by making a small incision and hooking out. By such incisions the whole worm can be completely liberated from its tangles, and can be pulled out without further difficulty. Of the two methods, I would recommend the first as being easy to the doctor to perform, less painful to the patient, more certain of success, and less likely to be attended with risk.

Prophylactic Treatment.—The only known method of guarding against infection of guinea-worm is to boil and strain the drinking water before use.

THE ANTISEPTIC.

JANUARY, 1907.



The Opsonic Theory and Serum Therapy.

OUR increasing knowledge of Bacteriology and a closer acquaintance with the phenomena of immunity have laid the foundation for the treatment of Bacterial diseases by means of protective vaccinations and curative sera. Artificial immunity from Bacterial diseases has been attempted in two ways, by the direct inoculation into a human being of attenuated cultures of Bacteria or sub-lethal doses of their products, what is called *active immunity* is produced. And by the inoculations into a human being of the blood serum of an animal which has been subjected to a process of active immunisation, what is known as *passive immunity* is produced. Among methods for producing *active immunity* may be mentioned, (1) Jennerian vaccination, (2) Haffkine's anti-Cholera inoculation, (3) Haffkine's anti-Plague inoculation (4) Wright's anti-Typhoid inoculation and (5) Pasteur's treatment for Hydrophobia. And included in the second class which aim at acquiring *passive immunity* may be mentioned the following sera: (1) anti-diphtheretic serum, (2) anti-tetanic serum, (3) anti-venene (4) anti-streptococcic serum, (5) anti-staphylococcic serum, (6) anti-pneumococcic serum, (7) anti-gonococcic serum, (8) anti-meningococcic serum, (9) Sclavo's serum for Anthrax, (10) Shiga's anti-dysenteric serum, (11) Yersin's anti-plague serum, (12) Pollantin, or the serum for Hay fever, and many others, such as the sera for the cancer, syphilis and yellow fever. The process adopted in the first class, when the active immunity is obtained, is called *vaccination*, and the material injected is called *vaccine*. With the exception of the anti-cholera vaccination all the other vaccinations we have mentioned under that class are fairly successful. The results of the anti-cholera vaccination are disappointing.

But with the second class, where various kinds of sera are used with a view to acquiring passive immunity, the results have been more unsatisfactory than otherwise. There are some notable exceptions, we admit, but on the whole we are of opinion that the method wants either modification or improvement. There are two ways in which these sera are supposed to act. Some of these sera act by destroying the organisms which are the causal agents of the disease, in which case the serum is called *anti-bacterial*; while some others destroy the poisonous products of the bacteria which, by circulating in the blood produce various kinds of toxæmias. These sera are called *anti-toxic*. We do not propose here to go into

the details of the history, statistics and action of these different kinds of sera in favourably influencing the particular diseases in the treatment of which they are used. We will only repeat the conclusion which we have arrived at from the study of these curative sera, that with few exceptions, such as the anti-diphtheretic serum, the results given by the majority of them are very unsatisfactory. It is especially so with the anti-bacterial sera. Some of these anti-bacterial sera, as tested in the laboratory, are extremely powerful specific bactericidal agents. But, nevertheless, in clinical experience they are disappointing. Dr. W. D'Este Emery, writing in *The Practitioner* has an explanation to offer for the failure of anti-bacterial sera. According to Dr. Emery there are two substances necessary to destroy a bacillus; "the first, a stable substance, the *amboceptor*, or immune body, and, second, an unstable substance, the *alexin* or *complement*." And, says Dr. Emery, "it is generally believed that the action of anti-bacterial serum commences by the union of the amboceptor with the bacterium, a union which does not, to a perceptible extent, alter the latter in vitality or pathogenic action, and that this is followed by a union of the complement in suitable amount with the combined amboceptor. As a result of this a sort of ferment action takes place, and the bacterium is destroyed. Now the anti-bacterial sera, as placed on the market, are devoid of complement, which is an unstable substance, and which disappears in a few days at the ordinary temperature, and is, moreover, very susceptible to the addition of minute amounts of the preservatives used. When such a serum is injected into a patient it probably unites with the bacteria, just as it does *in vitro*, and the preliminary stage of bacteriolysis is effected. For the further stage the presence of a proper amount of a suitable complement is necessary and it is here that the first source of failure occurs. The commercial sera are from the lower animals, as a rule from a horse, ass or goat, and are readily activated by complements from these animals, but not necessarily by those of human serum." From the above quotation we see clearly two difficulties that stand in the way of the success of anti-bacterial sera, namely, the unstable nature of the composition of the complement, and the impossibility of getting the sera from the lower animals activated by human complements. These are serious difficulties, and even if Ehrlich's suggestion to use the sera of apes is acted upon and the chances of complements from closely allied species activating taken advantage of, even then a way has to be found to prevent the breaking up of the complex and highly unstable complement. Perhaps after patient research a way may be found out of the difficulty. But in the meantime attention is diverted into a new channel by the enunciation of the opsonic theory and the demonstration of its practical working.

The opsonic theory, as enunciated by Sir Almroth Edward Wright, is this, that in the blood there are certain substances which act on the bacteria in such a manner as to prepare them for ingestion by the white corpuscles.

It has been experimentally demonstrated that white corpuscles alone when mixed up with bacteria are incapable of destroying them, and that only when certain substances in the blood have prepared the bacteria that the white corpuscles are able to eat them up. These substances in the blood which thus prepare the bacteria to serve as food for the white corpuscles have been called Opsonins, from the Greek word '*opsono*' which means 'I prepare for dinner.' When the vitality of any person is lowered, say from tuberculosis, the activity of his white blood corpuscles, so far as phagocytosis is concerned, remains the same, but the opsonic power of his serum is found to be diminished. So the preliminary to bacterial infection is a diminished power of the Opsonins contained in the fluid portion of the blood, or as it is usually expressed a diminished opsonic index. It has now been found out that it is possible to artificially increase or decrease the opsonic index of any individual. When any one gets vaccinated and thus acquires immunity against small pox, that individual, as the result of the process of vaccination, has increased his opsonic index. In the same way it has been found to be possible to artificially increase the opsonic index or resisting power to any particular microbe by subjecting the individual to injections of that particular kind of microbe. Of course, it is out of the question to use living bacteria for such injections. But sufficiently devitalized and properly prepared vaccines can be used with safety. Now, what follows after inoculation, we had better describe in the words of Sir A. E. Wright. Soon after an inoculation "when we test the resistance we find it reduced." That is called the *Negative phase*. The inoculation of a considerable quantity of vaccine thus reduces the resistance of the patient. Then after a time the resistance power increases. That is spoken of as the *Positive phase*. Then after a time it falls away, and eventually the blood of the patient does not differ very much from the normal. Now when the resisting power has fallen away the patient is not what he was originally. He has retained the faculty of rapidly manufacturing protective substances again, these opsonins as soon as he is reinoculated again." With each reinoculation, we are told, it is possible to raise the opsonic power higher and higher 'step ladder fashion,' up to a certain point beyond which it is impossible to raise it. But if the dose which is inoculated is excessive then gradually the resisting power is brought down instead of being increased, and hence the necessity for testing the opsonic power of the blood before each inoculation, and of regulating the dose of the vaccine according to the opsonic index. The inoculation ought always to be given in the positive phase of the previous inoculation. This is the method of procedure laid down by Sir A. E. Wright:—"After you have found that a patient is infected with a microbe you isolate the microbe in pure culture and then test the resistance of that patient's blood to see whether or not it is able to kill off that microbe as well as normal blood can. If he is not able to do so you inoculate with the proper vaccine; with vaccine made from staphylococcus, if it is staphylococcus infection."

from tubercle bacillus if it is tubercle infection; and so on. Throughout the whole course of inoculation we endeavour to keep the resistance of the patient's blood as high as possible." Following that method Sir A. E. Wright reports some very interesting cases successfully treated. That is the opsonic theory and its practical application to the treatment of bacterial diseases. If the theory is correct and its application practicable, then the days of passive immunity and of anti-bacterial sera are numbered. But, Sir A. E. Wright himself, the other day, after explaining his opsonic theory to the medical faculty of the University of Toronto, said: "You should take what I have told you to-night with very great incredulity. You should be very critical." That is exactly our advice to our readers.

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Original Articles.

***Six consecutive cases of Eclampsia, treated in the Glasgow Maternity Hospital, between 13th September and 20th October, 1906.**

BY

ROBERT JARDINE, M. D., F. R. S. E., & C.

*Professor of Midwifery in St. Mungo's College, Glasgow,
Senior Physician to the Glasgow Maternity Hospital.*



THE following six cases of Puerperal Eclampsia were under my care in the Glasgow Maternity Hospital, between the 13th of September and the 20th of October, 1906. My usual method of treatment was adopted, with success, in all.

Case 1. This was a case of recurrent eclampsia, and, as I had treated the patient in her first attack, in January, 1905, I am able to give an account of both attacks.

First Attack.—Mrs. R., vi-para, æt. 30, 7th month; recovered; child dead, macerated.

This patient was conscious when admitted, and able to give her name and address, but knew nothing about having had fits. Her friends stated that she had had two fits, which had lasted about 5 minutes each. She had been seen by a doctor, who had given her an injection of $\frac{1}{4}$ gr. morphia and sent her into the hospital. There was very little œdema, but the urine was heavily loaded with albumen. The os was about the size of a half-crown, and the vertex presented.

Ten ounces of blood were withdrawn from the arm, and one and a half pints of saline solution (one drachm of acetate of sodium and one of chloride of sodium to the pint), were transfused directly into the vein. A large dose of salts was given through a nasal tube. An hour and a half later the patient had another fit. She was then put into a hot pack. About six hours after admission, a macerated foetus was expelled, without the patient indicating that labour was going on.

Next day she was quite conscious. She had no remembrance of any of the fits. The urine showed albumen (12 per 1,000 Esbach.)

* Specially contributed to "The Antiseptic."

When dismissed there was still some albumen present ($\frac{1}{4}$ per 1,000 Esbach).

Second Attack.—Seventh Pregnancy, full time. The patient had been seized suddenly, with severe headache and giddiness, followed by a fit. She was at once brought to the Hospital. On admission, she was quite conscious, but there was marked oedema of the legs, and the urine was heavily loaded with albumen. She was bled to the extent of 16 ounces, from the arm, and one pint of the usual solution infused under the breast. A purgative was given, and a diuretic mixture. Labour came on and ended normally, with the birth of a live female child ($9\frac{1}{2}$ lbs.), four days later. The albumen quickly disappeared from the urine, and the patient was dismissed perfectly well.

It is rare for eclampsia to recur in subsequent pregnancies, but it does so, in about 1 per cent. I have now seen three cases, and they have all recovered from the second attack. In this case, there was only one fit in the second attack, but we were fortunate in getting the patient under treatment shortly after the onset, and it is quite possible, that our treatment prevented the recurrence of the fits. It may be urged that this is merely an assertion on my part, but judging from the results in the other five cases which I am about to relate, I think I am justified in making this claim. In the first attack, it will be noticed that the foetus was macerated and yet the urine was heavily loaded with albumen. It has been asserted that, on the death of the foetus, the albumen quickly disappears from the urine. This has not been my experience, as I have seen about a score of eclamptic cases with macerated foetuses, in which there was a large quantity of albumen; in a few, there was so much that the urine became solid on boiling.

Case 2. Mrs. W. æt. 19, 1-para, seven months pregnant, was admitted to the Hospital at 7-15 A.M., unconscious and suffering from Eclampsia. The fits had commenced at 6 A.M., and the patient had had six by the time of admission. A doctor had given her $\frac{1}{2}$ a grain of morphia, hypodermically. Sixteen ounces of blood were at once drawn off from the median basilic vein of the right arm, and two pints of the ordinary saline solution were transfused directly into the vein. Twenty grains of calomel were given by the mouth followed by two ounces of Magnesium Sulphate, a few hours later. The bowels moved six times. As the skin was not acting, the patient was given two hot packs. The urine was almost solid on boiling, and gave 24 per 1,000 Esbach. A diuretic mixture of Diuretin and Acetate of Potash in infusion of Scoparium, was given as soon as the patient could swallow. There was no indication of labour.

Next day, the patient was still drowsy, but there had not been any more fits. She was drinking freely of milk and Imperial drink, and the kidneys were acting well. The albumen had fallen to 12 per 1,000 Esbach.

From that time onward, the recovery was uninterrupted, and six days later, the albumen was only $\frac{1}{4}$ per 1,000 Esbach.

The patient was allowed to go home on the 14th day. She was feeling perfectly well, but there was still a trace of albumen in the urine. She was sent home to be under the care of her own doctor. The foetal heart sounds were quite audible.

According to some authorities, we should have emptied the uterus at once in this case, but fortunately for the child, and also for the mother, I was of a different opinion. If this patient takes proper care, there is no reason why she should not go to full time, and be delivered without any complications.

Case 3. Mrs. H. æt. 23, 1-para, full time, was admitted to the Hospital suffering from fits and unconsciousness. Early in the morning she had taken a fit during labour, and had been delivered with forceps by a doctor. Shortly after delivery the fits had recurred, and her friends stated that they had been very frequent during the twelve hours prior to admission. During the first fifteen minutes after admission, while the nurses were cleansing the patient, three fits occurred. Chloroform was then given, and sixteen ounces of blood drawn from the right median basilic vein, two pints of saline were transfused directly and four ounces of magnesium sulphate given through a nasal tube. The patient had no more fits. At the time of admission, the urine did not contain much albumen, and by next day there was barely a trace. The perineum had been badly torn, and stitched with wire. It sloughed, and for a few days there was a temperature of about 102° F. The wire sutures were removed, and the patient was douched for a day or two. The temperature soon fell, and recovery was uninterrupted. There was nothing remarkable about this case, except that there was very little albumen in the urine. Emptying of the uterus did not stop the fits.

Case 4. Mrs. M. æt. 21, 1-para, full time, was brought from the country in an ambulance waggon. She had had fits continuously for six hours. During the time she was in the ambulance, the doctor had kept her under chloroform. Four fits occurred in the short time occupied by the nurses in cleansing the patient. Chloroform was given, and 33 ounces of blood were drawn off before there was any perceptible alteration in the pulse. Two and a half pints of saline solution were transfused, and four ounces of the magnesium sulphate given through a nasal tube. There was only a trace of albumen in the urine. The os was not dilated, and no foetal heart sounds could be heard. About three hours later, the patient became very restless, so she was put into a hot pack, and given an enema of sixty grains of bromide of potash, and thirty grains of chloral hydrate. A few hours later, the os began to dilate, and, about seventeen hours after admission, when the patient was well on in the second stage of labour, a slight fit occurred. Forceps were applied and delivery effected under chloroform. The child, which weighed eight pounds, was dead. Post-partum bleeding was encouraged, but very little blood was lost.

The patient took no more fits, but two days after delivery she became very confused, talked nonsense, and at times, was very noisy and violent. Restraint was necessary to keep her in bed. Hypodermic injections of Morphia were given without any quietening effect. On the fourth day of the puerperium, she was removed to the parochial asylum. The parochial Insanity Expert would not admit that she was insane, but said that she suffered from what he termed "puerperal" confusion.

Insanity is not a very uncommon sequel of Eclampsia. The prognosis is generally favourable.

Case 5. Mrs. M. aet. 19, 1-para, five months pregnant. This patient was transferred to the Maternity Hospital from the Western Infirmary, where she had been under treatment for fits, for twenty-four hours. The House-Surgeon had performed lumbar puncture, and drawn off one ounce of fluid for diagnostic purposes, as he thought the case to be one of cerebro-spinal meningitis. Bromide and chloral had also been administered, but the fits persisted, and ten had occurred before admission to the Maternity Hospital. She had another fit while the nurses were preparing her for treatment. She was bled, but only six or eight ounces of blood could be got from the vein. One and a half pints of saline solution were transfused into the vein, and a dose of salts was given. The urine contained three and a half parts albumen per thousand Esbach. There was no oedema of the limbs. There had been some bleeding from the vagina while the patient had been in the Western Infirmary, and packing had been inserted. The packing was taken out, and about an hour after admission, the contents of the uterus were expelled intact. The patient was restless, but beyond this, gave no indication that labour was going on. We were treating Case 6 at the time, and when we were done with it, I noticed that Case 5 had suddenly become very quiet, and on placing my hand on her abdomen I found that the uterus had emptied itself. The intact sac lay between her thighs. The nurse, who was standing at the bedside, watching the patient, did not know that labour was in progress.

There were no more fits, and two days later, the patient was quite conscious, and there was only a trace of albumen in the urine. Her recovery was uninterrupted.

In this case the attack commenced earlier in the pregnancy than is usual. The removal of the cerebro-spinal fluid had no beneficial effect on the piles.

Case 6. Mrs G, aet. 21, 1-para, full time, delivered before admission. This patient was delivered at her home by a nurse. There had been two fits before delivery. The outdoor House-Surgeon saw the patient, and wanted her to come at once to the Hospital, but she refused. The fits began to recur, and the friends then consented to her removal. By the time of admission, she had had eight more fits and was deeply unconscious. There was only a trace of albumen in the urine. She was bled 16 ounces, and two pints of saline were transfused, and four ounces of Magnesium Sulphate were given by the stomach tube. The recovery was uninterrupted, and there was no trace of albumen in the urine ten days after admission.

Cases 3, 4, 5, and 6, were all in the Hospital together, and 5 and 6 were admitted at the same time. I have so often seen several cases within a short time of one another, generally when there has been a sudden fall of temperature, that I believe that the atmospheric condition may determine the onset of the convulsions. If a patient is suffering from toxæmia, and the weather suddenly becomes colder, elimination from her skin will be lessened, and the

strain upon her kidneys increased, so that the poison will accumulate in her system, and convulsions probably result. Just before these four cases were admitted, there had been a sudden fall in the temperature, and I told my residents that they might expect to have some cases of Eclampsia for treatment, within a short time. My prediction was soon verified. I have frequently seen two cases in one day, and a few months ago, I had three lying side by side, having fits.

The method of treatment adopted in these cases is that which I have found to give the best results. I wish to point out that the saline solution used is not the ordinary normal one, but has, in addition, one drachm of sodium acetate to the pint. Longridge maintains that the blood of Eclampsia is less alkaline than that of ordinary cases, and he thinks the efficacy of my treatment lies in the addition of the alkali to the blood. I know of several cases, treated with ordinary saline solution, without any benefit, but as soon as Acetate of Sodium was transfused, the fits ceased. According to a recent theory, the poison lies in the placenta, and therefore, immediate delivery is called for. If the placenta contains the poison, how is it that there are so many cases of post-partum Eclampsia? A few days ago, I treated a case where the fits did not begin till two days after delivery, and in the Journal of Obstetrics of the British Empire, for July 1906, the records of a case of mine will be found, where the patient recovered, after having 199 fits during the puerperium.

If labour has not begun, I do not attempt to bring it on, but if it has advanced sufficiently to admit of easy delivery, I finish the delivery, as a rule, while the patient is under chloroform, for venesection and transfusion. If the fits recur, interference will be necessary, and also if the labour is prolonged or obstructed, but otherwise, nature may be allowed to take its course. In Case 2, I did not interfere, although the urine was nearly solid with albumen, and the result was most satisfactory. Cases 3 and 6 illustrate the fact that the fits do not invariably cease after the uterus is emptied. I have now had a very extensive experience in treating Eclampsia, and have delivered many cases by accouchement force, but within the last year or two, I have seldom interfered actively as regards delivery, and my later results compare favourably with the earlier ones.

* Toxæmia following Intra-Nasal operation with report of four Cases.

BY

THOMAS J. HARRIS, M. D., NEW YORK.

*Adjunct Professor of Diseases of the Nose and Throat, New York Post Graduate Medical School; Assistant Surgeon, Manhattan Eye and Ear Hospital;
Member, American Laryngological Association, &c.*

The close relation of the nose to the outer atmosphere and the attractiveness of its mucosa, as a favorite abiding place for numerous bacteria, has long been recognized. On this account, the successful carrying out of aseptic surgery in the nose is rendered difficult, if not impossible. This, however, does not

Specially contributed to "The Antiseptic."

preclude the exercise on the part of the operator in every operation, however small, of care and pains in securing as sterile a field as possible. Careful cleansing before operation, as well as the use of only sterilized instruments, is self-evident. In spite, however, of such precautions, instances will occur when unpleasant sequelæ in the throat, or elsewhere, will occur when least expected. If the operator is thoroughly satisfied that he has violated no rule of aseptic surgery, he may be greatly puzzled to account for what seems to be a clear case of infection.

During the present winter, several cases, under the care of the writer, have developed such post-operative conditions where there can be no question about the care exercised in every step of the operation.

Such sequelæ are not limited to the nose and throat alone, however, but are seen by every general surgeon in connection with apparent minor operations. In a recent paper by Dr. Houghton in the "New York Medical Record" of October 1905, attention is directed to the important rôle played by the alimentary canal in producing these symptoms. In a series of such cases, Houghton examined the urine for sugar, albumin and indican. In one case, sugar was found; in several, albumin; and in all the others, larger or smaller quantities of indican in excess. That faulty metabolism is present, there can be no question. It would seem that the equation between health and disease in these patients, was so evenly balanced that the slight shock following the operation was sufficient to throw the scale in favor of disease, or, in other words, to allow the non-pathogenic bacteria in the nose to overwhelm the resisting phagocytes in the epithelium. As illustrative of such complications, the following cases are briefly recorded:—

Case 1. Mr. F., age 40, Teacher, presented himself for obstructed nasal respiration, causing difficulty with the hearing. A slight thickening of the mucous membrane upon the posterior end of the septum was removed under cocaine. On account of the situation of the growth, considerable time was consumed in its removal. No undue traumatism was committed. A strong solution of cocaine—15 to 20 %—was employed, and an antiseptic dressing introduced. The second day after the operation, marked prostration, pains in the joints, and some headache with a slight elevation of temperature was complained of. The removal of the dressing gave some degree of relief. The wound appeared in a healthy condition. At no time was there any decided reaction in these regions. Although temporary improvement was experienced, a persistent pseudo-rheumatism developed with moderate fever and severe migratory pain in the various joints of the body. No sugar or albumin was found in the urine which was not examined for indican. The patient was a neurotic individual with a general recognized lowering of vitality. A similar result had followed an operation upon the nose some years previous.

Case 2. Miss L. age 30, Stenographer, presenting herself for difficulty in hearing associated with nasal catarrh. A thickening upon the left side of the septum was recognized and removed under cocaine. Little or no reaction followed the operation until the third day, when an inflammation of the right tonsil developed, followed by a peritonsillar abscess which promptly got well

upon evacuation of the pus. No examination of the urine was made in this case, and the operation was performed without the slightest unusual incident. The patient to all appearances was in perfect general condition; it was discovered afterwards that she had suffered from several attacks of quinsy on the same side.

Case 3. Miss M., age 16, was operated upon on February 7th, 1906, for recurrence of adenoid growth. No excessive violence was practised, and the operation was in every respect an ordinary one. Three days after, however, an inflammation developed in both ears which later became suppurative. The region of the operation which could easily be seen by the mirror, showed no sign of undue inflammation. This case is hard to explain; the young lady seemed in perfect health. An extension of infection through the Eustachian tube would seem the most natural solution, but yet while no examination of the urine was made, we cannot help feeling that some other factor was present. Such a development following the adenoid operation, is not unheard of. It has, however, been almost unique in a large number of such operations seen or performed by the writer.

Case 4. Miss C., age 27, referred to the writer by Dr. James Pedersen, of New York, for a persistent post-nasal discharge, causing repeated colds and general malaise. An empyema of the right antrum was diagnosed. A preliminary partial removal of the inferior turbinate was performed. Little or no reaction followed the operation. The third or fourth day after, however, the patient was attacked with a bilateral follicular tonsilitis associated with considerable prostration. The tonsilitis was soon controlled, but the general prostration persisted for a considerable length of time. Upon the 13th day of January, 1906, a radical opening of the antrum was performed under ether. The operation lasted 45 minutes and no complications arose aside from some vomiting which the patient ascribed to a hypodermic dose of morphine which had been administered before the operation. No unpleasant results followed the operation. There was, however, a repetition of the prostration which existed after the turbinectomy, including pains in various parts of the body, which continued for a number of weeks. This patient was a woman with manifest and evident low vitality, and is a good illustration of the narrow margin between health and disease which exists in such individuals.

In view of the possibility of the development of such unpleasant and such unanticipated complications, we are strongly inclined to regard as in no degree superfluous, a careful inquiry into the condition of the gastro-intestinal canal, and where any evidences of incomplete secretion or excretion exist, to correct these before performing even a slight operation. The practice which pertains in the care of large major operations cannot be held to be amiss in aural and rhinopharyngeal surgery. The patient can well be brought into the hospital a day or two in advance—a careful urine analysis made—the alimentary canal cleared out by a dose of calomel, together with where indicated high intestinal lavage. What we have formerly regarded as the result of exposure following operations is, doubtless, in not a few instances, nothing but this mild infection.

As a further means to avoid such retards in healing, it is wise, where the urgency of the condition does not call for immediate operation, to put the patient on reconstructive diet and medicine for a few days.

***On the Diarrhœa of Infants, or Infantile diarrhœa properly so called.**

BY

SURGEON-MAJOR R. E. WRAFTER, B. M. S. (RETIRED.)

(Continued from page 422, Vol. III., No. 10.)

Treatment.

2. *Treatment of Acute or Autumnal Diarrhœa.*—**Medicinal**—In this variety there is a considerable degree of inflammatory action, quickness of pulse, and constitutional disturbance. Supposing that our case of simple diarrhœa has slid into the acute form after six or eight days of suffering, there is a daily evening exacerbation of fever, and a morning remission. Gastric disturbance is not very urgent, and indeed it seldom or never is in cases that gradually merge into the acute from the simple variety. The bowels are moved frequently, and the stools are heavily charged with mucus. The normal secretory function of the mucous membrane is in abeyance. The exhalation that keeps the membrane in its naturally moist and soft state is replaced by a large quantity of a thick, stringy, jelly-like substance, which the researches of Dr. Edward Rindfleisch, of Professor Henle, and of Dr. Budd of Munich have shown to consist of globules collected together in a fluid called mucin; the globules are nothing than young epithelial cells arrested in their normal development under diseased action. Obviously, then, the two indications for treatment here are the removal of this semi-transparent, slimy stuff, which is mechanically opposing the absorption by the alimentary canal of both medicines and nutriment, and the restoration of the mucous membrane to a condition compatible with its normal function. We proceed with again administering a small dose of castor oil with the view to clearing the bowels of vitiated secretions, thus removing a source of irritation, and at the same time putting the alimentary canal into a more genial state for the reception of nutriment; and we next employ alteratives to restore the function of the mucous membrane to its natural condition, antacids and sedatives being added for obvious indications. The alteratives that we place most reliance upon in infantile diarrhœa are the Hydrargyrum cum Creta and Ipecacuanha powder; but as we have already given our patient mercury when the case was of the simple form, we deem it prudent now to repose our trust entirely upon Ipecacuanha, and we combine it with Bicarbonate of Soda, Dover's powder, and Bismuth Subnitras; or we prescribe a mixture containing Liquor Potassæ, Vinum Ipecacuanha, Tinctura Camphora Composita, and Acacia Gummi in Dill or Aniseed water. This treatment, pursued in accordance with our indications, often suffices to extinguish the diarrhœa by a sort of *coup de main*, or abate it. But if, with the diminution of the febrile action and of the tenderness of the abdomen, there is not

* Specially contributed to "The Antiseptic."

a moderation of the looseness, it, on the other hand, becoming more profuse and of an exhausting nature, we must have recourse to astringents; adding Kino, or Catechu, or Gallic acid to the medicines already prescribed. Extract of Hæmatoxylon is recommended by Dr. Charles West, but kino is one of the most useful astringents we possess, and though we may not agree with M. Bally in his remark, that it may be freely administered even when febrile and inflammatory symptoms range high, yet we have frequently felt no hesitation in using it even during the existence of some fever. During the febrile paroxysm, whether intermittent or remittent, and even in continued fever during its period of greatest intensity, for careful examination at different hours of the day will detect the skin hotter at one time than at another, the use of astringents should, as a rule, be suspended, because with the increased determination of blood to the already congested capillaries of the intestinal mucous membrane, and with the highly irritable condition of the mucous follicles, inflammation of a destructive nature is apt to be induced. In this state some diaphoretic mixture is admissible, but so soon as the intermission or remission has fairly set in, we resume our astringents. The partial arrest of the evacuations during the febrile paroxysm is followed by a sequence of excessive discharges, and unless we are in time with our astringents, the patient will most probably fall into an alarming state of weakness. In advanced stages of the disease, where diarrhœa gets suddenly arrested, the abdomen becomes puffy and the countenance anxious. We should at once withhold astringents; and on the other hand, where the discharges are inordinately large and frequent, and exhaustion is imminent, we must persevere with them in spite of the existence of some fever, for the simple reason that that which is lessening the vitality of our patient fastest must be combated with first. Without going further in pointing out the indications or contra indications for the use of astringents, the observant medical man with the advantage of having his patient before him, will best decide what course is to be pursued. To check profuseness of diarrhœa of some standing and where congestive inflammatory conditions of the intestinal canal have been subdued, the following prescriptions are recommended.

	R Acid : Gallic	gr : viii vel xii.
	Spts. : Ammon : Aromat,	mxl.
	Tinct : Opii	mviii.
	Aqua Cinnamomi	℥ii.
		Misce,
	fiat mistura : ℥ii every 3 or 4 hours.	
Or	R Acid : Nitric : dil	mxii.
	Acid : Gallic : "	gr. vi.
	Tinct : Kino	℥ii.
	Tinct : Opii	mviii.
	Aqua Anethi	℥ii.
		Misce,
	fiat mistura : ℥ii every 3 or 4 hours.	

Or

R Plumbi Acetat :	gr. vi.
Acid : Acetici diluti	℥xx.
Tinct : Opii	℥viii.
Muc : Acacia	℥ii.
Syrupi Zingib :	℥i.
Aqua Pura ad	℥ii.
	Misce,

fiat mistura : ℥ii every 6 hours (Dr. West).

Some Practitioners may not have employed the acetate of lead in infant practice, but Dr. West speaks of it as very useful in arresting excessive secretion, hæmorrhage, etc. It is very desirable in our treatment to ring the changes (not in quick succession) in the use of drugs, as certain medicines, when long persevered with, seem to lose their efficacy, and it frequently happens that when one drug fails to effect the required purpose, another succeeds. But now let our hypothetical or supposed case be one of acute diarrhœa, originally so, with a good deal of fever, but not much of gastric disturbance, we commence with administering a dose of castor oil, or we prescribe the following mixture :—

R Ol: Ricini.	℥i.
Pulv : Acacia	℥ss.
Sacchari Albi	℥ss.
Tinct : Opii	℥iv.
Aqua Anethi	℥vii.
	Misce,

fiat mistura : ℥i every 4 hours.

This preparation was first brought to the notice of the profession by the late Dr. Bayley for the treatment of dysentery, after having given it an extensive trial among the prisoners of the millbank Penitentiary. Doubtless, many of us have had considerable experience of its use in the treatment of acute diarrhœa of infants, and we beg to commend it to the profession in India as deserving of the encomiums bestowed upon it by Dr. Charles West. Its use, however, should not be continued beyond thirty-six or forty-eight hours, and should be accompanied with the employment of alteratives, alkalis, and sedatives, as already mentioned. A few doses of the Hydrargyrum cum Creta will be necessary, but its use should not be prolonged; the case may now be treated like the previous one. Where we have a case of acute diarrhœa with great gastric irritability, it is a cruel practice to administer such nauseating drugs as castor oil, and powders of Ipecacuanha, Hydrargyrum cum Creta, etc. We must direct our attention to Medicines that will, in the smallest quantities possible, allay the vomiting, and we prescribe calomel and opium as recommended by Drs. West and Tanner, one-fourth of a grain of calomel and one-twelfth of a grain of opium every three or four hours; but we place much dependence on the use of small doses of Acidum Hydrocyanicum Dilutum, and would recommend the following prescription to be given in addition to the calomel and opium, with the view to economizing time

in getting the stomach into a fit state for the reception of medicines, for the intestinal derangement, and nutrition for supporting the powers of life:

R Liq. Ammon. citrat :	℥ii
Acid. Hydrocyanic. dil.	℥iii
Soda Bicarboni.	gr xii
Aqua Destillata	℥vi

Misce, fiat mistura : ℥i every 2 or 3 hours.

Three or four doses suffice to quiet the irritability, so that there need be no apprehension of alarming symptoms setting in from the use of the acid. A mustard plaster to the pit of the stomach, until some redness be caused, will hasten relief. We have said nothing yet of the concurrent fever. Our attention should be directed to it at the same time that we are engaged in treating the diarrhœa. Diaphoretics should be administered during the febrile state, and, with the view of cutting short the fever, a grain of quinine with an equal quantity of soda bicarbonate should be given an hour before the expected attack. But it should be distinctly understood that we do not advocate the prolonged use of quinine. Where a moderate use of it fails to effect an abatement of the fever, its discontinuance is advisable, or else appreciable symptoms of cerebral excitement may result: we must then trust to a decline of the fever as the diarrhœa becomes less. If the heat of the head is great, sponging with eau-de-cologne and waters, or with cold water alone, will afford relief. Abdominal pain and tenderness, when severe, is to be relieved by fomentations with flannels warmed over a fire, or with frequently renewed warm bran poultices, not more than a quarter of an inch thick, otherwise their weight inconveniences the infant. Enemata are of course highly advisable to relieve tenesmus and much irritability of the rectum, as indicated by frequent scanty dejections of mucus. They should always have a fair trial, and if retained, will do much good; but it will be found in practice that children do not understand what retaining an enema is and as soon as one is injected, it is passed out by the little patient. Two or three drops of laudanum with three or four grains of bicarbonate of Soda, and a couple of drachms of thin watery arrowroot, make a good enema. One of those globular India rubber syringes with a thin ivory pipe is the best apparatus for ordinary use. If the gums are hot and tense, lancing them becomes necessary, and the mouth should be frequently examined in case of necessity for further lancing. Warm baths are indispensable so long as the child's strength will admit of their use, and may be employed both morning and evening with the precautions already mentioned. The advantages from them are many, diaphoresis being the best of these advantages. If there is much exhaustion, stimulants, both volatile and alcoholic, are called for, such as the aromatic spirits

of ammonia, spirits of chloroform, and sweet spirits of nitre, Brandy and Port Wine. It is impossible to point out in writing the exact time at which we should throw in our stimulants in our plan of treatment, but if the medical attendant watches, the pulse and the countenance of his little patient, it will be to him as clear as daylight when to employ them. Brandy or Port Wine in quantities of 10 or 15 drops at a time may be given in the mixtures used; the great object to keep in view is not to worry the child with the too frequent administering of things, at one time medicine, at another time Brandy, at a third time food, and so on. A meddlesome nurse will refine this system of worry by filling up the intervening periods with now a little water, at another time a little of some other petty things; but the medical man who appreciates the importance of rest in the treatment of diseases, will set his face against zeal so fertile with harm. The erythematous redness of the skin round the anus, and of the nates caused by the irritant nature of the discharges, will be relieved by the application of violet powder, oxide of zinc ointment, or Glycerine. Scrupulous cleanliness, and wiping the child after each evacuation with a sponge moistened with warm water, should be strictly enjoined. When the diarrhoea assumes more of a chronic form, to the employment of astringents must be added tonics, bearing in mind that quinine in small doses is the most powerful one we possess: and that vegetable bitter tonics, such as calumba and gentian, are valuable, because they brace up the mucous membrane and improve the function of absorption. The compound tincture of red cinchona bark may sometimes be prescribed in a little Dill water as a good tonic and astringent, and unobjectionable to infantile taste. The bael fruit (Cyle Murmelos) has been much extolled for all forms of both diarrhoea and dysentery when febrile symptoms have subsided; but infants will not take kindly to any preparations of it, and if it is to be forced down their mouths, it would be more advantageous to force down something more efficacious than bael, and that is prescribed with medicines containing both astringents and tonics. The model preparation called Dietetic Bael, has, perhaps just a shadow of approach to being palatable, but even it is not infrequently refused by infants in the most unmistakable manner. The following is a useful formula:—

R Ext. Bala Liquid	℥ss
Syr. Gummi Rubr.	℥ii
Tinct. Camph. Co.	℥ss
Syr. Zinjib.	℥iii
Aqua Anethi ad	℥iiss M.

A teaspoonful three or four times a day.

The probabilities are that with the severe, and perhaps protracted, course of illness our little patient has gone through, an anæmic condi-

tion of the system has resulted, which calls for the use of iron. We must carefully avoid all such preparations as will, from their difficult solubility, irritate the mucous membrane of both the stomach and intestines and cause evacuations of a dark colour, slimy, and containing a good deal of unassimilated food. The Ferri et Ammonia Citras, the Liquor Ferri Dialysatus and the Syrupus Ferri Phosphatis Compositus, are very appropriate preparations, and are sufficiently easy of solution; but even they seem frequently to disturb the gastric mucous membrane, causing a partial cessation of its function, and the iron and the undigested food pass through the intestinal canal, causing irritation and pain until they are finally expelled. It is therefore desirable to obtain a preparation that will be easily absorbed in the stomach without even a portion of it passing into the intestines, which, from the harassing and prolonged disturbance they have undergone, seek for quiet, and which preparation, in being absorbed by the stomach, will not cause that organ to lay behind in its work. The syrup of the lactate of iron, a ferruginous tonic, appears to us to fulfil all these requirements, and it is now almost the only preparation of iron that is prescribed among patients whose pecuniary means admit of their using it. The lactic acid that it contains is an active agent in facilitating its being assimilated by the stomach, without in the least interfering with the gastric function. The best proof we have that it is entirely absorbed by the stomach, is in the fact that the stools remain unaltered in colour under its use, unless larger quantities than are necessary are administered. It may be given in doses varying from 10 to 15 or 20 drops twice or thrice daily, and is in almost all instances taken with relish by children. *Diet and Regimen.* Much has already been said regarding diet. When the child is only a few months old, and has been on artificial food for only a short time, a return to human milk is advisable; but where such is impracticable, a change to other artificial aliment is called for. Where exhaustion is great, our milk diet must be supplemented with a little of strong broths and beef tea and where milk of any sort disagrees, being passed through the bowels in large hard curds, we must rely almost entirely upon broths. But whatever diet we give, the grand point to remember is to administer it in small quantities, frequently repeated. The stomach in its enfeebled state is not equal to much work, and where a small quantity is perfectly digested, a fresh craving is created for more. Where gastric irritability is great, and excludes the possibility of administering the usual quantity of food, injunctions should be left to try the giving of only a tea-spoonful of milk at a time until the stomach is calmed. It would be right to state here the objection we have to the addition of lime water to the milk administered to infants suffering

from diarrhœa, and in fact when suffering from any form of diarrhœa, excepting perhaps the giving of a small quantity in simple diarrhœa when there is much acidity of the primæ viæ. The effect of the admixture of lime water to milk is to delay the digestion of the latter in the stomach, and to cause a large portion of it to be passed on to the small intestines, both which results are directly subversive to our great constructive process. Our object is, if anything, to hasten gastric digestion, and we are always hoping that the little food we give each time may be quickly and entirely absorbed, and thus aid in the renewal of life; and again, acknowledging rest to be essentially necessary to the restoration of diseased parts, our best efforts should be directed to secure rest, as far as lays in our power, to the small intestines, which are in a highly irritable state, with their mucous follicles more or less congested or inflamed. With the bowels in such a condition, surely it is superfluous to add that not only is digestion almost impossible, but that the ingesta thus brought in contact with their walls become a fresh source of aggravation to their diseased state. In thus pointing out the objection to limewater, we have fallen upon two most important indications in the dietetic treatment of our patient. The first is to effect a speedy and easy solution in the stomach of what we present to that organ, and the second is to save the small intestines as much as possible from functional labour. The second indication will, however, be fulfilled on the first being attended to. The agent calculated to do this is the dilute Hydrochloric acid, which we should employ in small doses, it being one of the greatest restoratives we have at our command; and although some credit it with many other beneficial effects in diarrhœa of extensive standing, such as improving the conditions of the mucous membrane by checking the inordinate flow of mucus, and by reinstating its natural secretion, and also of supplying chlorine to the blood, which by combination with metals forms some of the principal salts of the blood, yet we think all these advantages "hide their diminished heads" before the greater benefit it affords, and that is the solvent power it exercises over albuminous articles of food; herein then it gives assistance to the stomach of most vital importance, not only in aiding that organ in the function it is performing slowly and easily, but it aids in causing the solution and the quick absorption of a larger quantity of nutriment, thus materially contributing towards the great constructive design. Under its use the tongue gradually clears, and we may rely upon it that this cleansing foreshadows a corresponding shedding of the stunted epithelial cells which degenerated into mucous globules. It is because of this special character that the dilute Hydrochloric acid most deservedly bears that we have placed it under the head of dietetics, instead of among medicinal agents. The dilute acid Hydrochloricum may be prescribed in doses of three or

four minims every four or five hours, and it will best fulfil its duty if administered half an hour after the ingestion of milk or any other food.

Change of Residence, Climate, etc.—When the acute stage of the disease has subsided, a change from one house to another, or for a few days, not many miles into the district, or to another station for a short time, carries with it much benefit. Travelling should, as a rule, be done in the morning and evening; exposure to the night air being highly injurious. But the greatest advantage will accrue from a change to any of our hill sanatoria. This step should be recommended when the disease has passed out of the acute stage, and when there is a reasonable hope of recovery. The clothing of the infant, and the ventilation and cleanliness of the sick apartment must be attended to. It would be well to recommend that the soiled napkins or cloths from the child be placed for a short time in a solution of Mc Dougall's disinfecting fluid, or any other, so as to get perfectly purified.

3. Treatment of Serous or Watery Diarrhœa. Medicinal. This variety of diarrhœa is most common among infants, and in those who are early weaned or badly fed. The disease usually follows a rapid and fatal course. Its frequency is much greater in the spring months, than at other seasons of the year. "It is so frequent during the period of first dentition, that some writers consider dentition a cause," (Lewis Smith). It is in our experience far more frequently due to atmospheric influences and errors of diet. It usually commences with simple or inflammatory diarrhœa, the child loses its appetite and is fretful, then it is seized with purging, and occasionally with vomiting, attended with prostration, pallor and symptoms of sinking. Violent retching sometimes co-exists with serous diarrhœa, and the disease may set in very suddenly, and rapidly proceed to a fatal termination. The tongue is slightly coated or clean, smooth and dry, and the pulse quick and small. As the disease progresses the respiration becomes oppressed, the urinary secretion is suspended, and the surface of the body is cold, damp, and sometimes livid. The alvine discharges at first are thin and fæcal, or frothy, with mucus or altered bile; but in the course of a few hours there are no traces of a biliary secretion whatever, the evacuations being copious, frequent, and like rice water or oatmeal gruel, from containing shreds of intestinal epithelium. It is the excessive discharges of colourless fluid which distinguish this form of diarrhœa from any other; when the stools are pale and fluid there is no odour belonging to them; but if they are in any degree feculent, and yellowish or greenish, then they are extremely fœtid and offensive, and, notwithstanding the utmost cleanliness, the odour is at once perceptible on entering the sick apartment. At first there are evidences

of pain and griping sensation in the stomach and bowels; the hands and extremities are cold, the face pinched, and the eyes hollow. There is usually a craving thirst, and fluids are no sooner swallowed than they are brought up again; anorexia or all appetite is gone, and sleep is broken and unrefreshing. If the disease does not soon yield, to remedies, the child passes into a state of coma or stupor and probably dies. If the disorder lapses into a chronic form the evacuations may assume a dark greenish and putrid character; the abdomen becomes tumid or tympanitic, and the tongue is covered with aphtha. The disease may end fatally in a few hours or extend over some days. Cases apparently hopeless sometimes recover. In this form of the disease, whether supervening upon the other varieties or arising originally, laxatives of any sort are not to be thought of. In an original case we may give a few alterative doses of calomel and Dover's powder, but the frequent and copious evacuations of serous fluid, which are rapidly exhausting the patient's strength, demand the use of speedy means to arrest them. We therefore place almost sole reliance upon the following prescription, the Acid Sulphuric Aromatic being used for its well recognised property of checking abundant watery discharges:—

R Acid Sulph. Aromat	in xx vel xxx.
Acid Gallic	grs x vel in xv.
Spt. Chloroformi	in xx.
Aqua Cinnamomi	℥ss.
	Misce,

fiat mistura: ℥ii every two or three hours.

Stimulants, both volatile and alcoholic, will be required early in the disease, and should be at hand. As to stimulants, it appears scarcely open to controversy, that these agents are not much required in the treatment of the diseases of childhood. They increase the impulse of the heart's action, and produce a feeling of warmth and energy temporarily. Ammonia, ether, and camphor are the chief stimulants (volatile and medicinal) which are employed in cases of exhaustion and debility. Alcoholic stimulants are to be administered to children with great caution, because their free use is succeeded by serious depression. In some affections of great exhaustion, as, for instance, violent watery diarrhoea, if used to excess, alcohol produces a narcotic depression, which greatly enhances the danger to the patient. Whenever the fontanelle or bregma is depressed, stimulants are always indicated. If the gums are swollen and tense, they call for lancing; and the recumbent posture should be insisted upon during the violence of the attack. The use of ferruginous tonics will be called for to counteract the great anæmic state of the system that follows an attack of this disease, and the syrup of the lactate of iron may be prescribed with great advantage. *Diet and Regimen.* Suffice to say—Enough has already been said under

this head to comprehend the general principles of diet as applicable to the disease.

4. **Treatment of Mucous Diarrhoea, or the Diarrhoea connected with Entozoa. Medicinal.** The presence of worms in the intestinal canal is one of the commonest troubles of childhood. Worms produce in some cases an amount of constitutional disturbance and local irritation, which the best observers may be pardoned if they attribute it to specific disease. In this form of diarrhoea we have the following indications to attend to. To remove that heavy collection of mucus which forms a nidus in which the worms are lodged and their ova hatched; to improve the sluggish functions of the digestive organs and to raise to par the depressed organic nervous energy and vital resistance. The first indication is not to be accomplished by the lavish use of purgatives; on the other hand, the free administration of such drugs will just increase that debilitated condition of the system that fosters the growth of worms, and which is favourable to the excessive pouring out of mucus. To a moderate use of purgatives, such as influence worms, we add a tonic treatment, giving quinine and iron in vegetable bitters of cascarilla, gentian, and calumba. In the treatment of the tænia or tape-worm, the ethereal oil of male fern is very valuable, and may be employed as Dr. Jenner recommends. At night a small dose of Pulv. Rhei and calomel the following morning a dose of castor-oil, and after the bowels have been freely acted upon, half a drachm or 20 drops of the male fern oil may be given and repeated every 6 hours for three or four doses. Or we may administer a dose of calomel and Pulv. Rhei at night, and follow it up in the morning with a dose of kamala; from 15 to 20 grains of the powder will be required for a child three or four years old; native children require larger doses than European children do. The tape-worm is very seldom indeed found in children under three or four years of age. For the treatment of the *Ascaris lumbricoides*, santonine is our great stand by. It may be administered in grain doses morning and evening for three or four days, to a child eighteen months old, and at the end a dose of calomel, and Pulv. Scammonii Comp. may be given, or the purgative may follow on two or three doses of Santonine. The *ascaris vermicularis* may be treated the same as the above, but enemata of common salt and Infusion of Quassia should also be employed. It may be remarked here that children under a year old seldom, if ever, suffer from worms. *Diet and Regimen.* Nutritious, at the same time easily assimilable diet should be prescribed, and cleanliness, with exercise, etc., should be enjoined.

Prolapsus ani. In cases of long-continued diarrhoea the sphincter ani loses its contractility, and the surrounding parts become relaxed. When the diarrhoea is cured the local irritation ceases, and the child's bowels may act once or twice daily without any protrusion of the rectum. The condition cannot be mistaken when observed, a tumour of varying size presents itself at the anus, at first it is bright red, like healthy mucous membrane; but if it comes down often, the inverted gut will be seen to protrude as a purplish red, thick ring, from the fundament. There exists no cause for alarm. Reduction may be readily effected, and complete relief thus given. The treatment consists in sponging the relaxed parts with cold water, and if there is tenesmus, an opiate enema after the bowels act, will be of service. Another plan is to wash away all faecal matter from the bowel, and then apply a strong solution of alum before it is returned. When the bowel remains protruded apart from any action of the intestinal canal, gentle pressure with the finger dipped in sweet oil will cause it to return; cold water enemata every morning are serviceable in this state of relaxation. We have found great benefit from the use of Ferri Sulphus and Infusion of Quassia as a valuable astringent-enema (3i to ʒviii) and the decoction of tormentilla has also been recommended. Where the prolapsus ani is not the result of diarrhoea but is rather a chronic condition in weakly children, it is well to hold the child in the hands whilst the bowels are being relieved as, by so doing, the rectum will rarely be forced down. If, on the other hand, the child is placed where its feet can reach the ground it will make most powerful expulsive efforts as will commonly cause protrusion. Another plan is to keep the little patient lying on its back whilst the motions are passed: a compress and bandage for the perineum may be worn during the day to prevent any descent. Prevention is the proper treatment in all such cases. Let the diarrhoea—constipation—debility be removed, and the accident will cease to happen. But to accomplish this end time, and perhaps perseverance, is required.

Our Contemporaries.

MEDICINE.

Pericarditis.

BY WILLIAM HENRY PORTER, M. D.,

Professor of Pathology and General Medicine, New York Post-Graduate Medical School and Hospital; Attending Physician to the New York Post-Graduate Hospital.

AND JOHN GARNET HUNT, M. D.,

House Physician, New York Post-Graduate Hospital.

The cases forming the basis of this article are one of *chronic sclerosis of the kidney* with an unusually pronounced *pericardial inflammation*; the other that of a marked *valvular lesion* of the aortic and mitral orifices, with a pronounced *hydropericardium* which was operated upon successfully. While we shall endeavour to bring out all the points of interest connected with the two cases the main object is to call attention to the pericardial and endocardial changes, chiefly the former. As a general premise, we must, first of all, have a clear conception of the etiological factors that enter into the production of diseased processes, and the methods by which the lesions are developed before we can interpret the cases clearly and rationally.

Before relating the clinical histories in detail, it may be well to enumerate first the causes of pericardial lesions; then we can appreciate more accurately the reason for the lesion present. Lesions of the pericardium may be produced by extrinsic causes such as a blow or punctate wounds from outside the body or through the esophagus, directly injuring the pericardium, thus exciting inflammation. All the other causes are intrinsic; that is, reaching the membrane from within or through the blood. Most of these are bacterial in origin, as for instance, inflammation by extension from the pleura or lung, abscesses entering the pericardial sacs, etc. In like manner almost any of the infectious or contagious diseases may cause a pericardial inflammation. It not infrequently occurs in connection with the toxic condition of the blood in syphilis, rheumatism, and renal affection—three diseased conditions which have not as yet been established upon an absolutely clear bacteriological basis. Not infrequently when the nutritive function of the system falls to a very low ebb the walls of the blood vessels of the pericardium will lose their functional activity and the water of the blood will flow into the pericardial sac more rapidly than it can be removed by the lymphatics and a pronounced hydropericardium will be produced. Occasionally the tubercular, sarcomatous, and carcinomatous processes may attack the pericardium and act as etiological factors.

The causes of valvular lesions are still more simple, being only five in all, to wit: congenital malformations, endocarditis acute and chronic and its resulting changes, acute and chronic dilatation of the heart cavities, rupture of a chorda tendinæ or of the segments of a valve alone. It may be well at this point to emphasize the fact that the three chief causes of endocarditis, namely scarlet fever, rheumatism and syphilis, are not the causes of valvular lesions, but rather causes of conditions that may produce valvular lesions. These three are emphasized because less than one per cent. of our cases of endocarditis can be traced to any other cause.

Murmurs due to positive organic changes at the bicuspid orifice have been clearly understood for many years; but that condition in which positive and indisputable evidence of mitral insufficiency is obtained by thoroughly competent examiners, upon physical examination, during the life of the patient, and in which necropsy demonstrated a perfectly normal state of the left auriculo-ventricular orifice and the valve guarding the same, was first elucidated by me in a series of lectures published in the *Medical News*, of Philadelphia, in 1891.

Up to that time there was nothing to be found in explanation for this peculiar state of affairs, to wit: perfectly clear and distinct murmurs during life with no lesion at the necropsy. The possibility of such an apparently contradictory state of affairs was held in doubt for a long time. It gave rise to an endless amount of discussion pro et contra; in fact, some observers went so far as to doubt the diagnostic value of physical signs in connection with cardiac disturbances, on account of this contradictory evidence between the living and dead subject. Upon close investigation, however, the difficulty did not prove to be so much with the rational and physical evidence, as with the interpretation placed upon the signs and symptoms presented.

My experience, which at that time was quite large both at the bedside and at the necropsy table, has been greatly extended since, so much so that I am more than ever convinced of the truth of the statement made at that time, which was that when the rational and physical signs presented in connection with cardiac cases, and especially with so-called valvular affections, are correctly analyzed and properly interpreted our diagnosis will be correct in the vast majority of instances. When this is not the result the fault is in the interpretation of the symptoms presented in each case, for each case must be analyzed by itself.

So-called functional regurgitation at the bicuspid orifice, or that condition without organic changes in the valve, and in which there is produced a mitral indirect murmur, is the abnormal sound which is of the greatest importance. First, because of its frequency; second, because it is so often mistaken for a sound due to positive organic changes. Many explanations have been advanced for the presence of this murmur, one of which is that it is due to an

over-powerful contraction of the left ventricular wall, causing an over-closure, and a forcible sliding of the valve segments, upon one another, thus producing the sound. While this might hold true in a few instances, it is not sustained in the majority of cases by the necropsy finding. To have friction enough to produce so loud a sound would necessitate a roughening of the surfaces of the valve segments, and this would in due time lead to a hypernutritive condition, and this would be followed by a positive thickening of the valve segments. This is not the case, however, for at the necropsy the valves are perfectly smooth, thin, and absolutely free from any lesion. The physical signs also disprove this theory, for a murmur caused by too tight closure would not give rise to any leakage or regurgitation of blood at this orifice; consequently, there would not be a distinct murmur heard behind as is the rule in this class of cases. A sound heard at the apex in the M. I. circle and in time slightly after the first sound of the heart, and not transmitted and not heard posteriorly might justly be attributed to such a condition. Frequently cases are met in which there is a distinct intra-ventricular systolic hum or murmur, which is caused by an over-vibratory tension of the bicuspid segments and their attached chorda tendinæ, dependent upon excessive muscular contraction of the ventricular wall. With this abnormal sound again, there is no leakage at the left auriculo-ventricular orifice, thus ruling it out of the regurgitant class of murmurs.

Many cases are met in which a positive murmur is heard at the apex area over the mitral indirect circle, and transmitted to the left, lost in the axillary region, and heard posteriorly with equal intensity at the point as already mentioned. In these cases the necropsy reveals no organic lesion in the segments of the bicuspid valve or its attachments, and there is no dilatation of the ventricular cavity preventing closure of the mitral valve orifice and in which the gross appearance of the valve and the heart itself is normal. Such cases are of special interest from a practical standpoint, both to the patient and practitioner.

Stopping to consider for a moment the anatomico-physiological mechanism of the heart, the explanation of these cases is quite simple. The ventricular wall is composed of seven distinct layers of muscle fibres, or for simplicity they may be considered as four. There is connected with these layers, in the left ventricle, two sets of papillary muscles, one springing from the anterior and the other from the posterior wall of the ventricle. To the papillary muscles the segments of the bicuspid are attached by their chorda tendinæ.

When everything is working in unison, the two segments of the valve which are in the ventricular cavity float outward toward the auricular cavity. At the height of the ventricular contraction, the margins of the bicuspid segment are approximated at just the right point, and held there by the equal

and synchronous contraction of the two sets of papillary muscles and their attached chorda tendinae. By this peculiar mechanism the auriculo-ventricular orifice is perfectly closed, and regurgitation from the left ventricle to auricle prevented. When for any reason the innervation of the heart is unequally distributed to the different papillary muscles or the muscular layers become unequally nourished, the unity of contraction is apt to be disturbed, and, instead of this perfection of action just described, one set or layer of muscles contracts more forcibly or more quickly than the other, and as a result one papillary muscle shortens more than the other. As a natural sequence one segment of the valve is pulled a little too far into the ventricle, while the other segment floats too far out into the auricle, thus preventing complete closure of the mitral orifice and permitting an escape of blood from ventricle to auricle. In this manner a complete gap is produced, the same as if there was an organic lesion.

Through this opening there is a positive escape of blood and one that gives rise to all the physical signs of an organic insufficiency with regurgitation. The temporary results are the same as if there existed positive and irreparable defects. The rational signs are the same in both instances.

Organic and the so-called functional insufficiency at the left auriculo-ventricular orifice can easily be differentiated during life, not by their rational or physical signs however, but by an appropriate line of treatment. If the cause of the so-called functional murmur be a deficient innervation, by giving such remedies as will restore the nerve power, the signs and the symptoms will quickly disappear, all regurgitation be prevented, and the patient relieved from all the unpleasant symptoms.

On the other hand, when due to a defective nutrition, with incomplete innervation and irregular muscular action, a building up of the cardiac muscles (as can be done with proper dietetic and therapeutic conditions), will cause the murmur to disappear.

When the physical signs are due to positive lesions in the valve segments, the physical signs will not disappear, but will often become more pronounced. Even if the murmurs do not disappear, much can be accomplished in the way of improving the action of the heart.

Having settled accurately which of the two classes of murmurs we have to deal with, and having decided whether they are due to organic changes or not, it is easy to determine just what the lesion is. This accomplished, all the other combinations that are commonly given in teaching physical diagnosis of the cardiac murmurs can be added. For instance, having decided that a mitral regurgitant murmur is present, it is easy to add that it is a systolic murmur heard at the apex, that it occurs with or takes the place of the first sound of the heart, that it is synchronous with the so-called apex beat and with the arterial pulsation, etc.; but the examiner is not compelled to confuse his mind

with all these conditions before deciding as to the presence or absence of an abnormal cardiac sound. By studying these cardiac areas in routine order, and deciding whether abnormal sounds exist or not, and determining the direction in which they are transmitted, I have rarely failed to have the correctness of the diagnosis verified at the necropsy when such opportunity occurred. Having found myself correct in the diagnosis in such a large percentage of the cases, I feel quite confident in regard to the diagnosis in this class of lesions, and especially so where the opportunity presents for examining the case several times while under treatment.

The above facts were especially well marked in this case, for when the patient was placed in bed and the heart well stimulated, there was no evidence of any valvular lesion, and the necropsy verified this interpretation of the case.

Without a large experience, in the post-mortem room, there is absolutely nothing upon which to rest the certainty of the diagnosis that may be made. Unfortunately, too many practitioners are compelled to go through their whole medical career without ever having had the opportunity to get personal and practical training in this most important branch of medical science—the combined clinical and post-mortem work. The more frequently one can be placed on record as to the diagnosis, and have it confirmed or overthrown by the result of the necropsy, the greater will be the probability of obtaining skill in diagnosis.

Inflammations of the pericardium differ but little in their pathology from similar changes in other serous membranes. The most common lesion of the pericardium found at the necropsy examination is an excessive amount of serous fluid in the pericardial sac, or that condition known as a moderate hydropericardium. In all conditions of malnutrition, the vessels of the pericardium lose their normal nutritive tone, and thus permit the escape of a large amount of simple serous fluid into the pericardial sac than is normally the case. In a few instances we meet with a hydropericardium that is the result of more active changes in the vascular walls of the pericardium. Then the hydropericardium becomes an active lesion and may call for positive treatment during life; in some instances the symptoms are so urgent as to suggest the possible necessity of aspirating the pericardial sac, as is so frequently done in connection with the pleural cavities. These large accumulations of serous fluid in the pericardial sac may be simply a part of a general anasarca, or they may be local in nature and due directly to inflammatory changes in the pericardium.

Another quite common condition of the pericardium found at the necropsy is the so-called "milk patch." It is a white glistening appearance of the pericardium, due to the formation of new connective tissues in or beneath the pericardial membrane. Patches of this kind vary in size from very small points to large and irregular masses. In the latter case they form smooth opaque patches of a pearly aspect, and as a rule they cause a slight elevation above the

ordinary surface of the pericardium; they are usually found on the anterior surface of the heart, but may occur at any point. By some these patches are thought to be the result of a previous inflammatory action; by others to be due to a disturbance in the nutritive supply distributed to these localized points, augmenting thus the nutritive activity and in no way connected with an inflammatory process. The latter view is probably the correct one.

Still another non-inflammatory lesion of the pericardium is small punctate ecchymoses beneath the free surface of the pericardium. They are more commonly located in the visceral layer, but may be found at any point. This condition occurs in cases of asphyxia, in leucocythemia, scurvy, pernicious anemia, etc.

Occasionally a large hæmorrhage may occur into the cavity of the pericardial sac, non-inflammatory in origin, due to rupture of the heart or one of the large blood vessels.

All of these conditions, however, except the excessive hydropericardium already mentioned, call for little or no treatment.

Under the head of non-inflammatory lesions of the pericardium may also be mentioned the occasional involvement of the pericardium with new growths, such as carcinoma, sarcoma, gummatous formations, etc.

Tubercular involvement of the pericardium is generally considered as an inflammatory process. With this condition we find the pericardium or the subpericardial tissue infiltrated with miliary tubercles. Here again, owing to the generally deteriorated condition of the system, hæmorrhages are not infrequent. If the tubercular infiltration excites a surrounding inflammation all the products of an acute exudative inflammation will be found in addition to the tubercles when the pericardium is opened. In the fluid contained in the pericardium, and in its contained flakes of lymph tubercle bacilli may be found; this condition, however, and the finding of tubercle bacilli is extremely rare.

Taking up now the simple and acute inflammations of the pericardium, we find in the early and acute stage simply a deep and intense congestion of the pericardium, which condition is most marked, as a rule, on the visceral layer and around the roots of the great vessels. In some of the more intense cases there will be subpericardial hæmorrhages, also a little blood tinged serum in the pericardial sac, death ensuing before further inflammatory changes have been wrought in the pericardial membrane. More frequently, however, the inflammation results in a more or less abundant exudation of all the constituents of the blood into the pericardial sac. In some instances serum will predominate; in other cases the fibroplastic exudate will be the most abundant; in still others the two will be about equally divided, and in some rare instances it will be purulent in character.

In the non-suppurative type, if the case pursues a favorable course the fluid will be absorbed and later on a part or all of the plastic exudate

will also be liquefied and absorbed, and a complete recovery established. More frequently, however, there is the development of some new tissue with the formation of more or less permanent bands of new connective tissue connecting the visceral and parietal layers of the pericardium. Only in rare instances the adhesions may become so general that they completely obliterate the cavity of the pericardium. When this occurs it very materially interferes with the perfect action of the heart.

Case I, a young man 32 years of age, is remarkable on account of the very pronounced pericardial effusion and loud pericardial friction sounds. The history prior to admission was as follows: Mother died of carcinoma. As a boy, was subject to epileptic attacks but had none since he was nine years old. Measles at 14 and malaria at 18. Has been a moderate drinker, but does not smoke, and denies all venereal disease. His bowels were regular. His occupation for the past 12 years has been that of a bell-boy. In the irregular life of his occupation and probable frequent subjection to heat and cold may be traced the source of his renal condition. His temperament was morose and he lacked ambition.

The patient first came under observation in connection with the Post-Graduate School, on April 8, 1905, at one of the medical clinics. A simple glance at the man at that time showed that he was in a very serious condition. At that time, April 8, the patient complained of an attack of pain which started two weeks previously. The pain began in the epigastric region, was followed by pain in the left axilla and was increased by taking a deep breath. There was also a hacking cough, and a muco-purulent expectoration streaked with blood. He was markedly emaciated; the skin had a pale muddy pallor; the cornea were slightly bile tinged; the breathing was rapid and labored.

Physical examination at this time showed the apex beat to be located in the sixth intercostal space on the left side, 11 cm. (4.29 inch) from the median line. The heart's action was very rapid; instead of a clear, well-defined first sound, there was a well-defined thrill or valvular murmur which was heard over the direct and indirect mitral areas. This led to the impression that the patient was suffering from an endocardial lesion with bicuspid valvular stenosis and incompetency. This point is especially emphasized on account of the subsequent course of the case and the fact, as will be seen later, that at the necropsy the bicuspid valve was practically normal and the major lesion was located in the pericardium.

At the time the patient was admitted he was suffering from marked dyspnea, bloody expectoration and marked anorexia. Patient was unable to retain even fluids on the stomach and had to be propped up in bed. Temperature, 99.2° F.; pulse 120 and of high tension; respiration 28 and shallow. His mental condition was quite sluggish.

Inspection of the chest demonstrated that the heart action was very rapid and fluttering in character. The apex beat was diffused and indistinct. Most marked in the sixth interspace on the left side from four and one half to five inches from the median line anteriorly. No abnormal sounds could be detected. The normal heart sounds were feeble, especially the first, while the second sound seemed to reduplicate itself. The diagnosis made at the time was enlarged heart with degenerated muscular walls; later it became clearly apparent that there was a pericarditis with marked effusion. A few subcrepitant rales were heard posteriorly of a rather sharp crackling character, showing a tendency to edema of the lungs.

Abdomen slightly swollen and liver enlarged.

Extremities slightly edematous. The urine ranged between 1.010 and 1.014, contained a heavy trace of albumin, less than one per cent. of urea, and a few hyalin and granular casts. The quantity ranged between 30 and 40 ounces.

There seemed to be no doubt that the patient had a sclerotic kidney, that he was highly toxic and that the pericardial involvement was due to the toxic effects resulting from the non-action of the renal organs.

On the second day after admission to the hospital, a loud to-and-fro superficial friction rub was both palpable and auscultable all over the enlarged pericardial space. The friction rub occurred both with systole and diastole. The abnormal sounds appeared to be loudest just at the junction of the third interspace with the sternum on the left side.

By decided pressure with the bell of the stethoscope on the chest wall the murmur was partially arrested.

With the development of the pericardial murmur there was a decided decrease in the area of dulness. The friction sound continued with great distinctness and intensity up to the time of death.

The patient slowly grew more toxic day by day, the pupils became contracted and ceased to respond to changes in light; the tongue was dry and coated, the breathing short and labored. There was also retention of urine during the last two days. On the third of May the patient developed a general edema of the lungs and the heart ceased to act.

At the necropsy the following conditions were found:

The body was emaciated and somewhat edematous. The pericardial sac contained three ounces of a clear serous fluid. The following are the changes that may be found in connection with the pericardium.

The surface of both visceral and parietal layers of the pericardium sac were lined by the condensing fibro-plastic exudate, so that instead of a bright, smooth, glistening surface, it was coarsely granular. Two such surfaces rubbing together during life would naturally produce the loud superficial friction

sounds so distinctly heard. The left ventricle was hypertrophied, while the right ventricle and the auricles were dilated and contained large post-mortem clots.

The condition that we had to contend with in this case was the resolving stage of a sero-plastic exudate. When the patient first came under our observation the process had ceased to be acute, as there was no elevation of temperature or pain. There must have been considerable fluid at the time of admission, sufficient at least to keep the visceral or parietal surfaces from coming in contact. Later, as was clearly shown at the necropsy, the serum had been absorbed to a great extent.

The valves guarding all the orifices were practically normal, thus adding another case to the many that have come under my observation, in which distinct murmurs were diagnosticated and the necropsy failed to show any gross lesion of the valve structures. However, a correct interpretation of the signs heard with suitable treatment will enable the examiner to make a correct diagnosis.

The lungs were the seat of marked congestion and edema, with one small spot in the right lower lobe which appeared like the gray hepatization of pneumonia, but which was a splenization due to the long continued stagnation of the pulmonary circulation. This was borne out also by the absence of temperature during life and negative result of the examination of the sputum. The spleen was slightly enlarged and softened.

The stomach was contracted and deeply congested, which condition undoubtedly explains the inability of the organ to retain even fluids during life. For it is a well-known fact that congestion of the stomach and undue pressure upon the nerve endings in the stomach are two of the great causes of the nausea and vomiting in this class of cases. This being the fact, unless we can overcome the congestion we will not remove the symptoms.

The kidneys presented the lesions common to sclerosis of these organs. They were small, hard and contracted. The surfaces were rough, the capsules thickened and adherent, bringing portions of the kidney structure with it on removal. The cortical layer was less than half the normal thickness. The markings imperfect and irregular.

When we come to the pathology of the endocardium a somewhat different problem confronts us; this is on account of the difference in the histological construction of the two membranes, and also because its free surface is constantly covered by the ever-flowing current of blood. Histologically the endocardium is a more dense structure than the pericardium. The former has less surface vascularity than the serous membrane of the pericardium. Hence, when the endocardium is the seat of an inflammation there is less redness, less ecchymosis, and fewer punctate hemorrhages. Yet they are not altogether absent. If there is developed an inflammatory exudation upon the surface of the

endocardium, as occurs in connection with the serous membranes in general, it is carried away by the current of blood constantly passing over the inflamed surface, for it is not found after death. What occurs more frequently, so far as we are able to judge, is a congestion of the vascular structures which constitute the deeper layer of the endocardium. This causes an augmented nutritive activity of the cellular structures forming the more superficial portions of the endocardium. Following this we have a variety of changes; they may result in a simple multiplication of the cells in the substance or upon the surface of, the endocardium. If located in the valves of the heart, they will appear swollen, soft, and sponge-like; if the lesion is located at the more closely attached portions of the endocardium as against the cardiac wall, it will give rise to soft velvety patches having a pinkish color. On the other hand, in connection with the valves there may be only a surface cellular proliferation, and thus we have formed the various grades and types of vegetations found at the necropsy. In some instances these cellular proliferations may grow so rapidly that their nutritive activity is not perfectly sustained and they will be detached by the current of blood constantly flowing over them, thus giving rise to emboli that may lodge in various parts of the body. In still other instances these vegetations will become more highly organized and remain permanently, and thus interfering continuously with the flow of blood through the valve orifice, or with perfect closure of the valve. These vegetations may act, also, as foreign bodies upon which the fibrin-forming factors of the blood will be deposited, as fibrin; and this fibrin will later be detached, forming emboli, which may be dislodged and later arrested in some distant capillary or small blood vessel in various parts of the body. These changes in the endocardium of the valves may give rise to the formation of new connective tissue which by its contraction will distort the valve and make it incompetent. Or the newly formed connective tissue may undergo fatty degeneration to be followed later by ulceration and calcareous infiltration. One or all of these changes may occur singly or together in the same case and thus cause an endless amount of damage to the valves and their physiological action. In some rare instances small pus formations are found in connection with this simple form of endocardial inflammation.

These small pus formations in simple endocarditis must not be confounded with that special type of endocardial inflammation which has been given the distinctive name, "malignant endocarditis." This name is used because this form of lesion always has for its etiological and distinguishing feature the presence of certain micro-organisms: it is further a rapidly ulcerative and destructive process, and usually terminates in death, in a comparatively short time. On the other hand, cases have been reported as chronic in character. This is hard to comprehend in conjunction with the rapidly destructive nature of this disease.

It will be noticed that the bacteriological aspect of this subject has received little or no attention, as this part of the subject requires separate treatment.

The former class of endocardial inflammations, or the simple acute type, are not directly bacterial in origin, as is the malignant form, but appear to take origin in some toxic condition of the system, which of course is secondary to a bacterial invasion of the system, thus producing the disease that precedes and is often spoken of as the cause of the endo and pericardial inflammation. By some it is claimed that the endocardial lesion is always the result of the direct action of the bacteria on the endocardium. This, however, needs further confirmation before it can be accepted as the only method for exciting an inflammation in the endocardium. The so-called non-bacterial lesion may be both acute and chronic, at least so far as duration is concerned. In fact every acute process if not speedily terminated by complete recovery becomes chronic in character.

Cass II. The second case under consideration is that of a boy eight years of age, in which there is both a peri- and an endocardial lesion, the latter probably being the primary lesion. In this case the cause of the endocarditis resulting in the valvular defects and the secondary pericardial lesion may justly be traced to an attack of rheumatism which began a week before admission.

The boy's present illness began on Feb. 1, 1906. He was admitted to the Hospital February 8, complaining of pain in the legs and general malaise. The pain was intensified on moving the limbs. He also developed a very irritating cough.

Upon examination he was found to have a very anxious expression, face, pale; the tongue was coated with a brown fur and the breath was quite offensive. There was pronounced orthopnea. The skin was hot and dry. The breathing was rapid and accompanied by an expiratory grunt. The pulse was rapid and of low tension,—a condition which, if not corrected, must result in a rapid impairment in general nutrition. Owing to the common physiological law that an even tension must be maintained for a perfect distribution of the nutritive pabulum; hence a prolonged high or low tension must result in a rapid impairment in nutrition.

The apex beat was localized in the fifth interspace in the nipple line on the left side. The area of pericardial or cardiac dulness extended one inch to the left of the nipple line. No increased dulness was noted to the right of the sternum.

A loud to-and-fro friction rub was heard over the whole cardiac area loudest at the base, and increased by pressure upon the bell of the stethoscope. Heart sounds more or less obliterated.

From these signs the diagnostic interpretation would be that of a pericardial inflammation without involvement of the endocardium. Later on we shall find, however, that both endo and pericardium areas were complicated.

There was pronounced dulness over the superior portion of the left lung; crepitant and subcrepitant rales were heard on auscultation over the same region.

Over the right lung at the nipple area, the breathing sounds were almost bronchial in character, accompanied by a few fine dry rales due to a pneumonic process. Posteriorly a few subcrepitant rales were heard—all of which would indicate a general pulmonary congestion and a tendency to hypostatic congestion or splenization of the lungs.

On February 19 the dulness was still pronounced below the left clavicle, and the broncho-vesicular breathing continued.

The heart's action was less rapid but the sounds were fainter. The friction rub was limited to an area two inches square (2 in.—12.96 sq. c.) below and to the right of left nipple. The area of dulness was also increased especially along the diaphragmatic border. Patient unable to lie in recumbent position.

On March 10 area of dulness still further increased, extending now from left anterior axillary line to one and one half inches (4.8 cm.), beyond the right border of the sternum. The friction rub is now absent, the accumulated fluid evidently holding the pericardial surfaces from coming in contact, as occurred in the first case at the time of admission to my service.

The apex beat is very indistinct. As well as could be determined, it was still at the fifth intercostal space, two and one half inches outside the left nipple line. At this time a distinct double aortic bruit was heard over the normal position of the aortic valve and along the left border of the sternum. The systolic bruit was also transmitted upwards to the carotids. At this time the percussion note over the left chest as high as the fourth rib in the axillary line was flat and the breathing sounds very faint, showing that the expanded pericardium was compressing the inferior lobe of the left lung or that there was fluid in the pleural sac. The abdomen was distended. The liver was enlarged and displaced downward to one half inch of the umbilicus.

On March 11 the breathing being more difficult and medicinal measures having failed to reduce the size of the flat area in the left chest, the pleura was aspirated and six ounces (181 cc.) of clear serous fluid was removed.

Analysis of the urine showed from time to time marked traces of indican and albumin; the former indicating an imperfect digestion with some toxic infection therefrom; the albumin indicating that the renal cells were being overworked and poorly nourished. Upon microscopic examination a few hyaline casts and numerous leucocytes were found.

The blood culture gave a negative result. The first blood count, which was made Feb. 14, 1906, gave the following result:—

W. B. C., 54000.

Differential count polynuclear.....83%
 11 mononuclear.....10%

Large mononuclear.....1%
 Transitional6%

Feb. 28, W. B. C., 33,000.

Differential count, polynuclear.....76%
 Small mononuclear.....19%
 Large mononuclear1%
 Transitional4%

March 14, W. B. C., 50,000.

Differential count, polynuclear.....74%
 Small mononuclear22%
 Large mononuclear.....1%
 Transitional3%

The above blood examinations were made during the period of pneumonic process.

On March 17, there being no pronounced improvement in the breathing, Professor Lloyd was asked to see the case in consultation by Professor Burt, who then had the case in charge. Dr. Lloyd performed a paracentesis pericardii entering the pericardium with his trocar needle through the fifth intercostal space one and one-half inches (3.8 cm.) to the right of the sternum. In this manner 15 ounces (450 cc.) of dark bloody fluid was withdrawn. At first the fluid came out in distinct spurts, later as a gentle stream.

Percussion after the paracentesis indicated a great reduction in the area of flatness, the apex beat became distinct in the fifth intercostal space on the left side and just outside the nipple line. The cardiac dullness was limited to one half inch (1.3 cm.) beyond the right sternal border to one inch (2.5 cm.) outside the left nipple line.

At this time the aortic murmurs already described became more distinct, also a decided mitral systolic murmur was distinctly heard; all of which pointed to the endocardium as the primary and the pericardium as the secondary lesion.

A day or two later the case came into my service and lingered without any pronounced changes until the 30th of March.

There was during this time a slight reaccumulation of the pericardial fluid, but not sufficient to call for re-puncture. The cause of death being exhaustion, edema of the lungs and cardiac paralysis.

Treatment of this class of cases is best considered under three headings; first, prevention; second, the management of the acute condition; and third the treatment of the chronic stage or the after-effects. The latter can hardly be spoken of from a pathological standpoint as treatment applied to peri and endocarditis. It is rather the treatment of the secondary lesions that have been developed from an impairment in the functions of these two membranes. Hence, they will not be considered in this paper.

In a similar manner the preventive treatment is in a large measure of doubtful quantity, for we are not absolutely certain as to our etiological factors and the *modus operandi* of their action in producing these endo and pericardial lesions. We do know that these membranes are the most likely to become inflamed in connection with the condition known as rheumatism, with the infectious diseases, with "Bright's disease" (so-called), and with syphilis. From these facts we are apt to say that these diseases are the causes of the inflammations of these membranes. Hence it becomes us to exert our best therapeutic skill when dealing with these diseases, that their duration may be as short as possible and their intensity reduced to the minimum. The main object being to aid the system in every possible manner to rid itself as rapidly as possible of the toxic products that are keeping up the symptoms; in short, to shorten the duration and decrease the intensity of the disease as much as possible. This can be accomplished in an endless variety of ways, depending upon the inclinations of the individual practitioner. The main thing, however, is the dietetic and hygienic management of the case. The diet should be the most highly nutritious, and require the least expenditure of the digestive energy for its digestion and assimilation. The hygienic surroundings should be of the best, plenty of pure air and ventilation. Next the secretory and excretory organs should be augmented in their action by such drugs as will increase their physiological activity when sluggish, as they always are when the system is under the influence of a toxic infection. In this manner the general damage to the animal economy will be reduced to the lowest point and the liability to the development of an endo and pericardial inflammation reduced to the smallest possibility.

In the treatment of the active inflammations of the endo and pericardial membranes absolute rest in bed is the first desideratum. This should be prolonged for a considerable period after the more acute symptoms have subsided, if we are to secure the best results and prevent the establishment of a chronic lesion.

Locally, for the relief of the pain and the tachycardia which are the two most urgent symptoms in the acute inflammations, heat or cold applied directly over the pericardial region will in many instances give prompt and almost perfect relief. In some instances cold, in the form of an ice-bag, gives the best results in other cases heat works best. *In some a fly-blister may be required. All three methods act, in all probability, reflexly through the central nervous system, thus causing a change in the circulatory activity in the inflamed endo- or pericardial membrane, by which the local pressure upon the nerve-endings distributed to the membranes is relieved. Outside of these measures there is little that can be done locally or directly to modify the pathological processes. Here, as in all other inflammations, the same general rules that are applicable to the treatment of the disease with which these inflammations are associated, hold true with equal force.

The advisability or non-advisability of tapping the pericardium is an interesting question, and one in which there is, as yet, no established rule of procedure. If the heart's action is positively embarrassed by the pressure of the fluid contained in the pericardial sac it would seem that only one opinion could be held, and that would be to relieve the pressure upon the heart at once by aspiration. In like manner, when the inflammatory effusion persists and resists all forms of treatment, judging from the satisfactory results obtained in connection with similar conditions in the pleural sac, the day may not be far distant when the pericardium will be more frequently aspirated successfully. True aspiration of the pleural and pericardial sac is an entirely different problem from a practical and physiological standpoint, even though the pathological problem is almost identical. The former sac can be aspirated easily and successfully, while in the latter it will always be fraught with more or less danger to life.

The case here related proves conclusively that the pericardium can be aspirated successfully and even if it does not effect a cure it greatly relieves the distress during life.

It was most unfortunate that a necropsy could not be obtained in the second case. Had this been done then all our diagnoses could here be confirmed or overthrown.

It is only when we come face to face in the necropsy room with the existing pathological facts in the cases under observation that we learn to be good observers and interpreters of the signs and symptoms presented during life. Therefore, the absolute necessity for frequent observation at the necropsy table.—*The Post-Graduate*.

Some Observations on the Topography of the Chest.

BY

E. SEABORN, M.D., London.

The shape of the thorax is that of a cone, and both lungs together are necessarily conical. Each lung is therefore the half of a cone, but the two halves are separated from each other by a considerable interval known as the mediastinum.

Each lung, therefore, presents the surfaces and borders of a demicone. The borders are the anterior and posterior, and the two basal borders—one median, the other external.

The pleuræ are of the same general shape as the lungs, and present the same borders.

Affections of the visceral layer of the pleura only are essentially diseases of the lung substance, so, for the purposes of this paper, the term pleura will be understood to mean parietal pleura.

The anterior border of each pleura begins from one to two inches above the anterior end of the first rib. As both layers lie in close apposition to the lung, by mapping out the apex of the lung by percussion we map out also the apex of the pleura. The pleuræ here are separated by the trachea and œsophagus, and are defined by curved lines beginning at the sterno-clavicular articulation, and ending one-third of the way out on the clavicle. This portion of the pleura is especially liable to injury in fracture of the clavicle.

From the apex, the pleuræ pass behind the clavicles and rapidly approaching each other, come in apposition at the second costal cartilage, and run down side by side to the fourth costal cartilage. The *right* pleura continues down in a straight line to the sixth costal cartilage, and corresponds to the anterior border of the lung. The *left* pleura, deviating to the left of the middle line, arrives at the sixth costal cartilage also, but is one inch to the left of the middle line. The only place where the pleuræ come in contact is between the second and fourth costal cartilages. The line of contact is nearly always to the left of the median line. This is of importance, as abscesses, which lie between the pleuræ (*i.e.*, in the mediastinum), when they point in front, do so generally to the left of the sternum. Also in infants and children the percussion note just to the left of the upper sternum is duller than the corresponding point to the right of the sternum, as in them the anterior borders of the lung have not expanded, and the mediastinum is uncovered by lung. The left pleura between the fourth and sixth costal cartilages, although deviating from the middle line, does not do so to the same extent as the lung, the pleura diverging one inch and the lung three; as a consequence the two layers of parietal pleura are in contact in front of the pericardium and heart. In percussing the area of superficial cardiac dulness, we percuss through these two layers of pleura. The space between these two layers is known as the pleuro-pericardial sinus. All pleural sinuses may be filled, first, by great dilatation of the lung, as in emphysema, or, second, by fluid, as in pleurisy. Consequently, the superficial area of cardiac dulness may be obliterated by lung tissue or fluid.

The posterior border begins at the apex of the lung, and runs down about one inch from the midline to the level of the twelfth dorsal spine.

The external of the two inferior borders of the pleura begins in front at the lower end of the anterior border, and runs in a downward curve to the tenth rib in the mid-axillary line. Then to the twelfth rib at the outer border of the erector spinæ muscle. Then it crosses the middle of the twelfth rib, and joins the posterior border at the twelfth dorsal spine. The twelfth dorsal spine is about one inch below the head of the twelfth rib. The inferior border of the lung does not run down to the lower border of the pleura, consequently the two layers of the parietal pleura are in contact here, forming the costo-diaphragmatic sinus on each side. The right sinus overlies

the liver, the left overlies the stomach and spleen. That part of the left sinus that overlies the stomach corresponds to Traube's space, and the tympanitic note of the stomach is transmitted through the two layers of the pleural sinus. These sinuses may be obliterated by lung tissue or by fluid, and the tympanitic note will then give place to resonance or dulness. McCallum, of London, Can, has pointed out (in the *British Medical Journal* of Feb. 18th, 1905) that Traube's space may give a dull note in gastropnoia.

By marking out the lower border it will be found that the lowest point is not at the spine behind, but at the tenth rib, just posterior to the mid-axillary line; and it is reasonable to suppose that the first signs of pleurisy with effusion would be found in this position. This is difficult to demonstrate, however, as the dulness of the effusion is merged, on the right side, in the dulness of the liver, and, on the left side, in that of the spleen. When the amount of fluid is over 400 c. c., however, it should always be made out, even in people with very thick chest walls.

The relations of the posterior part of the lower border are of importance to the surgeon. The most necessary consideration is the length of the twelfth rib. The erector spinæ muscle, running up from the sacrum, passes over the twelfth rib. Now, the twelfth rib may be so short that it does not project beyond the outer edge of the erector spinæ, and the ordinary incision in operations on the kidney (*i.e.*, along the erector spinæ up to the twelfth rib) may miss the twelfth rib and pass up to the eleventh, in which case the pleura must be injured. It is well, therefore, to differentiate the twelfth rib by counting, and to make sure that it is of normal length.

The vertebral end of the lower border of the pleura passes in front of the quadratus lumborum and psoas magnus muscles. The parts of these muscles above the diaphragm (*i.e.*, above the ligamenta arcuata externa and interna) are covered by a very thin fascia only, and pus can burrow through this very thin fascia, pass behind the diaphragm, and so get into the posterior wall of the abdomen.

The median lower border joins the lower ends of the anterior and posterior borders, and passes along the angle formed by the diaphragm and mediastinum. It, of course, cannot be mapped out clinically, and, apart from the mediastinal surface, is inessential to our present purpose.

The Surfaces of the Pleuræ.

The outer surface lines the ribs and intercostal muscles. The weakest point in the chest wall is in the fifth interspace in the nipple line. Below this, the external oblique reinforces the chest wall, and, above this, the pectoralis major does so. Between the clavicular and sternal parts of the pectoralis major there is a weak spot also, and, in children, an empyema may point here. Another weak spot is in the auscultatory triangle at the lower end of the scapula, where the trapezius and latissimus dorsi separate from each other.

The lower or diaphragmatic surface overlies the liver on the right, and the stomach and spleen on the left side. Pleurisy, limited to these surfaces, may easily be confounded with disease of the abdominal organs and is, in fact, often a sequence of them. When the pleural effusion is large, the liver may be dislocated in a peculiar way. It will be remembered that the suspensory ligament stretches from the diaphragm to the liver, and is attached from the anterior to the posterior border of the liver. It is near the middle line of the body, and directly underneath the mediastinum, and so is attached to that plane of the diaphragm most capable of sustaining weight. Now, when there is effusion into the right pleura, the right side of the liver is pushed downwards, but the left side is pushed upwards, the suspensory ligament acting as a pivot. The liver thus seems much narrower than usual and has often been mistaken for a tumor.

The internal, or mesial, surfaces of the pleuræ lie against the mediastinum, and may be affected by disease, originating in it. It is, therefore, important to know the structures forming the mediastinum. Behind we have the oesophagus and thoracic duct. In front of these we have the trachea above and the pericardium below. That part of the aorta outside of the pericardium passes up on the right side of the trachea, crosses over in front of it, passes backward, and then downward to the aortic opening in the diaphragm. In passing backward it passes so close to the trachea as to produce a bulging inward of the tracheal wall. This bulging overhangs the lumen of the left bronchus and helps to protect it from foreign substances. As the trachea and aorta are bound somewhat firmly together by connective tissue, we have an explanation of the phenomenon of tracheal tugging in aneurism of the aorta. It is said that in aneurism, exaggerated bulging may be made out with the ophthalmoscope. On a plane anterior to the aorta and its branches, we have the great veins of the thorax.

The right pleura lies, in relation to the oesophagus, from end to end of the thorax. It may even pass behind the oesophagus and form a pleural sinus. Even at the opening for the oesophagus at the diaphragm, although far to the left of the median line, the pleura touches the oesophagus. The left pleura touches the oesophagus at two points only, above the arch of the aorta and at the diaphragm; the descending aorta separates them in the rest of the course. From this it will be seen that the right pleura is the oftener affected by oesophageal disease, especially cancer. Disease of any of the component parts of the mediastinum may occasionally implicate the pleura, such as aneurism of the aorta, abscess of the bronchial glands, malignant endocarditis, and cancer of the thoracic duct, etc.

The Lungs.

The anterior border corresponds to that of the pleura except over the heart, the lung there not extending to the bottom of the pleural sinus, but leaving the heart uncovered.

The posterior border corresponds to the pleura, but runs down only to the tenth dorsal vertebra.

The inferior mesial border corresponds to that of the pleura.

The inferior curved border extends, in front, to the sixth costal cartilage, to the eighth rib in the mid-axillary line, and to the tenth vertebra behind. The only places where the borders of the lungs can be mapped out with precision are: the right base over the liver, the left base over the spleen, and the apices of both lungs, and even the borders at the apex are not absolute, although we can determine resonance and increase or decrease in inspiration and expiration.

Fissures of the Lungs.

The main, or oblique, fissure of each lung, begins behind at the second dorsal spine, and ends at the anterior border of the lung, opposite the sixth costal cartilage. This fissure runs in such an oblique direction that it would be almost as well to call the two lobes which it separates the anterior and posterior, instead of the upper and lower. The upper lobe of the right lung is subdivided by another fissure known as the longitudinal. It begins at the middle of the oblique fissure, that is, near the mid-axillary line, and ends at the fourth costal cartilage in front. In pneumonia the dullness usually corresponds in extent to the lobe in which it is situated, consequently dullness over the back, unless supraclavicular, is to be referred to the lower lobe, while dullness in front is in the upper lobe. On the right side, dullness in front, but below the level of the axilla, is to be referred to the middle lobe. In searching for suspected pneumonia, it is well to percuss in a gentle manner, taking the upper lobe in front, then the middle lobe if in right side, and then the lower lobe, especially since dullness generally makes its appearance first on a level of the upper part of the middle lobe.

The Bronchi.

The trachea divides opposite the fourth dorsal vertebra. The right bronchus runs down to a point opposite the fifth, the left opposite the sixth dorsal vertebra. As the trachea runs down and divides into two branches, the pulmonary artery runs up and also divides into two branches, and, where they meet the bronchi, the arteries lie in front of the bronchi; but, in the lung itself, the artery passes first above and then behind the bronchus. This crossing is at the same level in both lungs. On the left side the artery passes over, before the bronchus has given off any branches. On the right side the bronchus has given off a large branch before the artery has passed over. This bronchial branch is necessarily above the artery, and is, consequently, known as the eparterial branch. It is given off some two inches above the first branch on the left side. This fact is of great importance, as it accounts for the phenomena that there is greater resonance, and vocal fremitus of the upper part of the right lung, and that the respiratory sounds approach the

broncho-vesicular. Also, when a foreign body enters the right bronchus it generally passes down far enough to pass the end of the eparterial bronchus, and so allows air to reach the upper part of the lung.—*The Canada Lancet*.

SURGERY.

Surgery of the Kidney and Ureter. *

BY

W. J. MAYO, M. D., *Rochester, Minnesota.*

After discussing the embryological development of the kidney and contiguous parts, Dr. Mayo went on to say: When you have a horse-shoe kidney you usually find it in the posterior position. Pretty much all horse-shoe kidneys are low-lying kidneys. They are seldom higher than the region of the umbilicus. Sometimes they come higher than that, but they are always low kidneys. As to blood supply found in the kidney, there are usually two rows of calices. There are usually from six to eight in each row. The anterior of the rows of calices and half of the posterior are supplied by the anterior arteries; the posterior artery supplies the balance. The point is, if you want to get the vascular center of the kidney, you find it about three fifths of an inch from the anatomical center. The entire top of the kidney gets its supply from the anterior blood vessels. The blood vessels as they divide up always run between the calices so that when you take a kidney that is creased, the blood vessel is in the bottom of the crease; if you cut along that line, the blood will only be from the capillaries; if you cut across the crease, you get the arteries. One of these calices, the lowest one, is the one that is always in the same place, and always has the same relative position in regard to the blood vessels. The only blood vessel, with the exception of the arteries, in the kidneys, is the blood vessel which passes up just to the inner side of the posterior calix. If you desired to reach this calix, you would cut up into the posterior side without cutting anything more than capillaries. You could do that with perfect safety.

There is another feature that comes from this question of blood supply which is also very important: that is, that the posterior part of the kidney does not get the same amount of blood that the anterior does, so that, instead of having the same shape, it is larger owing to the greater amount of blood supply. If you wish to get into the calices, cut into the anterior side; if you wish to get into the pelvis of the kidney, cut into the posterior side. In getting at the pelvis of the kidney, one must always recall that the ureter always comes up from below, and it reaches the blood supply, so that in getting at the vascular supply you will always find that the ureter is well supplied, and you can take the ureter and turn it aside, and still have ample blood supply.

*Extempore address delivered before the Surgeons' Club, Rochester, Minnesota, November 7, 1906.

The ureter is about ten inches long. It has three points of narrowing: the first one, just about two inches on an average from the kidney, is at the junction of the pelvis and the ureter; the second point is where it crosses the iliac artery; and the third point of narrowing is just outside the bladder. Another peculiarity is in regard to the blood supply. When I was taught, and when I demonstrated anatomy, it was said the ureter had a single artery carried down from the top. As a matter of fact, the ureter is one of the best supplied organs of the body with blood, so that one does not need to be afraid he is going to stop the blood supply of the ureter. It can be cut open the whole length and the shell allowed to drop back, and if it does not turn, there will be no leakage. The practical point is that in the operations on the ureter of this kind, and in surgery of the intestines, I very carefully drain them with rubber tissue, not gauze. When you pull the gauze out, you get an infection which follows down and which will result in fistula. So if you drain these cases, you want to drain them with rubber. If you take a nerve and cut it and put one end in a glass or rubber tube, and put one end of the nerve above and the other below, the one above will grow down; if you take the end of the nerve from below and place it above the other end will turn around. We have known that this thing takes place in regard to nerves. The same thing takes place in regard to certain ducts in the body. For instance, if you cut a ureter, instead of resorting to the method of telescoping one end into the other, if you simply take the cut ends of your ureter and suture it correctly and direct its attention to its fellow, they will grow together.

Coming to the function of the kidney. The tubuli of the kidney are drawn out about sixty miles in the loops of Henle. We get two different kinds of infection. We get hæmatogenous infection in which an infection of the blood is cast into the kidney. We see no pus or blood, perhaps only a little irritation, a little albumen in the urine. We used to be taught, for instance, that the kidney was prone to suppuration. This is not so. It was the old methods employed, and especially the use of silk, that caused the infection and suppuration.

We have, then, the two different forms, namely, the hæmatogenous form and the urinogenous form.

Then as to the pathology of the kidney. Take first the question of stones in the kidney, which are probably mostly hæmatogenous, that is, the infection that is carried on is through the excretion of certain bacteria, through the kidney and certain diathesis we get from the stone. The kidney is excreting bacteria. One will find a certain number of bacteria in healthy urine if searched for with sufficient care.

As to stone in the pelvis. In the matter of diagnosis the x-ray will, of course, be the most material. Then you have certain urinary findings, a little

blood, a little pus. These cases have had pain, more or less, for a number of years. If you examine for obstruction of the bowels, one will get in these cases a condition like complete obstruction of the bowels. I have seen a number of cases that have been sent here to be operated upon for obstruction of the bowels. I have seen it in these cases more often than in gall stones or in anything else. There seems to be a peculiar similarity of condition between this and obstruction of the bowels. The difference is only apparent because the bowels will move. Then one would trust more to the x-ray, to the little drop of blood or urine under examination. One cannot tell certain cases of tuberculosis in this part of the kidney, for some reason, from cases of stone in the kidney. The symptoms are exactly alike. I have run across cases of localized tuberculosis, giving rise to exactly the same conditions. In an x-ray diagnosis of stone in the bladder, a great deal depends on the reading of the plate. A great many men can get a good picture, who cannot read a plate. It is an art. It seems to be something that is very difficult to acquire. When it comes to operating, I have to show up the number of stones indicated by the x-ray picture.

Now, as to stone in the kidney, 40 per cent. of them are, as the Irishman says, in the ureter. So, many times when we cut down into the kidney we do not find the stone, and quite likely it was in the ureter. A large proportion of these stones are in one certain portion of the ureter. You remember there are three points of narrowing: the first at the kidney, the second just after it crosses the pelvis, and the third about three-quarters of an inch from the bladder. Now the proportion runs: in sixty cases, you will get about two-fifths of them at the first point, or not quite half. If you found there was no stone in the kidney, and a part of the ureter was dilated, you would start to look for the stone at the point where the ureter was dilated. If you opened it up, you would not have to keep on until you reached the point of dilatation. The first thing you would do is to draw the kidney up. Is the ureter reasonably small, or is it dilated below the point of the stone? You then examine to see at which of the points it is dilated. One makes an incision just the same and low like a McBurney operation for appendicitis. It is very easy to find the bifurcation of the iliac, and there you will find the ureter. It is adherent to the peritoneum, and if you are not careful you will tear the membrane. When you find the stone, put in a little piece of gauze and make a pad. I usually put a stitch across. I first make a small incision down until I can see the stone, and then take a needle and thread and make a loop and pull the loop out of the way and take the stone out. I don't think it makes much difference what kind of a suture you use. An ordinary catgut stitch will close the opening you have to make. Don't use gauze; use rubber, if you operate for stone in the pelvis. That brings up a point that we have considered a good deal. I have always been told that going through the kidney and taking a stone out of the pelvis is likely to produce fistula. I think it is all bosh. It sometimes

depends on whether there is infection or not. The chances are that you may get a more or less permanent fistula if you cut into the pelvis of the kidney, but it is on account of the drainage. If the urine is fairly clean, you would simply cut down to the stone and sew it up. There is no particular trouble in putting your sutures in to control a large opening or a small one. Don't be too careful in putting in the sutures. This idea that you have to go down to carefully and cautiously is not true. In old times they used to use silk. That is how a good deal of this trouble originated. A catgut stitch which will last five or six days is ample. If the pelvis is dirty, don't cut down to the stone immediately, or you will have a fistula. Leave the posterior portion and cut about three-fifths of an inch from the anatomical centre. Then you will get a long track that is likely to heal.

The next question is one of hypertrophies. The symptoms are pain in the right side, marked by a great deal of vomiting and tenderness, greater on the right side, much more common in women. They will tell you that if they compress their side, for instance with a pillow, it will give relief. You are very liable at first to get these cases mixed up with gallstones or appendicitis cases. In the early stages there is no pus or blood to give definite indications. The pain would indicate equally as much that the trouble was in the stomach. The soreness and tenderness are centered at the base of the twelfth rib. But they will always tell you that they get relief by compressing the side, or by lifting the kidney up. A good many can mechanically relieve the distress in that way. The obstruction is usually at the first point of narrowing. There are very few cases in which you won't find it at that situation. The ureter comes up and makes a little curve. I have operated on 15 of 16 cases of this ureteral stricture. If the urine was fairly clean, I stick a probe down and cut it. I do not stop to place sutures. I happened to have two cases in one week. A physician from Philadelphia was visiting here. He would not believe that it was possible that they would heal. He told me, for instance, that he thought it was reckless surgery. I think while he was here that that old gentleman went to see those patients twice a day. This can be done, however, only with homogeneous structures. In other cases, the parts must be brought together with sutures.

This brings up the question of movable kidney. If you are going to do an operation on the kidney at all, the operation is not to take and harness the kidney up. The kidney sits in a fatty envelope, as is shown in a very clear paper by Reynolds of Boston. The first proposition in movable kidney is not the movability of the kidney, it is the detachment. Some have used a basket and eventually the kidney begins to slip up and down in the basket. When the kidney was first operated upon, the operation was to hitch the kidney up, and then we had all kinds of fool contrivances. The proper thing is to remove the capsule of Garotti, and suture the colon to the muscles behind. If you had a little boy, and you had a cistern in the back yard, and you were afraid the

boy would fall into it, you would have the sand man throw in two or three loads of gravel and fill the whole. You would not tie a rope around the boy. Why no one has thought of filling up the hole is hard to say. There should be re-attachment of parts.

Another thing in regard to kidney operations that I want to speak of is in connection with tuberculosis of the kidney. We used to be taught that tuberculosis of the kidney was always double, and therefore it was incurable. Occasionally in a case where it seemed to be a tumor or seemed to be an obstruction you would cut down on to it, and these patients got well if you removed the tumor. Such cases were accidental. We started seven years ago taking up these cases of tuberculosis of the kidney and subjecting them to cystoscopic examination. Dr. Millett has done a good deal of good work with the cystoscope. This is the result. He has found that 85 per cent. of the cases of tuberculosis of the kidney are still confined to one kidney.

When the second kidney becomes involved, the disease works much more rapidly than in the first. The patient is generally in good condition. He still has great powers of recuperation.

The patients come in and say that they have some trouble with their bladder. He has to get up often to micturate in the night. The urine looks dirty. If you tell him to bring you some he may say "I got this the day before yesterday;" or, if you happen to leave the bottle on your stand, it continues to look dirty instead of settling. It is dirty urine. Most any other kind would tend to settle. Now perhaps you get a history that he passes some blood, then this frequent micturition. You question and find usually that he has more pain on one side than the other, and in 85 cases out of 100 the disease is still in one kidney, because when the other kidney becomes infected he goes to pieces so fast he cannot get to anybody. You put in the cystoscope and you notice that the vicinity of one ureter has papules, while the other side is perhaps clear. Having made your diagnosis, having ascertained that the other side is clear, you will read the history. While in one kidney there will be nothing microscopic, around the other kidney there is hardly a section that will not show that there is tuberculosis. What shall we do about the ureter? We have had six or seven of these cases, and we have simply put in six or seven m. of pure carbolic acid and tide it off. It can be compared to an elastic tube. Either fill it with pure carbolic acid, 10 or 15 m., or take it out. You take the kidney out from the back, and leave it hang down back. Loosen it down as far as you can. Turn the patient back as far as you can. Make a little incision, if you find the ureter. If you cannot find it, have some one assist you. Get hold of the ureter and strip; now keep pulling and stripping; keep pulling back and the entire ureter will come out. When you get down to this point, use a catgut suture, and put two stitches in the bladder and sew it up like a hole made with a knife. Don't take out half of the ureter. I don't know of any more perni-

cious practice. They say, "Well, I did not take out all of the ureter; I left as much as I could." If you are going to leave the ureter, leave it where it is. If it don't heal up, don't leave it where it will spue its contents into the pelvis. I have seen these cases come in with fistulas in all the surrounding parts, simply from taking out half of the infected ureter. If you leave it, fasten it where you know where it is, so that if you have to operate again you can go down and get it.

One thing more and I am done. I don't want to take up the entire pathology of the kidney. The tumors we have called e carcinoma and sometimes sarcoma. Another type found in old people is called hypernephroma. About fourteen years ago Grawitz, a German practitioner, said that it was usually due to misplaced parts of the suprarenal capsule. These tumors are very peculiar. In the first place, you can tell them from the microscopic examination. They look like a rotten pumpkin. They are a sort of a canary yellow. It is a homogeneous material and spreads out like grease. The kidney has not many glands. The lymphatic supply is poor. The infection is carried into the veins. Then you get the secondary stage of hypernephroma and the infection breaks out in various parts of the body. You can cure some of these cases if you get them very early. Usually they follow the blood vessels. In two instances I have gone into a large vein on the right side. Don't turn the cut edges of the blood vessels in, while joining them—turn them out. Leave a sort of a flat point with the two edges of the blood vessel coming up toward you. The best way is to do it with your forceps. Just reach in and catch it. Then you suture it. You have much more latitude in working on the left side on account of the vena cava on the right side. I once stood beside an operator who had the misfortune to enter the vena cava. Before he could do anything the patient died to death. In another case, I saw the operator take a pair of forceps and close the entire vena cava.—*The Canada Lancet.*

Bladder Drainage versus Complete Suture In Suprapubic Cystotomy.

BY

E. BLASUCCI, M.D., NEW YORK.

Although its field of application in diseases of the urinary bladder is quite extensive, still there is no operation in surgery which has so little profited by our modern methods of asepsis suprapubic cystotomy.

It seems that the Hippocratic aphorism: "*Cui persecta fuerit vesica letale est,*" fully authoritative in the times of the old master of Colho, still has some bearing with the 20th century patient. From Peter Franco, the inventor of *sectio alta*, to John Douglas and Cheselden, who brought this method into general recognition, almost two centuries elapsed during which the operation of suprapubic cystotomy seemed entirely forgotten; and the general opinion prevailed that the lack of anatomical knowledge of this region was responsible for this omission. However, if we look up the literature we find that as early as

1690 (only 20 years after Franco) Francois Rousset had experimentally demonstrated that, if previously filled with liquid, the bladder could be reached by way of the hypogastrium without cutting into the peritoneal cul-de-sac. So likewise Fabricius Hildanus, Simon Peter and Riolanus, not much later, strongly recommended the method of Franco. But the inventor's experience had been so very unfortunate that he himself expressly advised against following his example, for, although the patient survived the operation well enough, yet his life was for a long time in great danger.

Evidently there were in the after-treatment good reasons for discarding Franco's method and condemning it to oblivion; and it was not before the middle of the 18th century that a drainage method for the urine was devised by J. Cosme, a Benedictine friar. He opened the bladder over the hypogastrium from within outward by means of an armed canula, which he inserted into the viscus through the perineum; this canula was left in place for drainage after the operation.

Fifty years before Cosme, Cornelius Solingius (Dissertatio, Amsterdam, 1698), anticipating the modern tendencies in treatment, conceived the idea of draining the urine through the normal passages and closing the wound by suture. This idea of Solingius was not put into practice till the beginning of the last century, when Cazenave and Amussat used his method on the living subject. But having found a great opponent in Velpeau, it was entirely forgotten, and Solingius' modern followers do not even mention his name. The method of Cosme, however, was still highly recommended by Sabatier in the early part of the 19th century as the best one for preventing the purulent and gangrenous infiltration of the urine following the operation (Sabatier, Med. Operat., Napoli, 1822).

Thus we have the origin of the two methods for the after-treatment of suprapubic cystotomy, and since Guyon recently pointed out the advantages of *sectio alta* over perineal section, the controversy has been warmer than ever amongst competent surgeons upon this very subject, both methods having their adherents.

Let us first consider what can be accomplished by the modern method of primary closure with respect to—(a) rapid healing, (b) better scar, (c) danger of consecutive infection, (d) avoidance of further interference with the wound.

Rapid healing. I will admit that if everything goes favourably healing is assured in ten days; nobody could safely dismiss a patient before such time after any serious operation. But how often is such a result obtained in practice?

True, there are very few statistics reported in the literature on this subject; still we can deduce from them some very interesting points. Dietz (*Ann. Mal. Gen.-Urin.*, 1890) in 47 cases of complete suture had 31 primary unions, 14 cases with discharge of urine through the wound, and two deaths. Bassini (*Rif. Med.*, 1890, V. II, p. 61) reports that of 21 cases, 14 were cured between the 10th and 12th days; 6 between the 18th and 30th days, with

discharge of urine through the wound, and one patient died. Clemente (*Rif. Med.*, 1899, Vol. II, p. 580) used the complete suture in 10 cases and had 4 cures *per primam* within twenty days, 5 cures between the 24th and 47th days after discharge of urine through the wound, and one death.

Summing up these statistics we have 78 cases in which complete closure was the method adopted; of these 49 primary unions were obtained within 20 days and 4 deaths, or about 62 per cent. of primary unions and 5 per cent. of deaths.

If we consider that the cases treated by complete suture are generally selected from the most favourable, we can readily imagine how the death rate would swell if complete closure were used in every case.

Better scar. The esthetic standpoint is of very little importance in the hypogastric region, and as regards the firmness of the scar there is very little danger of causing hernia over the pubis; not a single instance following cystotomy has been reported as yet.

Danger of consecutive infection. There are a few exceptional cases in which the concomitance of several favourable conditions permits us to prognosticate a happy result. Take a strong, healthy subject, with perfectly normal bladder and kidneys, with a sound urethra easy to catheterize, and in such a case, if there be sufficient space for easy access to the bladder and the insertion of a double row of accurate sutures, and provided the surgeon has skill, patience and a good deal of training, he will have fairly good chances of success without any complications in the after-treatment. Unfortunately, however, such patients are very rare. On the contrary you will generally find the bladder infected and the liquid injected previous to the operation spreads the infection over the operative field the very moment the surgeon cuts into the bladder. The substitution of air for the usual boric solution does not help us out of this difficulty. Indeed, it has many disadvantages. Air is not easily sterilized; we cannot measure the quantity we inject as well as we can with liquids; it is apt to escape through the catheter during the operation without our notice, and this may result in a dangerous complication, namely, the descent of the peritoneal cul-de-sac. Last, but not least, the golden rule in surgery to conform to conditions fixed by nature, applies very well here. The bladder was intended by nature to hold fluid, not gas, and we cannot positively say that the presence of air in the bladder will not affect the system in its immediate or remote consequences. Even one of the most strenuous advocates of air dilatation in bladder surgery, Dr. Bransford Lewis (*Amer. Jour. of Urology*, Vol. I, p., 130) admits that air is not as agreeable to the bladder as is a fluid medium. It occurs to me that the mouths of the ureters cannot possibly stand air pressure as well as liquid. The instrument of Dr. Vetere, of Naples, which carries in its shaft a collapsible balloon to be distended when the catheter is in the bladder, while useful in exceptional cases, has the disadvantage that its beak is not free in the viscus and deprives us of a great aid in the operation.

As regards suprapubic cystotomy without vesical distension, I have already expressed my opinion in an article published in the *Medical Record* of March, 1904. I do not consider it worth trying. Indeed, we have to operate most of the time on patients with infected bladders; and as in these procedures the interior of this organ is dealt with through the wound, it therefore is quite impossible for the surgeon's fingers or the instruments to avoid carrying infection from the bladder to the field of operation.

Avoidance of further interference with the wound. If a stitch gives way and a drop of urine filters through the vesical sutures its destructive action on the fresh wound is such that there will soon be an avenue for more urine to escape from the bladder. It will then find an easier access to the space of Retzius and to the loose peri-vesical connective tissue than to the skin; and often this unfortunate event is disclosed by the general symptoms before the development of the manifestations local.

To avoid this, several special hints have been given by the advocates of primary closure. Championniere and Pozzi advise bringing into contact surfaces, not edges. Bastianelli dissects the mucosa from the muscular layers and unites the former with Lembert stitches and the latter with continuous sutures. Bassini inserts three rows of sutures and Brenner a purse-string suture, although this author acknowledges that the bladder capacity is thereby reduced. It would take too long to enumerate all the different procedures that have been proposed, all being more or less complicated and difficult to carry out.

Indeed if we think of the work that must be accomplished, often guided by the sense of touch rather than by vision; if we consider the small field limited by the pubes below, the peritoneal cul-de-sac protruding from above, and the collapsed bladder which, if not sustained, falls deeply into the pelvis, we can readily see how uncertain must be the success of an accurate suture, even in the most favorable cases. Especially so when these conditions are so frequently aggravated by the thinness and fragility of the bladder walls, the contusion and laceration of the edges of the wound, and the thickness of the abdominal wall.

Aside from these shortcomings arising from the wound itself, there are still some other factors which either directly or indirectly prevent the adoption of this plan of treatment. I will simply mention hemorrhage, malnutrition, general debility, and all those conditions of the urethra which either prevent an easy access to the bladder or render frequent catheterization or the retention catheter difficult of employment.

In the presence of such discouraging results Helferich and Brenner, while advocating complete suture of the bladder, do not sew up the abdomen. Neuber sews it only when the bladder wound has healed, while others include in one

row of sutures the bladder and abdominal wall. Finally there are others still less adventurous (Senn, Lesser) who advise performing the operation in two sittings, first incising the hypogastrium down to the bladder, and when this has become adherent to the abdominal wall, opening the bladder, removing the abnormal contents and completing the operation by suture.

All these different procedures betray the fallacy of the method. It seems as if the constant ambition to attain primary closure in each and every wound has diverted the attention of surgeons from the proper treatment in this particular class of cases. This is the only reason that can be advanced for the little improvement attained by drainage treatment in this last quarter of a century. Still the success obtained by a few who have persevered in the use of this method speaks for its advantages, and I view with keen interest the many enthusiasts of complete suture who resume drainage treatment for the benefit of their patients.

If we lay aside the old practice of Cosme followed only by Burchardt, Burney and a few others at the present day, we find that Guyon speaks of patients cured in nine days by the Perier-Guyon tube. Gibson has reported a case cured in seven days by applying the Kader's method of gastrotomy to bladder drainage (*Med. Record*, Jan. 12, 1901). Assendelft (*Arch. fr. Clin. Chir.*, 1899, V. LX, p. 679) reports 460 cases of suprapubic cystotomy all treated by drainage and partial suture with only 3 deaths.

Dr. Gibson's method appeals to me as a very good substitute for the complete suture in favorable cases, but it cannot possibly be applied in most of the cases for the reasons mentioned above, inasmuch as the procedure requires three rows of sutures to be efficient.

Dr. Assendelft's patients have been cured by the 26th to the 66th day, but that can be accounted for by the length of time the drainage had remained *in situ*, in some cases having been left as long as 36 days. In my recent cases with partial suture and proper syphonage, I have obtained cures in from 10 to 12 days.

There is a factor of great importance in the after-treatment of cystotomy which has been overlooked, and that is the mode of action of the urine on the tissues. It is a matter of common experience that while the urine acts as an escharotic on a fresh wound, it is a good stimulant for the granulations. Hence, in drainage treatment, as well as in primary closure, all contact of the urine with the wound should be scrupulously avoided for a few days after the operation, while such contact should be favored as soon as granulations are commencing to form.

This last task can be easily accomplished by removing the drainage at the proper time. It is not so easy, however, with the other.

Hypogastric drainage to be efficient should be made to conform itself to physiological conditions. It must provide for the discharge of the urine as

soon as it issues from the ureters, before it has any chance to filter through the wound. Consequently we should construct a syphon, according to physical laws, to give a capacity of discharge proportionate to the quantity of urine that collects in the bladder. Kaczknowsky (*Internat. Mod. Magaz.*, V, VIII, p. 867) judging the aspiration power of a single tube shaped as a syphon, such as is generally used, to be insufficient, applied a Bunsen aspirator to its outer end; and Connell (*Annals of Surgery*, V, XXXVII, p. 886) imitated him with a somewhat similar apparatus. These tubes have in reality a discharging capacity much above the normal—hence a strong aspirating force that results in drawing the bladder mucosa toward the opening of the tube. True this shortcoming has been recognized, but attention has been directed to the faulty suction of the mouth of the tube rather than to the cause of it. Guyon, with some show of rationality, applied two tubes; Trendelenburg used a T-shaped tube, and Bodinex modified this by extending that part of the tube which projects into the bladder at least $4\frac{1}{2}$ inches beyond the cross-piece. But unless the aspiration power is reduced to a minimum, the mucosa loosely lining the bladder is easily sucked in by any opening or openings, however placed on the tube, whether it be long or short. The result is that the bladder gets filled up with urine which then filters between the tube and the wound, and it is only when the tension becomes excessive that the aspirated mucosa is pushed off, but too late to prevent infiltration of urine.

If the wound has been left wide open and the inner opening of the tube has missed the bladder wall, the syphon is apt to suck up air, and this having penetrated the tube there is no more syphon action, and the tube works merely as a drain. It is evident then that the urine will filter through the wound by capillarity, until there is sufficient pressure again in the bladder to force the liquid through the upper curvature of the tube.

Dr. Cathcart's apparatus for intermittent syphonage, improved and introduced into this country by Dr. Dawbarn (*Annals of Surgery*, April, 1896), while working on a different principle as regards the penetration of air, does not overcome the difficulty in respect to the sucking in of the mucosa. The moment the overfilled loop puts the apparatus into action it exerts a great aspirating power similar to any other syphon, resulting in the suction of the mucosa into the inner or bladder end of the tube. Air being thus prevented from entering the apparatus, this steadily draws in the mucosa, and the urine finds its way out through the wound.

In 1895 I pointed out all the difficulties in bladder drainage, giving hints for the construction of a good syphon (*Rif Med.*, 1895, Vol. IV, p. 771). The result was the adoption of a hypogastric syphon which has given satisfactory results in this country and abroad. One of its main features is a collapsible balloon which is introduced into the bladder, and another is the great difference in size between the external and the internal openings of the tube which causes the urine to come out by drops, prevents air from entering the

bladder, and the instrument works steadily and constantly, imitating the action of the ureters. A full description of it can be found in *Atti della R. Accad. Med. Chir. di Napoli*, 1897, p. 361; in *Annales des Malad. Org. Gen.-Urin.*, 1898, p. 734; and in *Transact. of Amer. Med. Assoc.*, Sect. on Surg. and Anat. 1902, p. 308.

I generally sew up the bladder with a few Lembert stitches, putting in apposition those parts of the wound not occupied by the tube, and I am careful to have it fit loosely in order to avoid necrosis from pressure. The abdomen is then closed, and as a still further precaution I leave a catgut drain in the lower corner of the abdominal wound. The dressing being always perfectly dry does not need to be changed. The patient feels comfortable if not disturbed, and were it not for the syphon which needs to be watched, he would require no attention whatsoever. As to bladder irrigation I practice none, unless urgently needed; absolute rest of the tissues being the best means at our disposal to enhance the healing process.

The syphon needs not to remain *in situ* more than three or four days. This is a point to which I have always given particular attention. As soon as granulations are formed it is necessary to remove it. Delay would cause necrosis of the tissues surrounding the tube and greatly retard the healing process, while after removal of the syphon at the proper time the healing process is very active. Indeed, I have seen patients urinate through the urethra the very first day after the bladder was freed from the instrument.

I have so far seen no complications arising from the wound itself by this method of drainage, which I would call real syphonage, so that my patients are generally dismissed within two weeks after the operation. My last case, a very debilitated young man of twenty, who had been a weakling all his life on account the presence of two oxalate calculi in his bladder since childhood, was passing all his urine through the urethra the ninth day after the operation and left the hospital on the 20th day.

In conclusion I may state that:

(a) Primary closure of the wound in suprapubic cystotomy is very unreliable, although there are a few cases in which it may be used with fairly good chances of success.

(b) Syphonage is the safest plan to adopt in suprapubic cystotomy. Properly employed it can reduce the after-treatment to a week or ten days. *The International Journal of Surgery*.

OBSTETRICS AND GYNÆCOLOGY.

On the Treatment of Advanced Cases of Extra-Uterine Pregnancy.

BY

JOHN W. TAYLOR, M.Sc., F.R.C.S.,

Professor of Gynæcology, Birmingham University; Senior In-patient Surgeon, Birmingham and Midland Hospital for Women.

The Editor has asked me to write on the treatment of advanced cases of extra-uterine pregnancy. The subject is of great interest both theoretically and practically, but whether it will continue to maintain its practical interest may be doubtful. Nearly all the cases of advanced ectopic gestation present, on careful inquiry, the history of some crisis of secondary invasion from the tube, and as the knowledge of extra-uterine pregnancy extends, and the method of its successful diagnosis becomes better appreciated so the earlier stages of the condition, and such periods of crisis will become more certainly recognized, and the cases in which they occur will be submitted to an earlier treatment. This will on the whole be a gain to the community. There can be no doubt, I think, that life will be saved and suffering avoided by early operation in all cases of active ectopic gestation; but whether early operation in all such cases will be a gain to the sciences of pathology and surgery, may perhaps be open to question.

It is still of great importance to obtain extended and accurate information regarding the exact conditions found before and during operation in every case of advanced extra-uterine pregnancy, especially in cases operated on at "term," for there are at least two points, if not more, in which our knowledge is at present defective. One of these points is that of the value of the extra-uterine child. This, we might think, had been for ever determined by the classical table of Mr. Bland-Sutton (last published in the new "System of Gynæcology," p. 639*), but the number of cases available for tabulation is (as yet) too small, and the cases themselves are too "mixed" in character to warrant any certain and final conclusion. The children of abdominal or rather tubo-abdominal pregnancies, lying, as they do, exposed to the direct pressure of bony prominences, are almost always malformed and defective, but we are by no means certain that this is the case, or to anything like the same extent, with "ligamentary" children.

Children, the result of tubo-ligamentary or purely tubal pregnancies, though specially adapted for operative delivery at "term," have hitherto usually escaped diagnosis as extra-uterine until all chance of saving the life of the child has

* My own case in this table, I have always thought, should have been tabulated rather differently. The placenta is said to have been left. It was removed twelve days after the removal of the child.

been lost. So that, unless it were possible to judge what should have happened if they had been removed at "term," the value of the life of the "ligamentary" child must be regarded as still uncertain.

Many of the dead children which have been removed afterwards, show as for as one can judge, a formation and development quite equal to those of intra-uterine pregnancies, and worthy of every effort for successful delivery at "term."

This brings me to my second point, which is closely bound up with the question of operative treatment. This is the obviously defective character of our general professional diagnostic power in these cases advanced ligamentary pregnancy. The way in which case after case has been allowed to slip through the fingers of the surgeon until the child is dead, is both remarkable and humiliating. For proof of this one has only to turn to the *Journal of Obstetrics and Gynæcology of the British Empire* for June last. Here we find the records of six cases of intra-ligamentary pregnancy (viz., three cases reported by Reed and one case each by Haagn, Marsh and Maclean) and one case of purely tubal pregnancy (reported by Olshausen), all these cases having been allowed to drift until the child was dead. This is the more deplorable, because these are the very cases, as I pointed out several years ago, in which I believe no extensive or dangerous operation is needed in order to save the life of both mother and child. A simple incision into the sac, sometimes without opening the peritoneum at all, suffices for the delivery of the child, and if drainage be established by bringing the cord out of a dependent opening, the placenta may be left to itself. Sometimes, as in purely tubal pregnancies, or in broad ligament pregnancies approaching this type, the whole sac may be extirpated as easily as an ovarian tumour, but in all other cases (save those of acute rupture) the simple treatment I have indicated will probably suffice at every stage after the child is viable.

What, then, should be the rule of practice in advanced tubo-ligamentary pregnancy?

(1) The operation should essentially be one at (or about), "term"—as in Cæsarian section,—and a combined effort should be made by both general practitioner and operating surgeon to obtain a sufficient number of cases, so that we may finally determine the value of the life of the "ligamentary" child.

(2) The method of interference must vary, I think, according to the peritoneal displacement occasioned by the pregnancy. When the displacement is "anterior"—the peritoneum being lifted from the abdominal wall in front—an inguinal incision on the outer side of the rectus muscle may open the sac subperitoneally, but whether this be chosen for the site of delivery or not, an incision in the middle line will usually be necessary in order to determine the exact situation and relations of the pregnancy. When the sac is clearly defined, it is opened, the child is removed, and if the placenta be "quick," the sac

is drained through the original opening. If the operation be necessary after term, the placenta may be removable.

When the displacement is "posterior"—the peritoneum being lifted from the rectum and sacrum behind—the question of vaginal operation may sometimes need consideration. In this condition the foetus is behind and a little to one side of the uterus, (between this and the rectum); and the lower pole of the pregnancy is, or should be, very accessible to digital examination by the rectum. This form of pregnancy—"retro-peritoneal"—if allowed to drift beyond term, always becomes septic from rectal infection, so that it is doubly important in such a case to recognize the condition and to operate, if possible before the foetus dies.* So long as the child is living, there is but little or no danger of infection; as soon as the child dies, every day's delay increases the danger. Not only are fæcal fistulæ liable to be formed between the rectum and the sac of pregnancy, but in more than one instance the child has actually been born "per anum" by means of such an opening between the sac and the rectum (*Journ. of Obstet. and Gynecol.*, 1906, p. 438). Obviously, if such an operation may be carried out successfully by the "vis medicatrix naturæ," a much better operation may be carried out by means of posterior colpotomy in the hands of an experienced surgeon. In a suitable case the patient should be prepared for vaginal section in the usual way, and the sac of the pregnancy be opened freely, by scissors, from the vaginal vault behind the uterus. If extraction be considered possible by this method, further space should be obtained by stretching with the fingers rather than by extensive incision, for fear of injury to the probably displaced ureters. The head of the fœtus should be brought down gently into the vagina and the foetus removed almost as in normal parturition. The sac may be douched with a weak iodide of mercury solution, and in case of a "quick" placenta, the cord is tied and cut off near the summit of the vagina, the incision around it being temporarily packed with iodoform gauze.

This procedure is quite possible (and has been carried out successfully) in a retro-peritoneal pregnancy which is not fully advanced. In a pregnancy at "term" it may be wiser to use the combined method. After opening the sac from the vagina, and establishing the relations of the pregnancy by direct examination of the interior of the sac, the child is removed by an abdominal section and intraperitoneal incision of the sac. The cord, if the placenta be "quick," is brought out through the vaginal incision, and the abdominal incisions are absolutely and separately closed (as in Cæsarian section), or, if time be of importance, they may sometimes be closed together.

The treatment, then, of an advanced ligamentary pregnancy, may be regarded—on paper—as comparatively simple. If the child be living, the ideal

*Is not a careful rectal examination the usually neglected means which might lead to a successful diagnosis?

operation is the operation at "term," and when extirpation of the whole pregnancy and sac can be cleanly and satisfactorily accomplished, this is the operation of election. In all other cases dependent drainage of the sac is most advisable: *without* placental interference when the placenta is "quick," as at "term"; *with* removal of the placenta when this is over time and easily detachable.

The one real danger of operation in the retro-peritoneal variety is that of precipitation or enlargement of some communication between the rectum and the sac. The tissue or line of demarcation between the two may be extremely thin and easily broken. It is therefore much better to remove the child gently by abdominal section than to run any serious risk of tearing the rectum by forcible extraction from the vagina.

It is the opportunity and ability for making a successful diagnosis which must mainly govern the treatment of this form of pregnancy.

Operation at term must depend on diagnostic skill, or, at all events, on diagnostic suspicion. In cases where the condition is doubtful, even after careful and skilled investigation, help may be gained, as has been recently suggested (Lichtenstein), by the use of the Röntgen rays.

The ideal treatment of an advanced case of tubo-abdominal pregnancy is much more open to question. The whole of the pregnancy is, in this case, lying open in the abdomen. There is no sac save the flimsy remains of the amnion, nothing which can be sutured or closed around the placenta so as to shut this off from the peritoneal cavity, and no easy or rough operation is at all likely to be followed by success.

Happily in this form of pregnancy there is more often time for preparation, for there is much less difficulty in diagnosis. In many cases the child may be almost seen through the loose abdominal walls and, as the liquor amnii is usually deficient, the foetus can be palpated with astonishing precision and facility. There can therefore be no doubt as to the pregnancy and a careful bi-manual examination of the uterus should be quite sufficient to determine that the pregnancy must be extra-uterine. If necessary, as the pregnancy approaches "term," the diagnosis may be confirmed by the passage of the uterine sound and measurement of the cavity of the uterus. Both patient and doctor are much more likely to suspect abnormality in this form of pregnancy than in the ligamentary form, when both are well advanced, so that not only the necessity for operation, but the date and method of it may very probably be considered and determined some time before there is any urgent necessity for its performance. When should be the date of it? The life of the "abdominal" child, as we have already seen, appears to be comparatively valueless and, if it can be proved that the life of the mother is decidedly guarded by allowing the pregnancy to drift until quiescent, it may be justifiable to sacrifice the life of the child for the sake of the greater safety of the mother.

But I am very much inclined to think that this is quite uncalled for, and that, again, the ideal operation is the operation at "term." With all the facilities for a correct diagnosis at our command, there is still a possibility that a purely tubal pregnancy—like those of Tait and Amos—might be mistaken as abdominal and the life of a child be needlessly sacrificed when the whole pregnancy (including both child and placenta) could be removed as easily as a simple ovarian cyst and with perfect safety. But, apart from this, any good, aseptic surgeon, I think, who really grasps the pathology of this form of pregnancy and particularly—in spite of its variable relations—the constant deep blood-supply of the placenta, will not readily be deterred by any fear of hæmorrhage or difficulty from attempting to save both mother and child. So that here, as in "ligamentary" pregnancy, I recommend operation at "term."

Then, as to the method of it: no preparation or care can be too particular. An aseptic theatre, every convenience for aseptic work, a perfect light and skilled assistance; all may be needed and should, if possible, be at the operator's disposal. As I have already noticed, the placenta in abdominal pregnancy cannot be fully isolated from the rest of the abdomen except by removal, and, when "quick," the method of its treatment is the "crux" of the operation—the point on which everything depends. Up to the present time, in only one case, I believe, has it been retained without giving rise to trouble; so that it is far more important to remove the placenta in the abdominal than in the ligamentary pregnancy.

Two forms of the placenta in this pregnancy have been recognized and described; one may be called the "ball-like," and is nearly covered everywhere by amniotic reflexion; the other is the "discoid," and has only one surface free from vascular attachments. These forms are fully described and the method of their production explained in my book on Extra-uterine Pregnancy (pp. 89 and 90), but they have scarcely perhaps received the attention they deserve as governing the method of treatment to be adopted in each case. The ball-like placenta can generally be removed with safety, the discoid cannot.

Whatever accessory vessels from the omentum or mesentery or intestine or abdominal wall may contribute to the blood supply of the placenta and need separate and detailed ligature and division, the main supply comes from the remains of the Fallopian tube and broad ligament beneath it and therefore from enlarged branches of the ovarian and uterine vessels of the side affected. In the ball-like placenta these can be secured by tilting up the placenta and clamping the infundibulo-pelvic and uterine ends of the broad ligament before removal. In the discoid placenta, where there is a flat attachment all over the pelvis, this may be impossible. Then, although I have not as yet had the opportunity to try them, two methods strike me as possibly affording a solution of the difficulty:—

(1) All the vessels of the uterine side of the placenta may be secured by vaginal incision before removing the placenta, leaving only the ovarian vessels to be attended to afterwards; or,

(2) With our present experience in aseptic operative work the child and cord should be removed so cleanly and so neatly and the operation-field afterwards be so securely closed above the (retained) placenta that this is left in no worse condition than the after-brith of an extra-uterine pregnancy which has gone over-time. This, in favourable cases, as we know, is gradually and painlessly absorbed.

If the latter method of treatment be attempted, I would clamp the cord as closely as possible to the placenta, divide it with the cautery (without the use of any ligature if possible) and wash out the space where the child has been with a weak solution of the red iodide of mercury before hermetically closing the abdomen. In this case there must, of course, be no drainage, but the asepticity of the operation must be perfect.

The successful treatment, then, of advanced tubo-abdominal pregnancy, though as yet still unsettled, must be regarded as depending much more on operative than on diagnostic skill and experience. What is needed for the ideal operation is an accurate knowledge of the pathology of the abdominal placenta, ingenuity in securing its blood-supply if the "quick" placenta be removed, and perfect asepsis if the placenta be retained.—*The Journal of Obstetrics and Gynaecology.*

Fibroid Disease of the Uterus and Its Treatment.

BY

ALBAN H. G. DORAN, F. R. C. S.

Surgeon to the Samaritan Free Hospital, London; Past-President of the Obstetrical Society, London, England.

Fibroid disease of the uterus is important because of its extreme frequency, its nature and its treatment. Its frequency is admitted by all, and its nature is well known, yet we cannot say that medical science has settled its treatment. Long before the present era fibroid disease was recognized, whilst even at the present day it is not rarely detected for the first time on the *post-mortem* table, having produced no symptoms. Some women lay no stress on abdominal swellings, not always to their own disadvantage as far as this particular affection is concerned. The frequent inoccuity of fibroids must be remembered.

The nature of the disease is not simple, and clinical experience shows that it is much more complicated than was once believed. A uterine fibroid, according to the pathologist, is a fibro-myoma developed in the uterus, essentially an innocent tumor. The pathogenesis is uncertain, but there is reason to suspect that it is related to changes in the muscular coat of arteries, even beyond the limits of the uterus, and cardiac lesions have been noted in relation to fibroids in cases where the tumor could not embarrass the circulation by mechanical or septic agencies. The pathologist, however, declines to guarantee the absolute innocence of a fibro-myoma. Coincidence of uterine carcinoma and sarcoma are known, but where neither of these new growths exist, certain glandular elements, representing vestigial relics, may be found in the substances of the fibro-myoma itself. Such elements would explain carcinomatous degeneration of a fibroid. Sarcoma may certainly develop in a fibro-myoma. I have examined a typical case and a second where I operated was detected by Dr. Cuthbert Lockyer, one of my colleagues. I must add, however, that these are the only instances of malignant degeneration of a fibro-myoma which have been observed in the Samaritan Free Hospital for the last thirty years. I shall presently speak of the experience of others. Most assuredly the chances of this complication are so small that its possibility must never be brought forward as a plea for operative interference; although in circumstances where it is probable such a fibro should be held decisive.

Fibroid disease, however, means much more than the development of a fibro-myoma in the uterus. It bears certain homologies to innocent tumors clinically malignant in other parts, whilst in some respects this disease is unique. We all know how it may be divided into three classes, based on the original position of the tumor, subserous, interstitial and sub-mucous; that it may develop in the cervix and invade, the broad ligament, and that it is liable to several well-known complications, hemorrhage, necrosis and pressure effects being the most important. These are clinical common places which I need not discuss systematically, although I may have occasion to refer to them presently.

Assuredly we know much about this very common disease, yet I do not think that we can feel confident about treatment. Nevertheless, our experience teaches us that when active measures are indicated hysterectomy is the most satisfactory.

Obstinate menorrhagia is a distinct indication, so is necrosis or necrobiosis, and so is pressure on adjacent structures. The fact that a tumor exists is highly irksome to many women. Hysterectomy has become so

safe that it is quite justifiable when the patient is young and the tumor is increasing in size, although other complications may be absent.

Removal of the uterus is, however, in any case a serious measure; an "extremity," as I have heard it rightly called rather than a "step" or a "measure." The most obvious suggestion to the practical mind is the removal of the fibro-myoma alone, the uterus being saved. When practicable and fairly safe this operation, myomectomy, should be preferred. I have twice undertaken it in pregnant woman where a sessile, subserous fibroid growth from the lower segment of the uterus, threatening to obstruct labor. Labor occurred at term in both cases; the operation was done about the fourth month in each. Myomectomy is not, however always practicable, and it is difficult and never without danger, as ligatures and without sutures have to be applied to the treacherous tissue of the uterine walls. It is most likely to prove a permanent success when the fibroid is solitary. The enucleation of multiple fibroids is too much of a fancy operation, about which experts may boast. All gynecologists are not experts, and those who cannot make sure that they have effected a cure, even when they have picked a score of fibro-myomas out of a single uterus. In such a case the tendency to development of this class of new growth is high, and a single nodule left behind, might frustrate the aim of the operator.

I admit that it is not easy to trace cases, especially hospital patients still it is necessary to do so in order to gain an accurate estimate of the value of any operation for the relief of uterine fibroid disease. I have recently published a report of sixty cases, with tables, which will be found in the forty-seventh volume of the "Transactions of the Obstetrical Society of London," and I shall presently speak of some interesting evidence which I gained by following up these sixty cases of subtotal hysterectomy.

The truth remains that the sacrifice of the fibroid uterus is sometimes necessary. Hysterectomy, when properly performed, is highly successful, and the mortality may be very low. On the other hand, just as in myomectomy, we must seek for permanent success. I am forced to admit that, judging from after-histories of cases in my own surgical practice, certain results unpleasant to the patient may follow hysterectomy; results which may not appear until long after the operation. We must, therefore, endeavor to learn how these results may be counteracted. To that end we must first consider certain pertinent questions in relation to the appendages and the endometrium, and secondly, we must follow up every operation and avoid reporting any one case as satisfactory unless it has fared well for at least two years after the operation.

The Uterine Appendages.—When removing a uterus the management of the fallopian tubes and ovaries is no trifling matter. They are not rarely the seat of inflammatory disease, and in that case it is not safe to leave them behind. Immediate danger will follow the saving of a pyosalpinx or a suppurating cavity and ligatures passing through inflamed fibroid ligament are prone to become infected. Coincident, cystic disease of the ovaries, of course indicates that they should be amputated. The changes of bad results in any one case of hysterectomy, where the appendages are taken away entire, are, after all, slight. In exceptional circumstances, as when the patient is unusually young or distinctly neurotic, it is advisable to leave some ovarian tissue, even when both fallopian tubes require complete removal. This step is rarely impracticable. Granted that the ovaries be healthy they should decidedly be preserved.

The Endometrium.—The mucous membrane of the uterus or endometrium is now known to play an important part in a woman's physiology though it is not certain what its precise powers and limitations may be. During each menstrual cycle its tissues undergo marked changes, and after impregnation yet more remarkable developments ensue. Menstruation and pregnancy influence the general system. The ovaries have much to do with this influence, no doubt, but the endometrium does more than flood and cast its epithelium. We know how it is modified in pregnancy, but that is not all; for it is now believed, on good grounds, to be a secreting agent. Much light has been thrown on this subject by Mr. C. J. Bond, of Leicester, England. His recent essays, based on experiments performed by Sir Victor Horsley, bearing the title "An Inquiry Into Some Points in Uterine and Ovarian Physiology and Pathology in Rabbits," will be found in the *British Medical Journal* for July 21, 1906. In the rabbit, when not in rut, the endometrium appears to secrete a saline watery fluid, of low specific gravity, containing a large amount of chloride of sodium in solution. There is some antagonism between this endometric function or saline secretion and that portion of the internal secretion of the ovary specially concerned in producing pro-œstrous changes in the endometrium preparatory to the imbedding of fertilized ova. The same portion, as Mr. Bond terms it, of the internal secretion of the ovary, is associated with the growth of corpora lutea. The fact that the corpus luteum is no more evidence of degeneration, but a secreting agent of some importance, has been known for some time.

The endometrium, then, clearly counts for something in the woman's economy. *Lepus* is not *homo*, but both are mammals, and woman, like the

rabbit, has ova, graafian follicles and endometrium. We must, therefore, conclude that the endometrium is a secreting agent in each species, and that its functions are balanced somehow with those of the ovary.

If we turn from these deep physiological theories to surgical experience, we find that the latter supports Mr. Bond's views, an important fact in regard to the welfare of women with fibroid. In 1899, Professor Zweifel announced before a learned society that Abel had followed up his series of cases of consecutive sub-total hysterectomies and found that when the body of the uterus was amputated entire, the knife passing below the os internum and if at the same time the ovaries were saved, these organs always atrophied, so that within three years troublesome menopause symptoms set in, just as is often observed after removal of both ovaries. In fact, if all the endometrium be removed the saving of ovaries or ovarian tissue will entail but little benefit. Abel further records a very important experience. In three cases under his observation the knife had passed above the os internum; that is to say, a portion of the endometrium was saved. All the patients continued to menstruate and were free from distressing neuroses.

My own experience supports directly what I may call the Abel-Zweifel theory, and indirectly Bond's theory, that the endometrium is a secreting organ with functions balancing those of the ovary. In twenty-six of the cases of "subtotal" hysterectomy, followed up for over two years, one ovary was saved. In eight the catamenia were regular for a longer or shorter period after operation, the patient remaining free from menopause symptoms. In seven out of the eight I had purposely amputated the fibroid uterus above the level of the os internum. In six other cases I saved both ovaries, in three the catamenia continued regular; in two out of these three I had amputated above the os internum; that is to say, the endometrium was left behind. I must admit that in other cases where some endometrium was spared in this manner the period became irregular, or never reappeared. The endometrium, very probably, had been damaged during the operation, or yet more probably destroyed during the cicatrization of the uterine stump. In these apparent failures, again, it may be the ovaries and not the endometrium which fail to abort a strong menopause.

Turning to twenty-eight cases where I removed both ovaries, for various reasons not to the point at present, very severe symptoms ensued in no less than ten. Distinct but mild neuroses were noted in nine. In six the menopause was as complete as in the preceding nineteen, but without symptoms. There remain three cases, and in these the period

was neither immediate nor complete, although both ovaries had been extirpated; in two, at least, of these three I left some endometrium, amputating above the level of the os internum.

I have said enough to show that the endometrium must be taken into account for physiological reasons. A good series of after-histories of panhysterectomies for fibroid, where the entire endometrium is of necessity sacrificed, would be of interest, but I have not, as yet come across such a series.

All sides of the question must be taken into account, I admit. We lack evidence about the effects of panhysterectomy, but whilst the preservation of endometrium in "subtotal" hysterectomy is, in my experience, beneficial in the long run, it involves the leaving behind of a big stump, so that convalescence is apt to be retarded. Hence, when operating on an elderly subject, I do not scruple to amputate low down, below the level of the internal os.

Granting that it be advisable to amputate through the cervix, if we ignore the Abel-Zweifel theory, the supporters of panhysterectomy may ask why we should not remove the cervix, altogether. The answer is that without doubt that step involves much weakening of the pelvic floor; indeed, I know of two cases where a troublesome hernial pouch developed, protruding at the vulva. Panhysterectomy, again, takes much longer than the sub-total operation. It is difficult and dangerous when the fibro-myoma has invaded the adjacent peritoneal folds, unless the operator be experienced as well as skillful.

The panhysterectomists, however, claim one great point in their favor. The cervix, when saved, may become the seat of malignant degeneration. If this after-result were common it would be a most definite argument in favor of the total removal of the fibroid uterus; if not frequent the surgeon would not be justified in sacrificing the cervix on the chance of its becoming diseased. Much has been written about cancer of the stump, but I find that the evidence that it is frequent is not convincing. Lawers, of Brussels, stated in 1903 that various writers had hunted over long, statistical tables and numerous clinical reports, yet only succeeded in detecting about ten cases. Rishelot made out twenty-five reports of cancerous degeneration of the stump, working up until 1905. We cannot, however, rely on many isolated reports, as cancer of the stump at the time of the hysterectomy may be overlooked. The result could not fairly be included in a series of reports of cancerous degeneration after operation. We must not conclude that a formidable looking change in a stump, quite healthy when it was severed from a fibroid uterus, is certainly malignant.

Henrotin (*Amer. Jour. Obst.*, July, 1906, page 79) removed a bleeding, granulating stump two years after hysterectomy, for diseased appendages. The stump was carefully examined and found to be quite free from malignant elements. This interesting record suggests that inflammatory granulations on stumps may have been mistaken for cancerous tissue. Henrotin's patient was free from any sign of malignant disease three years after the removal of the stump, while after-histories of other cases reported malignant are not always complete. Considering how freely sub-total hysterectomy is practiced, the complication in question is hardly so frequent as to condemn it.

As I have been attached to a special hospital for nearly thirty years, I will take the liberty of adding to these notes a brief review of the evolution of the treatment of uterine fibroid disease during that space of time. I may be excused if I feel occasionally bound to repeat what I have already observed, and to omit all details about the steps of well-known operations in or out of fashion, and about mortality. In respect to the latter point I have ever found that each operator could show the best results where his experience had been the longest; nevertheless, the older methods have given way to the newer because the patients who survive do better after the more recent operations.

When I joined the Samaritan Free Hospital, in 1877, no satisfactory surgical treatment for uterine fibroid disease was known. The mortality of hysterectomy in the hands of the few experts who attempted it, was very high. Hence it was taught that as a fibroid uterus seldom caused the patient's death it should be left alone. Bleeding fibroids, when the cause of impaired health were rightly held as urgent. A palliative operation was devised by Hegar and Greely, practiced by Lawson Tait and others. We hear but little about it now, although it still has a few advocates. As I have lived to see this procedure come into fashion and then fall into disuse, I will dwell a little upon the subject.

I need hardly say that I am speaking of removal of the ovaries. The aim was ambitious, bleeding was to be stopped but the growth of the tumors was also to be arrested. As an artificial menopause was expected, the more or less speedy disappearance of the fibro-myoma would follow the arrest of its growth.

Unfortunately, it often happened that none of these aims were obtained. The operation itself was not without danger, extreme nervous shock was frequent when the patient was already anemic from loss of blood. In one case under my observation the patient died on the tenth day without any evidence of sepsis, nor was there a trace of hemorrhage from the

uterus or internally from loosened ligatures. I have since removed the uterus in a large number of cases of anemia from fibroid disease, leaving one or both ovaries. Little or no shock ensued. Another danger was thrombosis of pelvic veins, followed by embolism; then slipping of the ligature on the pedicle was not unknown. As the operator desired to remove all ovarian tissue, the pedicle, not hypertrophied as in cases of ovarian cyst, was always short, and sometimes extremely so, hence the frequency of fatal hemorrhages. In some instances the ovary lay flat on the tumor which had opened up the broad ligament. Removal was impossible in most cases of the kind, but bold surgeons sometimes whip-stitched the broad ligament on each side of the ovary, which was gradually cut away, the ligature being drawn firmly so that the edges of the opened-up broad ligament were brought together. The immediate risks of hemorrhage were great. I once saw the late Mr. Knowsley Thornton attempt this maneuver, but the bleeding was uncontrollable, so that he was obliged to remove the uterus by supravaginal amputation, and saved the patient. This operation occurred in about 1880, before the steps of the now familiar method had been formulated by experience. The remote dangers of sewing up the broad ligament in the manner just described were considerable. Big hematomas developed, and as large veins were sometimes transfixed deadly results ensued. In consequence of these experiences I never practiced this suturing of the broad ligament.

The next objection was frequent failure in removing both ovaries, owing to their position, or to the opening up of broad ligament to an extreme extent. Most commonly, however, the operator left some ovarian tissue behind. The ovarian ligament is in many subjects, extremely short, so that extirpation of the entire ovary is impossible, and I found, in some instances, a piece of detached ovarian tissue in the ovarian ligament close to the uterus.

The results of these imperfect operations were remarkable. Without doubt many failed because ovarian tissue was left behind, but I can also testify that in other cases where the ovaries were imperfectly removed the aims of the operator were attained, the tumors diminishing in size and the hemorrhage ceasing. It was laid down as a law that removal of the ovaries was useless when the fibroid lay in the lower segment of the uterus or in the cervix, yet I have had perfect results in more than one case where the tumor involved the cervix. In one patient where I operated the tumor was steadily diminished in size, yet the menorrhagia continued and neuroses developed soon after the operation. At the end of ten years the patient saw the period three or four times yearly, and suf-

fered from flushings. She was then forty-eight years old. The majority of patients did well for a year or so, then the bleeding returned or the tumor continued to grow. In performing a hysterectomy in a case where oophorectomy had failed, I detected a small flat button of ovarian tissue lying on the stump of the tube against the corner of the uterus. I have said enough to show that this operation was unsatisfactory.

I will not dwell long on the electrical treatment of fibroids. It has its supporters still. Dr. Thoms Keith maintained that it put a patient subject to uterine fibroid with troublesome symptoms in the position of a patient subject to uterine fibroid without troublesome symptoms. This great surgeon did not profess to be able to reduce the bulk of the tumor to any appreciable extent, although that desirable result occasionally followed his treatment. In my experience electric methods are as uncertain as oophorectomy; indeed, I suspect that in either, success, when attained, is due to some factor not yet understood. Circulatory disturbances must be taken into account. The electric treatment may keep back the growth of the tumor till the menopause, but I have twice removed a fibroid after prejudicial changes had followed that treatment.

The patient wishes to get rid of her tumor; the methods just mentioned seldom effect that object. Removal is new, satisfactory and safe, so that hysterectomy is the right treatment when a fibroid is otherwise than small and passive. When it is so, we must watch and wait, when otherwise we should operate; above all where there is hemorrhage or invasion of the cervix or broad ligaments. Delay under these circumstances means almost certain increase in the dangers of operation.

Supravaginal hysterectomy with extra peritoneal treatment of the stump, was the first radical method to come into vogue. The Serrencead, or elastic ligature, was applied to the cervix, and the uterus amputated above it. The patient suffered tortures for many hours after the operation, and the cicatrization of the stump and lower part of the wound was slow, hernia often developing. The sloughing process sometimes descended below the level of the constructing agent, then fatal peritonitis usually followed. I have also seen wide-spreading suppuration of the deeper layers of the abdominal parietes with opening up of the abdominal incision anterior to the peritoneum. The extraperitoneal operation was hardly practicable when the tumor invaded the broad ligament to any extent.

The dread of hemorrhage from the uterine vessels and sloughing of the stump deterred surgeons from the intraperitoneal operation until the

experience of a few bold operators showed how these perils might be averted. Nearly twenty years ago Sir Frederick Treves said, at a meeting of the Medical Society of London, that the fibroid uterus should be removed by a flap amputation; that is a true definition of subtotal hysterectomy. Howard Kelly also improved the operation by taking the principles of general surgery into account. It is now performed with great success by many operators.

In conclusion, I consider, after some experience in the evolution of the active surgical treatment of uterine fibroid disease, that it is best to watch and wait in all cases where there are no symptoms besides the presence of the tumor, especially when its situation would not be likely to obstruct labor. When certain well-known symptoms (including steady growth) are present myomectomy is indicated when safe as well as clearly practicable. When, as is the rule, the tumor alone cannot be safely and conveniently excised, subtotal hysterectomy with certain precautions on which I have dwelt, seems, according to our present knowledge, the most satisfactory way of dealing with the fibroid uterus.—*The Medical Brief.*

THERAPEUTICS.

Neuronal.

By

Prof. Dr. HERMANN WENDELSTADT,
of the Pharmacological Institute, Bonn.*

In a lecture at a meeting of the Deutsche Verein für Psychiatrie, held at Gottingen in 1904, E. Schultze drew attention to a hypnotic discovered by himself and G. Fuchs. The lecturer stated how theoretical considerations led to the synthetical production of the remedy. The new remedy, called "Neuronal," is bromdiethylacetamide, a crystalline substance melting at 66° to 67° C. without decomposition, and is readily soluble in ether, benzol, alcohol, oil and other organic solvents. In water it dissolves in the proportion of 1:115 parts. The taste is somewhat musty, with a bitter after-taste. From trials on animals made by the discoverers very favourable hypnotic effects were obtained. I experimented for verification and equally good results were shown. In a small dog or rabbit given *per os* or hypodermically 2 grms. of Neuronal after fifteen to twenty minutes a profound quiet sleep ensues, lasting for several hours. On waking, the animals do not exhibit any discomfort, and show

* Translated for THE THERAPIST from the Medizinische Klinik Wochenschrift für praktische Aerzte.

immediate signs of appetite. I observed (by means of a gas meter) the depth of respiration during the action of Neuronal in the case of a "tracheotomized" rabbit, and found it to decrease, and the air volume exhaled during the sleep to be most equal to that exhaled during the wakeful state; there certainly was no abnormal diminution. Neuronal did not exert an unfavourable influence on the blood-pressure, which was observed by a manometer connected with the carotis of a rabbit. The doses employed, viz, 2 grms., were very large for animals weighing about 1 kilog. (2½ lbs.), and any injurious effect would have been manifested. During sleep after Neuronal a slight fall in temperature ensues, not exceeding, however, 1° to 2° C. This fact has repeatedly been ascertained by me in both man and animals.

No injurious effects were shown in the numerous experiments made on animals by Fuchs and Schultze, nor in my experiments for verification.

In man, Neuronal has proved to be a good hypnotic. It produces a dreamless and refreshing sleep, the patients awaking refreshed and without experiencing any disagreeable after-effects. With doses of 1 to 1.5 grm. the sleep generally lasts without interruption throughout the night. Smaller quantities, 0.5 to 1 grm., prove ineffective in some cases, whereas 1.5 to 2 grms. produce the desired result. As a rule, it acts after twenty to thirty minutes. The dose of 1.5 to 2 grms. apparently does not entail any danger, as doses up to 4 grms. have agreed well with the patients. "The most valuable property of Neuronal consists in that it is highly nontoxic." Cumulative effects have not been observed, but a diminution of the hypnotic effect after protracted use has been noted. According to my experience, the remedy may be suspended after prolonged use without phenomena of abstinence being noticed. Artarit, who speaks highly of Neuronal as an agreeable and innocuous hypnotic, expresses himself to the same effect. As compared with veronal, larger doses of Neuronal have to be given in order to produce the same effect. Neuronal is not a very strong narcotic. Owing to its agreeable effect and apparent innocuousness, it will doubtless secure a position in the therapy of sleeplessness.

The amount (41 per cent.) of bromine contained in the preparation suggested the idea that it might prove serviceable in epileptic cases. Siebert, Stroux (*l.c.*) K. Schulze (*l.c.*), Maas, Euler, and Rixen observed it to exert a favourable influence on epileptic patients. In the case of restless, mentally deranged patients it seems to be equally efficacious.

In cases of headache I repeatedly observed even small doses to produce alleviation. The effect cannot be thoroughly relied on but it was clearly manifest in several instances. Here doses of 0.5 grm. apparently

suffice. I also employed the remedy with good results in patients subject to frequent attacks of coughing. To give relief in such cases small doses of 0.1 grm., in the form of tablets or pills, were taken repeatedly during the day, so that till the evening about 1.5 grm. had been administered. A quiet sleep frequently ensued at night. In respect of cough, the remedy may prove infective at times, but it seems, to deserve a trial.

L. Bleibtreu employed Neuronal tentatively in a number of diseases. He was satisfied with the results obtained in sleeplessness, neuralgia, muscular rheumatism, in cough and dyspnoea due to chronic nephritis, in the case of restless apoplectic patients, and in chorea minor. In patients affected by cough and phthisis in an advanced stage the effect was absent, but in slight cases he found abatement of the cough.

As after-effects, vomiting, without injurious consequences, was observed by Stroux (*l.c.*) and Becker, and congestion of the brain. Owing to those phenomena I had to suspend the use of the remedy in one case. If Neuronal gives rise to an increased supply of blood to the cerebral vessels, it might possibly be found serviceable as a remedy for sea-sickness.

C. Binz attributes the conditions in sea-sickness to a form of cerebral anæmia, caused by the unaccustomed irritation on the brain, due to rocking. For this reason, chloral hydrate, which also gives rise to hyperæmia of the brain, produces a favourable result in many cases of sea-sickness. It may be advisable to make trials with Neuronal in this direction.

A case of death during Neuronal medication was observed by Weifenbach but, apparently Neuronal can hardly be held responsible. Weifenbach writes: "In forming an opinion on the toxic after-effects of Neuronal, much stress ought certainly not be laid on this case, seeing that, on account of the severe infection of the intestine, it was impossible to determine exactly the limits of the effect attributable to medicaments." In another passage he accentuates the fact that the after effects of Neuronal—in contradistinction to other narcotics—after suspending the use of the remedy generally disappear in a very short time, without causing injurious consequences to the organism. As an after-effect, Weifenbach considers "the exertion of a distinct influence on the motor functions similar to that observed in the case of sulphonal, trional and veronal." Some of the patients referred to in his paper were given large doses. In his summary Weifenbach calls Neuronal a very serviceable hypnotic, in doses of 1 to 2 grms., for cases of non-complicated sleeplessness and states of excitation of mentally deranged patients, and in gene-

ral he attributes to it a good sedative effect when given in doses of 0.1 grm., three times daily.

In summarizing the experience of other authors and my own regarding Neuronal, I think that the new remedy is a good, hypnotic, with an agreeable effect, and but slight by effects of rare occurrence. It is serviceable, moreover, as a sedative. Although a number of good and efficacious hypnotics are at our disposal, still we welcome the introduction of new remedy, apparently innocuous, as a useful addition to the list—*The Therapist*.

Notes on Remedies Old and New.

By

J. DOWLING ALLMAN, M.P.S.

Oleum Betulæ.

This excellent remedy, the volatile oil of Sweet Birch (*Betula lenta*) has recently been introduced into therapeutics, and has now become a popular remedy as a local application in the treatment of sciatica, gout, rheumatism and lumbago.

It is chemically a mentho-methyl-salicylate, which gives off a powerful pine-like odour, and is analgesic, antiseptic, and anti-rheumatic in its therapeutic action.

It is claimed for it by various observant clinicians that one minim absorbed by the skin is converted into sodium salicylate by the lymphatics and is more powerful in its physiological action than any of the salicylates administered by the mouth, and causes no toxic manifestations, such as fulness in the head, with roaring and buzzing in the ears, and no intestinal disturbance to the digestive tract, which so frequently follows the internal doses of the salicylate of sodium.

Salicylate of sodium has of late lost much of its repute as a drug, owing to its unpleasant action in some subjects. For instance, it has been observed by many practitioners that alcoholics when attacked by gout or rheumatism cannot tolerate the drug, owing to its depressant action on the heart, and that in many instances very unfavourable toxic symptoms have followed its use, such as wild delirium, and that it should never be administered where cardiac weakness exists. This may be partly accounted for owing to the impurities of the commercial or synthetical salt, and that if it is continuously administered in cases of acute or chronic rheumatism the physiologically pure sodium salicylate should be used. In order to avoid any of those distressing physiological symptoms the oleum betulæ has come into use, and has been employed with considerable success; and

viewing the continued good reports from numerous clinicians it can now be classed as one of the most useful local applications for the immediate relief of the pain of sciatica, lumbago, and rheumatism, causing a disappearance of the symptoms in a period of from two or three hours. In cases of painful rheumatic nodes or joints, or in sudden attacks of lumbago, about one drachm of the Betulæ Oil rubbed in gives prompt and immediate relief. For the treatment of sciatica, when rubbing is contra-indicated, it is best to sprinkle some of the oil on absorbent cotton wool, lint, flannel, or spongio-piline and apply to the sciatic nerve, and then apply heat, a hot iron, or hot water bottle. This seems to produce an immediate analgesic and slight *en* beficient effect, relieving the agonising pain, and seems by its physiological and therapeutical action to impress the nervous disturbance, breaking up as it were the concentration of nervous forces and calling off the excessive functional manifestations. If the sciatica be of a specific or gouty taint, many practitioners give simultaneously with the use of the Betulæ Oil five grain doses of the iodide of sodium three times daily. This seems to exert a very powerful effect, frequently cutting short an attack that may have been prolonged for months.

For facial neuralgia a small quantity of the oil rubbed over the nerve gives great relief.—*The Medical Times and Hospital Gazette.*

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Original Articles.

* THE SERUM DISEASE.

BY

J. D. ROLLESTON, M.A., M.D., OXON.,
*Assistant Medical Officer at the Grove Fever Hospital of the
Metropolitan Asylums Board, London.*



HE phenomena designated *maladie de serum* in France, *serum krankheit* in Germany, and *malattia di siero* in Italy, have until recently received but comparatively small attention in English-speaking countries.

In spite of the large number of serums that have been introduced for various diseases, the great majority of which are of doubtful value, none have received such universal employment as Behring's antitoxin for diphtheria. It is, therefore for the most part from observations on patients suffering from diphtheria, and from experiments on animals that have been injected with this serum, that a knowledge of the serum disease is to be obtained. Though an enormous amount of laboratory work has been done, the pathology of the condition is still uncertain. The clinical phenomena, however, are very definite, and will alone be considered in the present paper, which is based on observations made on 1,100 diphtheria patients that have come under my care in the course of the last four years. Of this number 1,057 or 96.09 % were injected with antitoxin. The serum in all cases was given subcutaneously. From comparative observations I have not been able to persuade myself that the intravenous method has sufficient advantages to counterbalance the greater risk of the operation and the length of time required to perform it. The symptoms of the disease may be divided into (a) the early, (b) the late.

* Specially contributed to "The Antiseptic."

Among the earliest phenomenon of the serum disease is the activity of the sweat glands. Within a few hours of injection the skin becomes moist, and in well marked cases perspiration may be profuse. This phenomenon will usually be found to coincide with a rapid disappearance of membrane from the throat. In malignant cases of diphtheria, in which the action of serum is delayed, the skin remains dry. This dry condition of the skin is not due to a febrile condition, for in such cases the temperature is often normal or subnormal; associated with the activity of the skin is a condition of sleep or drowsiness to which adults and children are alike subject, which may last for some days after the injection. Diminution in the amount of urine passed is another early symptom, which is often accompanied by activity of the sweat glands. It must be distinguished from that due to the toxins of diphtheria. In the latter case the skin is dry, much albuminuria is usually present, and the general condition is characteristic of toxæmia. The most striking feature of the serum disease is the occurrence of rashes. The skin eruptions that follow the injection of antitoxin are of three kinds, (a) a scarlatiniform type, (b) urticaria, (c) circinate erythema. In addition to these must be mentioned an erythema localised to the site of injection that is liable to occur within the first few days, especially if the injection has been made into the dermis.

Scarlatiniform eruptions following the injection of serum are often the source of great difficulty. Some authorities of considerable experience, such as Marfan, regard them as a modified form of scarlatina. Undoubtedly this is true in a certain number of cases, but that it is not always so, is shown by the fact that when such cases have been removed to a ward for patients suffering from concurrent diphtheria and scarlatina, they have shortly afterwards developed an undoubted attack of scarlet fever. Neither the tongue nor the throat may be typical, the pulse and temperature may remain normal, and there may be no subsequent desquamation. The case may, nevertheless, prove to be scarlet fever, either by the development of some characteristic complication such as nephritis, or by infecting other patients in the same ward. Drowsiness, activity of the sweat glands, local or generalised erythemata, and diminution of the urinary secretion, may thus be regarded as the earliest symptoms of the serum disease. There is now a latent period varying in duration from 1 to 7 or 8 days during which no fresh phenomena are obvious.

The second stage is characterised by the development of urticaria. Almost always, it first appears at the injection site. It may be limited to that spot, or become generalised. It is often associated, especially on the face, hands, feet and prepuce, with considerable œdema. Oedema, however, is a symptom which is most marked when a second injection of

antitoxin is given for a relapse or second attack of diphtheria when the primary injection has been given some weeks or months before. In such cases the latent period is suppressed. Within an hour of injection urticaria may develop at the injection site, and rapidly become generalised. Rigors, vomiting, and collapse may also occur. These alarming symptoms are most likely to arise after a large dose has been given, so that it is well, if possible, to employ small doses in cases of relapse. Apart from the pruritus, which in some cases may amount to a veritable torture, there is no constitutional disturbance at this time. The temperature is seldom raised. It is important to note that albuminuria may occur simultaneously with the eruption of the urticaria, or pre-existent albuminuria may be increased. The total amount of urine passed in the 24 hours may also be somewhat reduced. The duration of urticaria is usually about three or four days, but it is often much longer or much shorter. Sometimes only a single wheal develops, and is followed by no more; on the other hand several fresh crops may come out every day, or, before the rash finally disappears, there may be an interval of one or more days in which no rash is noted. Urticaria is the most common of the skin eruptions following the injection of antitoxin. It occurred in 734, or 65.7% of the present series of cases.

The third stage of the serum disease is not always realised. Usually separated by one or more days from the second, it may sometimes be continuous with it. The most striking feature of this third stage is the development of a rash, at first usually an amorphous erythema, but sometimes circinate from the first, and almost always becoming circinate subsequently. The temperature is usually raised. Malaise and anorexia are present especially in older patients, who are more likely than younger ones and suffer at this time from pains in the joints and muscles. The sub-maxillary and cervical glands, and, to a less extent, the axillary and inguinal, become swollen and painful. Usually there are no phenomena within the throat to account for neck swelling, but occasionally specks may appear on the tonsils, or even a continuous deposit. This condition, which I have elsewhere designated "*angina redux*," (*Brit. Med. Journal*, May 19, 1906) may so closely simulate a relapse, that those not familiar with the condition may re-inject the case and thereby considerably aggravate the patient's condition. Much less common than *Angina redux* is a reappearance of laryngeal symptoms in cases that have been croupy at the beginning of the disease, but in which those symptoms have subsided. Personally I have only seen one case of the kind. Sevestre and Aubertin, Marfan and Mya have reported cases in which the symptoms were severe enough to necessitate intubation.

The other mucous membranes, according to some authorities, may also be affected. Thus, Sevestre and Martin say that diffuse bronchitis and

hæmorrhagic diarrhoea frequently occur. In none of my own cases, however, could bronchitis or enteritis be attributed to the use of serum.

The relative frequency of each of the symptoms of this late syndrome is shown in the following table :—

	Cases.		Percentage.
1. Circinate erythema	207	or	19. 5
2. Pyrexia	174	or	16. 4
3. Pains in joints or muscles	104	or	9. 8
4. Adenitis	98	or	9. 2
5. Angina redux.	40	or	3. 7

I have elsewhere dwelt on the dissociation of the elements of this late symptom-complex. "Joint pains may be the only manifestation of a serum reaction in the second week from injection. A circinate rash may appear and run its course without any pyrexia, or the temperature may be raised for a few days without anything to account for it. Adenitis at the angles of the jaw may also be met with as an isolated phenomenon." (*Practitioner*, May, 1905.)

Abscesses at the injection site cannot be regarded as forming part of the serum disease, since they are less liable to develop after the injection of antitoxin than after the use of the ordinary hypodermic syringe.

Prognosis. The prognosis of the serum disease is absolutely good. Though considerable distress may be caused by some of the symptoms, especially the pains, the joints and muscles, they all pass off without leaving any trace, in a few days. The prognosis of diphtheria, so far from being aggravated by the supervention of the serum disease, is, on the contrary, ameliorated thereby. I pointed out, two years ago, what my subsequent observations have confirmed—that the frequency and intensity of serum manifestations were directly proportionate to the size of the dose injected, and inversely proportionate to the character of the initial diphtherial attack. In other words, the larger the dose of antitoxin injected, the more likely a rash and the other symptoms were to occur, while the severer the attack of diphtheria, the less likely was such an occurrence. From this I concluded that the more marked the serum phenomena, the better the prognosis, both as regards ultimate recovery, and as regards escape from serious paralysis.

Treatment.—The treatment of the serum disease is both prophylactic and curative. Prophylaxis consists in the administration of calcium chloride in grs. v. doses thrice daily for the first few days. This treatment, which is advocated by Netter of Paris, I have adopted chiefly in the mild cases, and found, with few exceptions, that either no rashes resulted, or that the rash was localised or discrete. As the serum disease is most likely to

develop in mild cases of diphtheria, especially in adolescents and adults, this prophylactic treatment should be reserved for such cases. In young children, who rarely suffer much from the serum disease, it is unnecessary.

For the irritation produced by urticaria nothing excels the application of menthol ointment (menthol 3i, Gar. all. moll. 3i.) For joint pains immobilisation of the joints by splints or the application of glycerine of belladonna fomentations is suitable. Aspirin or aceto-salicylic acid given in gr. viii doses two hourly acts better internally than do the salicylates. Cessation of the pains often coincides with hyperidrosis due to the drug.

A CLINICAL LECTURE * ON DEFECTS IN DEVELOPMENT: THEIR SIGNIFICANCE.

BY

FRANCIS WARNER, M.D., LOND., F.R.C.P., F.R.C.S., ENG.

Senior Physician to the London Hospital, the Royal Albert Asylum, etc.

Gentlemen,—If you go into the Surgical and Orthopædic Departments, you will see a large number of cases of congenital defect, of one kind and another, in gross form, mostly requiring surgical treatment; such cases, for instance, as clubfoot, cleft palate, harelip, possibly some cases of defect of the ear, congenital dislocation of the hip joint, hemiplegia, and a number of cases of gross defect, which at once, and obviously, attract your attention. If you look at any large body of statistics of cases of this kind, the first thing that will strike you is that the larger proportion always falls upon males. I am not going to speak of those gross conditions, but of those cases of minor defect that you will see frequently among any group of children.

The proportion of children that have some condition of ill-development is very large, and, as I have said, falls mainly upon the males. In the course of an extended enquiry that I made personally in schools, when I had the opportunity of observing one hundred thousand cases during a series of years, and taking notes of them, this fact that I speak of came out very markedly. In putting the total results of that enquiry together, we found, in looking over large numbers of children congregated in schools, that, of the boys, 8.7 % showed some condition of defect in development; and of the girls, 6.8 %.

Let me explain now what you should look for in a patient to satisfy yourself as to whether or not the conditions of development are up to the average or normal. Looking at this boy, (a patient from the wards), we

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want to see whether he is a well-made boy or not, as apart from any question of medical diagnosis. The first thing to look at, and the most important of all, is the head. You will gain much information by the use of the tape-measure. The most important measurements to take are three. First of all, you should ascertain the circumference of the head, that is to say, the largest circumference that you can get. This boy is seven years old, and the circumference of his head is only a little over 20 in. As to the normal circumference, at birth, it should be about 11 in.; at nine months, that is, the time of dentition, when lactation should cease, it should be 17½ in.; at the end of the first year 19 in.; at seven years, when, in the generality of cases, school life has begun, 21 in. This standard of measurement is higher than what one usually finds amongst hospital cases. Speaking for Buxton Children's Ward, nearly all the cases are small-headed. You may take another measurement of the head, the transverse, from the top of the *meatus auditorius*, over the vertex, to the top of the *meatus* on the other side. Another useful measurement is from the bridge of the nose, or the upper terminus of the nasal bones, to the occipital bridge. It is very important to watch in the growth of the child not only the increase in the circumference of the head but also the increase in the transverse measurement. There is very little difference between the transverse measurement and the occipito-frontal. In a well-made head the measurement from back to front should a little exceed the transverse measurement.

Having considered the question of the size and volume of the skull, let us turn our attention to other parts of the head. With regard to the face, the eye openings, or palpebral fissures, should be sufficiently large, wide, and high, and long from side to side. Another item of normality about the palpebral fissures is that the axis of the two is in a straight line. We sometimes get a condition that is said by some to be a reversion to an earlier type of manhood, in which the transverse axis, instead of being horizontal, may slope outwards and downwards, or, in other cases, it may slope upwards; but the principal point, perhaps, is that of size.

It is important to observe the mouth and the nostrils. The principal point about the mouth is that it should be large enough. It is very common to have a small mouth in the male, and it is also very common to have a mouth which is kept constantly wide by grinning. A small mouth is frequently accompanied by a narrow and contracted palate, and by conditions causing obstruction to the naso-pharynx predisposing to deafness.

Concerning the palate, what we like to see is a palate of good width, and the front of it well rounded. The common defect is that, instead of being well rounded in front, it is contracted laterally, and comes to a sharp angle in front, often spoken of as "V-shaped." This means that the

anterior portion of the jaw, on either side, comes to the front in a sharp angle, instead of a curve. This is a point of great importance, for, next to the condition of defective skull, the palate gives the greatest indication of the constitutional tendency of the individual. Prof. Keith has gone over this matter very carefully with me, and has taken casts of various cases of defective palate, and analysed them. He concludes that in these cases of narrow and V-shaped palate, the condition is one of defective development in that portion of the upper jaw in which the milk teeth are produced, leaving out that portion in which we have the permanent mouth. This condition of narrow and contracted palate often goes along with nasal obstruction—such as enlarged turbinates, adenoids, and large tonsils and also, in female adults, with a form of dysmenorrhœa. So that, in adolescence, if you see a case of narrow and contracted palate, you should enquire as to whether there is any indication of stenosis of the os uteri giving rise to dysmenorrhœic symptoms.

The lower jaw should be in proportion to the upper. There are two common defects about the lower jaw; it may be too large when compared with the upper jaw, or it may be extremely small in comparison with it.

In regard to the nose, it is essential, for the purpose we have in view, to look separately at two parts of it—the bony nose, made up of the nasal bones, and supported inside by the septum; and the cartilaginous portion. A great deal of misunderstanding arises from not looking whether the defect is in the bony portion, or in the cartilaginous portion of the nose. It is of comparatively little importance whether the cartilaginous portion is badly grown, or not. A much more important question is: Are the nasal bones fully developed? In the infant the nasal bones are extremely small, and their development may be late, sometimes not beginning until the child is from one to two years of age. At seven years of age, you may find the nasal bones still very short, making a small bridge to the nose, and giving it a very different appearance from one that is well developed. I have known many cases in which nasal bones have been very short, up to seven; and remaining so till between seven and ten years of age, although the cartilaginous portion has grown to its normal size. A boy, in such a case, would have what is known as a tipped nose. It is not that the cartilaginous portion is bad, but it means deficient breathing.

We come, next, to the external ears. They very often have defects, but the defects are amongst those that fall in greater proportion on the boys than on the girls, being five or six times as frequent in the one case as in the other. What are the common defects of the external ear? First of all, the ears are generally symmetrically affected. There are criteria by which you can judge whether the ear is normal or not. First: Are all the

parts of the ear seen? Secondly: Is the tissue of which the ear is composed, healthy, normal tissue? This boy has got a well-formed helix. That is important. Thirdly: Is the skin of the ear healthy? He has a nice, healthy ear. There are no little varicose or dilated veins about it, the skin looks of a normal colour, and you can pick it up, showing that it is not adherent to the cartilage. The tissue of the ear is normal in structure and size. A very common and also very important defect about the ear is an absence of the antihelix. This boy has got no antihelix. There you see a typical outstanding ear. If the antihelix is absent you get an outstanding ear. An outstanding ear is apt to be defective both in structure and tissue. The antihelix may be absent on one side or the other; that does not affect the hearing; an outstanding ear, without an antihelix, is often very good for collecting sound. It is said that in the advancement of man, in the process of evolution, things have gone on for the best, but let me point out that amongst the lower animals, the donkey has not got an antihelix; its ears stand out and are much better organs for collecting sound than the human ear.

The hand should also be examined. The fingers may be too long, or there may be webbing of the fingers, or an excess of subcutaneous tissue on the palm of the hand, or an abnormality in the palmar markings. In some cases of defective development, you find the marks which are totally different from those on the hands of ordinary people. Prof. Keith has had impressions taken on paper of some of those markings on the hand, in cases of defective development, and analysed them, and shown that sometimes they correspond with those of lower animals.

There is a defect, called the epicanthus, which is not uncommonly found in the face, and consists of a vertical fold of skin projecting in front of the canthus, in the inner portion of the eye opening. This is a defect of the Anglo-Saxon race, and a great deal has been said about this; the epicanthus is one of those defects which, in many cases, disappears before adolescence; many a child that has had epicanthus at five years of age, has lost all trace of it when old enough to go into society.

Turning our attention once more to the ears, you may sometimes find, just below the pinna of a little cartilaginous growth. This appears usually on one side only, and is homologous to a supernumerary ear. This is important, because it may show a great tendency to grow rapidly.

I want, next, to speak of the significance of these minor indications of subnormal development. I pointed out to you that there are a large number of cases which show some point of subnormal development; but do not go away with the impression that, because there is some point in development

below the normal, therefore the child is a defective one. I only say that the defect is worth noticing. Let us compare those individuals who have some condition of defective development than with those who are perfectly normal. Taking the cases that had some of these conditions of defective development, we found, on further examination, that 22 per cent. of the boys were thin, and pale, and delicate. Taking similar cases among the girls, 32 per cent. of them were pale, thin, delicate children. If you are dealing with children who are pale, thin and delicate, and yet have no condition of disease, you will find that in a large number of them there are cases such as I have been speaking of to-day, cases which show that their bodily growth has been imperfect in certain features. This law applies much more to girls than boys. A boy, with some condition of defective development, may go on in fairly good health, but a girl is much more likely to become thin, pale, and delicate, and then anæmic. These girls also tend to develop abnormal nerve signs, to fall into a condition of anæmic low nutrition, nervousness, and mental dulness, until they get into those grave conditions, frequently seen in young womanhood, namely, hysteria, or neurasthenia. I told you just now that, of the cases we examined that had some defect in development, 22 per cent. of the boys, and 32 per cent. of the girls were thin, pale and delicate. The percentage of boys suffering from irregularities of the nervous system was 36, and that of the girls 35, or almost the same. As to the condition of dulness, the percentage was the same in each case, namely 31 per cent.

Perhaps, an active, first-class "M.A.", mistress of some girls' high school, says, "The girls are as good as the boys, and a little better, they can work, and stay on at school and matriculate." But, if you are practising in that town, you will have a great many more children delicate, and pale and thin, and falling into conditions of ill health, among the girls, than among the boys. That mistress is speaking of her girls on the average, and she says they can work well. True; but what about the percentage of her girls—about 6 per cent.—who have some condition of defective development? They would be known to you. And when the question is raised, concerning some girl, "Is she strong enough for a 'hare and hounds' race on Saturday afternoon?" her mother says, "she is not strong enough!" If it is one of those cases that are not perfectly good in those points of development that we spoke of, then there at once is a reason for being cautious. With regard to a high school, if you take a list of all those who present some condition of defective development, and then ascertain how many of the children left in the school show signs of delicate health, you will not find more than one to two per cent. But if you look at those on your list, those who have some condition of defective development,

about one-third of them will betray a low state of health—they will look thin, or nervous, or dull, or anæmic. I think, therefore, you will recognise the importance of the practical points that I am speaking of.

I have a point to impress on you. Of the children that come into our Medical wards, we scarcely find any that are free from defect. The commonest defect is small head. Other defects that I have mentioned are also frequent. Children come in with a diagnosis of "marasmus." If the case is one of 'rickets,' it will be admitted as such. The large numbers of cases in Buxton Ward mostly show some condition of defective development, usually a condition of small head. It is those children who have some imperfect development from birth that tend to fall into a condition of low nutrition, bronchopneumonia and other diseases which fill the wards.

Taking it that all the children in Buxton Ward are defective, let us look at the admissions during last year. There were 265 boys, and 228 girls admitted into the ward during that time. I venture to say, that the cause is not that those who admit patients into the Hospital have any special desire that these should be boys; there is no question of male or female beds in Buxton Ward, it must therefore be a question of demand, and more males than females come in. Of the boys 67 died, during the year and of the girls 65, representing a percentage of 25 and 30 respectively. We are looking then at the mortality of what may be termed a selected body of children with some degree of imperfect development, and you see that the percentage of deaths among the females is much greater than among the males. Bear that in mind. Looking at school life we find that, of those who have defective development, the tendency to become thin, and pale, and delicate falls greater upon the girls than on the boys. And so, in Buxton Ward, where all the children patients have some defect in development, you find that the tendency to death falls much more on the girls than on the boys.

As to the birthrate, a larger number of male infants are born than female. At the end of the first twelve months of age, the number of female babies exceeds that of the number of male babies. The infant mortality, of which we hear so much, and which is so exceedingly important, is, to a great extent, a matter of deaths amongst the males, because there are born so many more male infants with conditions of imperfect development. If a child has died during the first year of life, it is certified as a male or female; but for our present purpose, the great question is, was it a normally made child, had it a fairly developed head, and a sufficiently good brain inside? Though a larger number of males are born than females, yet owing to the much higher proportion of cases of defective development amongst males, the mortality that marks the latter

leaves a considerable surplus of females in adult life. Not only, in adolescence, are there more women than men, but the women have had the best of it in infancy, in having been better born, and, moreover, they live, on an average, some three or four years longer than men, that fact is borne out by the census reports. There is a very large preponderance of females, and a female life costs much more in providing annuities for than a male life. A thousand pounds utilised for the annuity maintenance of a man, over sixty years of age, would bring about £4-10s. per cent., the same sum of money invested for the benefit of an old lady would not bring more than £3-10s. per cent., because she will probably live so much longer.

I have brought before you some points which, I think, it is of very great importance that you should watch while you are at the Hospital, and I am sure, they will become matters of considerable interest and importance in practice, when you take charge of family interests yourselves. They will enable you, among other things, to make a better selection of those children who are delicate, and those who are not delicate. Amongst the delicate class of children I include those who, though they do not suffer from any particular pathological condition affecting any one organ, yet, nevertheless, often have headaches, or feel tired, or get a little pale, or fall off a little in their appetite—trifling things which a mother notices, but which do not very much affect their future condition of health. A child, in any of these conditions, is delicate, in a sense, but often enjoys really good health.

* TREATMENT OF RECTAL FISTULA.

BY

CHARLES J. DRUECK, M.D., CHICAGO.

Professor of Abdominal and Pelvic Surgery at National Medical University; Professor of Rectal Diseases at Jenner Medical College; Rectal Surgeon to People's Hospital; Attending Surgeon to Lakeside and Emergency Hospitals; Member of the American Medical Association and Chicago Medical Society.

In those few cases that you may see from time to time where the abscess has not yet ruptured, it should be freely opened away from the rectum and the cavity thoroughly and carefully drained. The incision should be made in a line radiating from the anus, as such an incision causes the least amount of hæmorrhage. In the great majority of cases you will not be consulted until a fistula has formed.

Exceptionally a fistula heals spontaneously or after some slight irritation or stimulation as the passing of a probe or an injection of an irritant into it. Such a cure can occur only in a recent fistula resulting from a superficial abscess with a straight track which is lined with healthy granulations. It cannot occur after the induration develops around the

* Specially contributed to "The Antiseptic".

sinus as is seen in old cases. Allingham says about one per cent. of these cases heal spontaneously.

Palliative treatment is not very effective as far as a cure is concerned but much may be done to relieve the suffering when the patient objects to active, operative treatment. The bowels should be kept freely open enough to allow a soft unformed movement; such a condition prevents stretching and lacerating the tissues and also prevents forcing feces into the sinus. After each bowel movement the rectum should be flushed out with an enema of plain water to keep the parts clean. If the fistula is a large one, with free exit, it may be washed out with a piston syringe, with either plain water or a five per cent. solution of carbolic acid, which will wash away the excretions and temporarily stop the seeping. All this may be attended to by the patient or his friends. The physician may occasionally use some stimulating application, as swabbing the cavity twice a week with Tr. Iodine or Carbolic acid 95%, quickly followed with alcohol to prevent any excess of action. Drainage is facilitated in all cases by dilating the external opening or all of the tract with metal dilators or sea tangle tents, and then put in drainage tubes. This also stimulates granulations by lacerations. Local treatment, however, is not sufficient, and the general health must be improved. Alteratives, tonics and digestants must be given in full doses whenever indicated.

Operative treatment.—As a rule, it is well to operate promptly in all cases unless there is some contra-indication. It is not well to operate upon an acutely inflamed fistula, because the peri-rectal areolar tissue is very liable to break down. In systemic complications such as cancer, Bright's disease, liver or heart trouble, an operation may be absolutely contra-indicated. The perplexing question comes with tubercular subjects. In my own practice, I operate upon tubercular patients the same as others if there is a chance of effecting a cure of the local trouble, because it relieves the patient of at least one source of waste and worry. It must be remembered also that primary tuberculosis of the rectum exists, and like a tubercular testicle, if early removed, the patient may be spared extention, and a complete cure expected. There is also some timidity in operating lest the wound in a tuberculous patient fail to heal. A properly selected case will always heal under careful and general and local treatment. With phthisical patients it must be remembered that the vitality is low and the operation should not be too extensive at one time for his recuperative power. Of course, no one would operate upon an active case of pulmonary tuberculosis. Where there is frequent and violent coughing it contra-indicates operation, because the movements of the rectum during coughing prevents healing. The rather common belief among the laity

that the fistula is the outlet of some vicious humors which produce the consumption, if the fistula is healed, is not supported by investigation. Many operators have reported good results from operation even in advanced tuberculosis. Kelley says: "Only once have I seen the cure of a fistula followed by marked increase of the lung trouble, and in that case the relationship between cause and effect cannot be established."

Whenever there is even a suspicion of tubercular disease the whole fistula should be curetted and cauterized with a Paquelin cautery or removed *en masse*. When there is extensive anæmia it may contra-indicate operation.

Operations for fistula are divided into two classes, the tentative and the radical. Tentative operations include the injection of astringents and the several methods of dividing the tissues with a ligature. All of these methods are tedious to perform and uncertain as to their final efficiency. To be honest with your patient, you cannot promise anything from these methods. The charlatan by these methods induces enough inflammation for the skin to heal over until he gets his fee, but the channel soon reopens and the patient is in the same condition as before the treatment. These methods are to be used only when the patient refuses radical operation.

Injection.—The variety of irritants that have been used to produce inflammatory sclerosis is innumerable, and some new remedy is almost daily suggested. Iodine is altogether the best, with zinc, silver, carbolic acid and ergot following.

The injection is made with a hypodermic blunt needle, which should be three inches long. The injection is made in and around the sinus, the left index finger being placed over the internal opening as a plug to prevent the escape of the fluid. When injecting into the sinus a small, ordinary syringe may be used, but sufficient force must be obtained to press the fluid against all of the surfaces. Nitrate of silver or carbolic acid may be used on a probe. This method is only sometimes successful, and is more painful and longer than radical operation. It gives its best results in certain recent cases of ischiorectal abscess where there is external drainage of pus but as yet no internal opening. The patient should be confined to his bed and the opening enlarged to allow free escape of pus. The cavity should be washed out with some solution; care being taken that no pressure of the irrigating fluid occurs within the cavity, because often the wall between the abscess and the rectum is very frail. In older cases, a pyogenic membrane, develops about the abscess, and more stimulating solutions are needed, as iodine in strong solution, turpentine or caustic potassium.

Ligation.—This is a very old method being described by Celsus, but latterly brought up by Allingham, although it is scarcely used now.

The operation consists in passing a ligature of some material threaded on an eyed probe, in at the external opening through the sinus and out at the anus. It is then drawn tightly and knotted. Heavy silk or an elastic band one-eighth of an inch in diameter may be used. If the elastic ligature is used a lead shot is pinched on the knot to prevent slipping. The ligature usually cuts its way out in a few days by pressure necrosis.

The advantages of this method are (1) no knife; (2) no bleeding; (3) no anesthetic is needed; (4) there is little pain, and (5) the advocates of this method say the patient need not be confined to his bed. As a matter of fact, however, there is no more reason why a patient should be allowed to be out of bed when the cutting is being accomplished slowly with a ligature than when performed with a knife. In either instance the fistula will heal while the subject is attending to his ordinary duties, but in both cases healing goes on much better and quicker if he is confined to his bed. Various devices have been recommended for passing the ligature through the fistula, but in my mind the best is a silver probe with an eye in it.

The objections to the ligature method are (1) more time is consumed than by the radical operation; (2) only the main sinus is treated and any other tracts are left untreated; (3) the method is unreliable because sometimes the ligature cuts out only partly, a considerable slough forms along the course of the ligature from the strangulation, and it is several days before it separates. When it does considerable hæmorrhage occurs.

Dividing the parts with a thermo-cautery wire is a form of ligature. It is quicker but requires an anesthetic, and is then open to many of the objections of both other operations. It is, however, applicable where there is considerable anemia and the operator is anxious to save any loss of blood even at the expense of a little longer course of after treatment.

The wire should be brought to a cherry red heat only, as that is sufficient to divide the tissues slowly. If too great heat is used the tissue is consumed instead of being seared; no coagula is left to occlude the vessels and hæmorrhage results, thereby forfeiting the best claim of the operation.

The radical operations are incision and excision. Each has its class of cases to which it is best suited, and the surgeon must not think either method applicable in all cases. Certain stereotyped methods are described in dealing with fistula, but it must be impressed that radical cure often requires desperate surgery, and sometimes much originality or genius on the part of the operator. No one knows the pathology of a fistula until it is laid open before him.

The advantages of radical operations are (1) every sinus can be hunted out; (2) overlapping edges may be removed; (3) free drainage obtained and sepsis prevented; (4) the operation is quickly and thoroughly done.

Incision and Division of the Parts.

The bowels should be thoroughly emptied the day previous but too great catharsis must not be provoked as a diarrhœa proves a great disadvantage to the operator. Six hours before the operation a high enema is given to wash out the colon and rectum. The hair about the parts is shaved off and the whole perineum and buttocks are thoroughly scrubbed. These details are just as important as if primary union were expected. While we have an infected field and pus cavity to begin with, we are also making fresh wounds, which should be as near aseptic as possible.

The patient is anesthetized, placed in the exaggerated lithotomy position, and the sphincters thoroughly paralyzed by over-distention. Always anesthetize the patient, even if the fistula seems small and superficial, because the operation is painful, and you cannot foretell the condition of the sinus. Only the small simple fistulæ may be incised without anesthesia.

The rectum may now be inspected and a final antiseptic irrigation given.

Pass a grooved director through the sinus into the rectum. It can usually be brought out at the anus and supported by the index finger of the left hand. By introducing the left index finger into the rectum before introducing the director, this manœuvre is facilitated. A heavy, sharp pointed bistoury, is passed along the groove of the director and divides the bridge of tissues, thus exposing the whole tract. The sphincter should be cut squarely across as incontinence is less likely to follow than if the fibers are cut diagonally. The edges are now held apart, and a careful examination made for diverticula, which if found, should be treated as a sinus. The scar tissue and membranous lining of the fistula should be carefully dissected away.

If the director cannot be brought out at the anus when introduced it is good surgery to dissect down upon it instead of using excessive force, as there is danger of breaking the instrument, which is a very annoying accident. Scissors are often preferable to the knife in such cases.

If the internal opening is high up, as sometimes is found in the internal incomplete one, it is well to divide the anal portion of the rectum in the posterior raphe, even to the tip of the coccyx if need be.

If the wound is extensive and there are any parts not thoroughly drained, so called dead spaces, they should be closed with a few appropriate stitches. Free drainage is however the watchword of success in all fistula operations, and is to be placed only with great care and never if the wound is superficial. After hæmorrhage has been stopped the wound is packed with iodoform gauze and a suppository of opium placed in the rectum. A pad of absorbent gauze or cotton retained with a bandage is all the dressing required, and need not be changed until it becomes soiled.

The bowels should be moved on the fourth day, by giving a cathartic followed by a copious enema just before the bowels move. This brings away the packing in the wound and after defecation is accomplished, the wound should be carefully washed and another strip of gauze inserted in the base of the wound to prevent the skin edges of the incision healing before the deeper structures. If there is any tendency toward skin healing the surfaces should be separated daily by passing a probe between them. Granulation may be stimulated if need be by balsam of Peru or by touching superabundant granulations with a stick of nitrate of silver.

Whenever there are any diverticula, they should also be dissected out and treated as the main tract, unless there is much danger of incontinence resulting, or of injuring to a great extent the perineum in the case of women, or of overtaxing the patient's reparative powers.

The sphincter may generally be cut once, especially in the median line, without danger of incontinence, but always divide as little as possible, and leave the internal sphincter, if possible. Never divide the sphincter twice at the same operation or without informing the patient that some incontinence is sure to result. The condition of the patient's bowels, as regards the number and character of movements, must always be considered. A sphincter that acts admirably for one formed movement daily, may be totally ineffectual in case of periodical constipation and diarrhœa. Division of the sphincter may cause some incontinence even in a robust man, and dilatation in a delicate woman may leave some permanent paralysis. In fistula cases, sphincters are weak, at best, and should not be incised or stretched any more than is absolutely necessary. The liability to incontinence after division, is found chiefly in horse shoe and rectolabial varieties, and those old cases where the whole anal region is niddled with openings, but it is these cases that give the operator a chance to show his resources and ingenuity.

In the treatment of all fistulæ that extend above the internal sphincter, the latter must be divided, with at least temporary

incontinence. A permanent paralysis results if the sphincter is cut several times.

Where the tracts extend above the internal opening in the bowel, the extension must be considered a diverticula, and so treated. Sometimes an operator, for fear of hæmorrhage, will incise only to the internal opening, and trust to inflammatory adhesion for the branch. Such a treatment is risky.

The branches running under the bowel are of two varieties. One kind extends along beneath the mucous membrane and does not bleed much when cut. The other runs deeper under the muscular coat and even into the peri-rectal tissues. In these there may be considerable hæmorrhage. Many sinuses extend under the skin from the bowel to the buttock or scrotum, and these may be laid open without interfering with the sphincters.

Where there are several fistulous tracts (in old cases) the patient's reparative powers are often weak, and it is better to do two small operations than to tax the recuperative power with one extensive one. In these cases there exist often two or three main tracts, apparently primary, each of which has its smaller diverticula. Each main tract and its branches may well be treated at separate operations.

When no internal opening can be found and the director moves under the thin layer of mucous membrane it is well to make an opening by forcing the director into the bowel and treat as a complete fistula. If more than one internal opening is found they should be incised into a common tract.

After Treatment :—A few points in the after treatment of these cases are as essential as the details of the operation itself. Too frequent dressing may indefinitely postpone healing, as also packing it too tightly and the surface assumes a membranous appearance instead of healthy granulations. Too energetic application of antiseptics also retards healing. Very often I use no dressings at all after the first packing but separate the edges every day to insure healing from the bottom and not allow lapping of the skin edges together, which is very likely to occur in the skin near the anus.

Pain is not severe enough to need opiates, and as they effect the stomach the patient is better off without them. The diet should be nourishing, soft, and of such kind as to leave little residue, but must not be scanty as all these patients are anæmic and need prompt building up. With this diet the bowels have no tendency to move for several days and need not be tied up.

How long the patient shall be confined to his bed depends altogether on the case. In a favourable one, he should be kept quiet until the wound heals, as moving about retards healing. Tubercular patients should keep their bed no longer than is absolutely necessary and while not allowed to move about much, they should be urged into the fresh air and sunshine, for everything must be done to build up the system; nutritious diet, change of scenes and such medicines as are tissue builders are necessary. Locally the treatment is stimulating, but it is wrong to worry the patient with frequent dressings. Many times the wounds appear healthy but refuse to granulate. If there is no sinus to account for the sluggishness, turn your attention to the general system. If there is any evidence of pus burrowing or the formation of a pocket it should be immediately incised.

After what has been said regarding the treatment of fistula, let me say that each case is a rule to itself, and no complication can be treated according to definite procedure. Allingham says it requires more dexterous surgery to cure a bad case of fistula than any other surgical affection. Do not promise too much for the first operation, as frequently a case is better treated in two or three steps, and if the reparative powers are overtaxed granulation and healing will not take place. But if each case is carefully and conservatively treated you may expect to cure 98% of them.

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Three Stomach Cases from the Physician's Standpoint: A Post-Graduate Clinic.*

BY

WILLIAM RUSSELL, M. D., F. R. C. P., ED.

Senior Assistant Physician, Royal Infirmary, and Lecturer on Practice of Medicine, Edinburgh.

In some quarters it seems to be thought that the time is not far distant when the art of the physician will become obsolete, and be replaced by the craft of the surgeon. If this prediction be ever realised, the fault will lie at the door of the physician and of the general practitioner. The latter, however much more he may be, ought certainly to be a physician, for to be a successful practitioner, in the only true sense, requires that he should be a careful, and, as far as possible, a skilful diagnostician. In no region has a more debatable land arisen than in the domain of gastric disorder, and the cause of this is to be found in the following considerations.

* These notes have necessarily been extended to make them suitable for publication.

In the very nature of things, digestive and gastric disturbances come into the hands of the practitioner and the physician. It is on them that the responsibility of diagnosis must primarily lie, and it is imperative that they should rise to their extended responsibilities in this department, and devote themselves to the attainment of skill in the differential diagnosis of abdominal diseases. That a gastric condition may require a surgical operation no more removes it from the domain of the practitioner and the physician than the diagnosis of an empyema lies with the surgeon because he is called in to operate on it. The contrary idea is but an illustration of what we have recently heard a good deal in other affairs—a want of clear thinking. The physician has above all else, in the first place, to be a diagnostician; and the position assumed in some quarters that he is not to be allowed to use his art in the disorders and diseases of the abdomen is as amusing as it is astounding. There is no doubt that the opening up of abdominal surgery has made it necessary to be more precise, more definite, more detailed in diagnosis than formerly. We are no longer satisfied with such diagnoses as dyspepsia, hæmatemesis, jaundice, colic, intestinal obstruction, or peritonitis; and the physician ought to be the pioneer in that whole realm of diagnosis. It is on him that the onus lies of indicating the paths and methods of differential diagnosis in the abdomen, as he has done in the thorax and in the brain. He is not justified in abandoning his birth-right in internal diagnosis. Whatever difficulties there may be, or appear to be, they have to be faced and solved. Not only ought he to be a pioneer in differential diagnosis, but he ought to be more, for, however much the surgeon's craft may be requisitioned by him, he ought to know, as well as the surgeon, not only the diseases which require operation, but also the kind of operation that may, or can be done in the various diseases with which he has to deal.

Surgery is not an occult science; even such questions as the advantages of anterior or posterior gastro-enterostomy are copiously, not to say openly, discussed. The physician knows, or ought to know, that if he diagnoses certain conditions the treatment is gastro-enterostomy, although he leaves it to the surgeon to select the method; and that, if he diagnoses other conditions, they are not worth meddling with unless they can be removed entirely. Sometimes one gets the impression that the physician thinks he ought not even to know what the surgeon will do in any particular case, which is as curious an affectation as if he professed ignorance of how a broken leg or a dislocated shoulder is treated. If the physician diagnoses gall-stones, he knows that the surgeon, to remove them, has to use the knife; the line of incision, and whether catgut or silk be used, is no part of his responsibility; but it is absurd to affect ignorance of, or

want of intelligent appreciation of, the dexterity and skill of the surgeon in carrying out all the details of the operation and the after-healing of the wound. If the physician is confident of his diagnosis he will not usually have any serious difficulty in convincing his surgical *confrere* that operation is desirable.

Difficulty arises more frequently, perhaps, when the surgeon recommends an "exploratory" operation, and the physician does not agree with him. The "exploratory" operation, tends, indeed, to be so widely applied and advocated that it threatens to be the bane of differential diagnosis. It has its own place, but when it becomes the screen for careless, ill-informed opinion, or for ignorance of methods, it would be difficult to apply too damnatory criticism to it.

If the physician's first duty is diagnosis, his second is to know enough of surgical methods and of surgical successes to understand and appreciate what he recommends his patient to submit to. These are essential for the physician, whether he be a family practitioner or a hospital consultant, for to him will assuredly come the vast majority of abdominal cases. The responsibility is laid upon him of making accurate and detailed diagnosis. There is really little difference of opinion as to what treatment ought to be pursued in definite conditions; the whole difficulty lies in a weak diagnosis. In abdominal disease and disorder there has been a sudden new demand upon the physician's skill, and there seems sometimes to be a tendency or a desire to shirk the new responsibility. This is, no doubt, largely due to the idea that as abdominal diagnosis was vague in the past it must remain so; and the champions of "exploratory" operation do nothing directly to remove this idea.

It seems to me that not only for the sake of the physician's reputation, but also for the maintenance of public confidence in surgery, every effort ought to be made to secure increasing accuracy in abdominal diagnosis—that is, in the differentiation of conditions which present a certain surface-resemblance to one another. The responsibility for such advance lies chiefly with the hospital physician, for it is he who has the material from which that can be worked out. When this is done, "exploratory" operations will be undertaken on much more enlightened principles than seem at present to be in vogue. The practitioner and the physician will then realise that the diagnosis of certain conditions imperatively demands the recommendation of surgical operation. It is not primarily a question of whether to operate or not, but of accuracy and completeness of diagnosis. "Exploratory" operation is really an acknowledgment of failure; and it is only by regarding it in this light that advance can be made.

I am to show you, in the short time at our disposal, three stomach cases, indicating the points in each case on which I base the diagnosis. They are all cases which, in my opinion, ought to be operated on; and I hope to be able to so arrange that you will have the opportunity of witnessing the operations.

CASE I.—*Pyloric narrowing—Gastric dilatation and ptosis.*

THOMAS C., aged 34, married, a draper in a country town, was admitted to the Edinburgh Royal Infirmary on 29th August. He complained of vomiting and pain in the abdomen, and stated that he had been very bad for the preceding six weeks. On going into his history it was ascertained that he had been troubled with his stomach for fifteen years, that is, since he was a youth of 19 years. The general description of his symptoms was that he had discomfort, fulness, and heaviness in the stomach, coming on usually about an hour after food. The discomfort was sometimes followed by, and relieved by, vomiting. Sometimes the vomiting was at night. The vomit, when copious, he thought consisted of what he had taken for some days. The vomit had sometimes been dark in colour and frothy. Twelve years ago he was treated in the infirmary for dilated stomach, and for the same condition two years later. Since that time he has been troubled, off and on with his stomach. During the past year he has had comparatively little trouble until six weeks before admission, when discomfort, pain, and vomiting came on. The discomfort and vomiting became very severe, and, he was confident, worse than ever before experienced. He has lost flesh and, of course, weight. Constipation has been extreme, the bowels only moving once a week if left to themselves. There was no history of *melæna*, nor of vomiting recently poured out blood. The patient had a fresh complexion, but was very lean.

Such are the essential points in the history of this patient's ailment. Let me show you how the boundaries of the stomach can be determined without artificially inflating it—a method I have not found it necessary to adopt. The stomach has not been emptied for twenty-four hours, so it is in a favourable condition for our present purpose. If the hands are placed, as I place my hands, on this patient's body, I can use them so as to produce a succussion wave in the stomach contents, and by means of this wave I determine the position of the lower border of the viscus—it is below the level of the umbilicus at present. You may be able by this method to trace the greater curve of the stomach upwards, and to the left lower border of the thorax. Then, as regards the position of the fundus, you can often find it by percussion by determining the point at which tympanicity begins. At this particular moment this is not available in

this case, as the stomach is so full, but if you reverse the succussion wave you can feel it quite easily, and find that it goes as high as the fifth rib, and may even go higher. By percussion and succussion I can also determine the position of the lesser curvature in the epigastrium, and I can thus outline the stomach to you on the surface of the thorax and abdomen. Try this yourselves; the method only requires a little practice, and it is absolutely reliable. Much difficulty is made in abdominal diagnosis by all kinds of strange imaginings. The succussion wave here is produced in the stomach, and cannot be anywhere else; and, however much you may marvel at the size of the organ, the outline is absolutely correct. I remove the stomach contents so that you may see their character and quantity, and we can rapidly show you that they contain free hydrochloric acid, and also can estimate rapidly the total acidity and the amount of free HCl present.

Remarks.—This is an example of gastric disorder of long duration, which came on early in life, and, at the comparatively early age of 34 years, has made activity impossible. Although the earlier symptoms of disorder cannot be recalled with certainty, there are indications that the type was hyper-acidity. Twelve years ago he was treated for stomach dilatation; but the name applied to the condition at that time does not really help us, for dilatation may be due to a considerable variety of causes—from malignant pyloric stricture to mere atonicity. That the dilatation cannot have been due to progressive stricture at the pylorus, or, indeed, to permanent occlusion from any cause, is indicated by the history of periods of freedom from symptom, one of which period includes the last twelve months up to six weeks ago.

Cases of recurring dilatation are, in my experience, most common in hyperchlorhydria. The sequence of events is usually this: an attack of hyperchlorhydria comes on from one or other of several causes, and, unless successfully treated, soon goes on to a moderate measure of dilatation; so long as the hyperacidity exists, so long does the tendency to dilatation remain; and, when the two co-exist, the dilatation rapidly increases, and may become very great.

In this case, there must, on more than one occasion, have been great dilatation, for the patient gives a history of vomiting large quantities of frothy material. During the six weeks of the present attack there has been very copious emesis, but the vomited matter has not been frothy. He must have recovered from his previous attacks of great dilatation, for if he had not, he could not possibly have had the freedom from symptom which, as we have seen, he evidently experienced.

The present attack has apparently been the most severe he has had, and he is most solicitous to have some radical means taken to relieve it. We are all the more ready to fall in with this, because there has been no improvement in spite of the regular emptying of his stomach by the tube, followed sometimes by lavage, and of careful dieting. His stomach retains a large proportion of the substances and fluids introduced into it, and, as is usual in such cases, pours out fluid which materially adds to the volume of the gastric contents.

Whether the stomach be emptied by vomiting or by the tube, the contents are fluid, of the thickness of cream or gruel. They vary in colour, being drab, dark grey, or brownish. The viscus may contain as much as 3 pints; that amount has been vomited, and an equal amount has been withdrawn by the tube. The total acidity is high, and there is abundant free hydrochloric acid. The very important question has emerged in this case—Why is the present attack so severe and intractable to medical measures taken for its relief?

There is, of course, no doubt as to the existence of a mechanical hindrance at the pylorus; without that there would not be such marked retention in the stomach of what is put into it. There is no thickening at the pylorus. The absence of such thickening, and the presence of abundant free hydrochloric acid, are against a diagnosis of malignancy. There has never been hæmatemesis, although the stomach contents have almost certainly owed their colour on many occasions to altered blood. There is no definite history pointing to ulcer of the stomach, such as is usually present when any considerable abrasion or a chronic ulcer is present. The symptoms are such as accompany hyperacidity, dilatation, and retention. The particular point that requires elucidation in the present attack is the amount of retention and the failure to remove the condition.

The picture I have formed is this:—The patient had an unusually severe attack of his recurring hyperchlorhydria, followed by dilatation, the dilatation being greater possibly than on former occasions. When there is dilatation the whole stomach sags, and the greater the dilatation the greater the sagging tends to become from the mechanical weight of the contents dragging upon it. After a time ptosis of the stomach is added to dilatation. With ptosis the pylorus is usually more or less dragged down also. In this patient I have not been able to determine any lowering of the pylorus. An explanation of the hindrance to the outflow of the gastric contents can be found by supposing that there are old adhesions at the pylorus which lead to a definite kink at the pylorus when dilatation and ptosis combine to drag upon the organ. This would explain the

periods of freedom ; it would explain the difficulty when the stomach returns.

With this picture of the case before us, we go forward to operation with hope and confidence. We shall ask the surgeon not only to do a gastro-enterostomy, but to look for any such adhesions, as we have referred to, which may be present. While saying this, you, I hope, realise that there is no doubt as to a mechanical difficulty at the pylorus, which we believe neither to be due to recent ulcer nor to malignant disease.

Remarks after operation.—Mr. Caird did a gastro-enterostomy on this patient on 29th September. The pylorus was found high up under the liver ; the stomach was greatly dilated. There were no adhesions of the pylorus to surrounding parts as we thought might be found ; the difficulty at the pylorus being due to an indurated, and, apparently, fibroid condition of the pyloric ring. This condition of the pylorus and its high position, along with the dilatation and ptosis of the stomach, were amply sufficient to explain the difficulty at the pylorus. There was no evidence of recent or of chronic ulceration. Some of the glands along the inferior aspect of the pylorus were enlarged, but Mr. Caird, while removing one for examination, did not think they suggested malignancy. The main points in the diagnosis were (1) pyloric obstruction, (2) not due to recent ulceration, (3) not due to malignant growth, (4) but due to old changes around the pylorus. The three first points were confirmed at the operation ; while, as regards the fourth, instead of pyloric adhesions there was an old fibroid stricture, which, along with the high position of the pylorus and the ptosis, caused the difficulty.

Case II.—Duodenal ulcer.

HUGH M., aged 26, married, stoker, was admitted to the Edinburgh Royal Infirmary on 21st September, 1906. He complained of pain in the epigastrium, all round that part of the right side corresponding to the hepatic region, and in the back. The symptoms complained of had lasted for four weeks. He has had three attacks since January last. The attack preceding the present one occurred in July last, and lasted for four weeks. After that he was quite well until the present attack began. The pain during the attacks has become worse. When questioned about the pain he is quite definite as to its coming on from an hour to an hour and a half after meals, that it gets gradually worse till he takes food again, when he gets relief for about an hour, when it begins again. The pain is worse with solids than with liquids. The pain is now burning in character, and is most severe at points midway between the xyphoid and umbilicus, and in the angle between the last rib and the spine, but also in the hepatic region between these points. After food he has a sense of load in the

epigastrium. The bowels have been very constipated for five years, and he has had to take laxative medicines all that time. He has vomited a few times—the last occasion was three weeks ago, and occurred an hour after food, the pain being relieved by it. The appetite is poor, and he is not inclined to take food. The attack which he had in July left him very weak and thin, and between that and the present attack he did not put on much flesh. He has become much thinner since the present attack began ; he has been off work for three weeks, and has been in bed most of the time. He was questioned more directly about vomiting and as to the character of his motions, and the following facts were obtained ; and although it was impressed upon that he must be quite certain of their accuracy, he steadfastly adhered to them. He has not vomited blood or dark material during the present attack, but ten days ago his motions were black like tar, although he was taking no medicine save seidlitz powders. He vomited coffee-ground material two months ago, and he had vomited similar-looking stuff before. The motions were black a month ago and also in July ; in fact, he seems confident that his motions were often, if not always, black when his attacks were on.

On examination of the abdomen there was a degree of tenderness all over it, with a degree of rigidity of its walls ; it was more tender at the spots mentioned above as points to which pain was referred, and over the hepatic region. The stomach was not enlarged. A test breakfast showed abundant free hydrochloric acid.

Remarks.—The special points to be noted in this case are that the gastric attacks have lasted for five years, and have recently become worse and more frequent. The history of the gastric symptoms point to hyperchlorhydria ; here, also, there are periods of freedom from trouble, followed by periods during which pain comes on an hour to an hour and a half after food ; is relieved by taking food for an hour or longer, but again returns. He has had three attacks since January. He had an attack in July which prelasted four weeks ; then he had a period of comfort until the present attack began four weeks before admission. The attacks are sufficiently severe to lay him up, and the loss of work has become a serious matter with him. He is very confident in asserting that he has frequently had tar-like motions, and that he has on some occasions vomited material like coffee-grounds. There has been no melaena and no hæmatemesis since admission. There is no difficulty at the pylorus leading to the retention of gastric contents. There is no dilatation or displacement of the stomach. The stomach contents withdrawn by the tube show abundant free hydrochloric acid. The patient is so very positive about the tar-like motions that his statement must, I consi-

der, be accepted as a clinical fact. The frequency of the attacks, their intractability to weeks of treatment, however imperfect it may have been, and the position and character of the pain, all tend to open one's mind to the acceptance of the patient's assurance of regarding the character of his motions, and perhaps of his vomit also. If the facts have been correctly obtained, if our evidence is reliable, all point to duodenal ulcer. And if we are to have the courage of our diagnosis, this is also a case for gastro-enterostomy. I am one of those who believe that when you make a diagnosis of duodenal ulcer it is wise to advise operation, especially if, as in this case, there has been recurrence of symptoms. The unsatisfactory point regarding operation is that the ulcer will not be seen, even at the operation, unless it be on the anterior wall; and, in this case, it is probably on the posterior wall. So the surgeon, even though he may accept the diagnosis, does nothing to establish its accuracy.

The operation of gastro-enterostomy was performed by Mr. Caird on 29th September. There was no ulceration of the stomach found, and no obstruction at the pylorus.

CASE III.—*Malignant Disease at Pyloric end of Stomach.*

MRS. K., aged 43, was admitted to the Edinburgh Royal Infirmary on 20th August, 1906, complaining of uneasiness in the stomach and vomiting, the symptoms having lasted since June last. The history of her present illness dates from early in that month, when she began to suffer from sensations of uneasiness shortly after taking food, the food often regurgitating, but there was no vomiting. The sensations came on, as a rule, from half an hour to an hour after each meal. She has also been constipated. Before June no history of any kind of gastric or digestive disorder could be obtained by the most direct questioning. She has become gradually worse—treatment giving her no relief. The eructations have increased, vomiting began and became more frequent. As she was rapidly becoming weaker and losing flesh, she came to the infirmary. She noticed some time ago a lump in the upper part of the abdomen.

Examination of the alimentary tract showed her gums to be edentulous, the result of complete extraction; and the tongue was flabby, with a slight fur. The appetite was fairly good. After meals there was a feeling of tension in the abdomen, and she was conscious of movements and rumblings in its upper part. She felt drowsy and heavy after food. She vomited frequently after admission, the vomit consisting of the food she had taken but little altered, and when she was allowed bread the vomit contained great pieces of undigested bread crust. Ultimately we minced all her food, but that only led to a temporary diminution in the frequency

with which she vomited. The vomit never contained free hydrochloric acid, nor did the gastric contents withdrawn by the tube after a meal. There was a pear-shaped lump to the right of the epigastrium; movable, and not seemingly adherent to deeper structures. The smaller end of the lump was to the right. The stomach was considerably dilated, its inferior border reaching to the umbilicus and the fundus to the fifth rib.

Remarks.—This case differs from the two preceding cases in this, that there is what is commonly called a tumour in the upper part of the abdomen. It is a somewhat pear-shaped swelling, running from above downwards and to the right, the smaller end being its right inferior end. The mass is usually hard, easily felt, and to small extent movable. The stomach is dilated, its boundaries being easy to define by succussion and percussion in the manner I showed you in Case I, which I repeat here, and which some of you can come forward and confirm. The succussion wave can be felt right up to this mass. A point of clinical interest is that this mass alters in character; it becomes so soft that it requires the expert hand to be sure of its existence. Further, waves of stomach contraction are often to be seen passing across the upper part of the abdomen and ending in the mass. The mass is the thickened wall of the pyloric end of the stomach—its position, shape, altering thickness, and its relation to the greater and lesser curves of the stomach, all confirm this. There has been no hæmatemesis, no coffee-ground vomit and no melaena. There was an entire absence of gastric symptoms until June last, but once they began there has been no material remission in them; discomfort and vomiting, especially vomiting, has indeed become pronounced. The vomit, and the stomach contents removed by the tube, have never shown a trace of free hydrochloric acid. That there is pyloric obstruction is shown by the retention of food in the stomach. That the stomach is not larger than it is, and that there is no marked fermentation of its contents, is due to the ease and regularity with which the stomach has hitherto emptied itself by vomiting when discomfort became considerable. The diagnostic points in the case are the "tumour," which varies in thickness and hardness and might be said at times to disappear; gastric peristalsis; vomiting. These three points indicate pyloric obstruction, with marked spasmodic contraction of the pylorus.

The two conditions which give rise to pyloric spasm, as marked as it is in this case, and two visible peristalsis, are simple ulcer and malignant growth at or near the pylorus. There is no history of simple ulcer here, nor are the symptoms those of simple ulcer near the pylorus, and therefore we conclude that there is a malignant growth here. The onset, the course, the present condition, the absence of free hydrochloric acid, all

support this. A great part of the difficulty commonly experienced in making differential diagnosis in gastric and abdominal disease is really due to a want of definite knowledge as to the lesions which occur in different viscera, and as to the symptoms which are practically inseparable from each.

In this case there is no doubt that the "tumour" is the pyloric end of the stomach. I once, after a hurried examination, thought a "tumour" of this nature a displaced kidney, but I speedily rectified my error. The pylorus is the site of the "tumour," and, if we consider next its nature, we conclude that much of it must be due to muscular contraction of the pyloric wall, for it goes and comes to a considerable extent. This is not uncommon.

As to the explanation of the muscular spasm, it is, in my experience, due to irritation, caused either by a chronic open ulcer, near the pylorus or to an infiltrating cancer in the same region. We exclude simple ulcer, and when this is done there is no escape from the alternative. If we have gone so far, it would be sheer affectation were I from this point to plead ignorance. If this is malignant, there is only one method of treatment of any avail, and that is removal. If removal were not possible I would not advise operation, but owing to the mobility of the "tumour," we hope it may be found removable. What particular operation is to be performed belongs entirely to the surgeon.

This patient was also operated on by Mr. Caird on 29th September, when a pylorotomy was done, followed by a gastro-enterostomy. The pyloric end of the stomach showed much thickening and contraction of the pyloric muscle, while near the pyloric opening there was one of those large circular growths, with a raised fungus-like margin and an atrophied-looking centre, which we commonly regard as malignant. There was no affection either of the lymph glands or of the liver, so far as could be seen.

Sections of the removed pylorus made by Mr. Wade, F.R.C.S.E., one of the assistant pathologists, showed the condition to be an infiltrating cancer.

These three patients made uninterrupted and rapid recoveries, and were able to return to their homes in the course of from three to four weeks. —*The Caledonian Medical Journal*.

The Role of the Internal Secretions in Senility, the Pre-Senile States, and Diabetes.

DR. ARNOLD LORAND, of Carlsbad, who has made a life study of the disorders of metabolism, gave, on November 14, 1906, a most interesting lecture before the Philadelphia County Medical Society on "Senility."

He presented his own views on the processes involved in that class of derangements exhibiting degenerative processes seen in premature senile changes, and the analogues, myxoedema, cretinism etc. Pure senility exhibits similar changes, but more slowly; it is less amenable to corrective measures, yet capable of amelioration on similar lines. The great interest in the subject lies in the fact that, since we are now able to understand the physiology of the ductless glands and their bearing on the regulatory life processes we are in a position to elucidate, as never before, the disorders of metabolism.

Certain facts taught by centuries of observation are well appreciated, but hitherto we have been able to interpret their significance only partially and could deal with them solely by empirical methods, chiefly hygienic, and therefore, inadequately. Within five or, at most, ten years, the trend of medical thought has been definitely toward appreciation of the potentiality of the great regulative mechanisms, the ductless glands. Here lies the key to many hitherto obscure situations. Isolated observers have recorded many important facts bearing on this subject, though the full significance of these is only now taking shape. Most of this work was done in Europe. Our country has contributed an important step to this advance, Sajous having been the first (January, 1903) to point out *how* the activity of the oxidation processes is increased in the organism when either the thyroid or the adrenals, from any cause, become overactive, or when extracts of these organs are administered.

In our text-books, in current literature, there are constantly appearing remarks showing uncertainty as to the nature of controlling forces involved in the circulation, the oxidation processes, tissue-respiration, in short, functionation. Various conjectures are hazarded, by no means consistent or uniform with well-known facts. Sajous's researches have made it plain that the whole may be reduced to equations based upon variations in activities of those organs forming the adrenal system. This consists of the thyroid gland, the anterior pituitary body, and the adrenals, which are functionally interdependent, forming a system through which cardiac action, respiration, and general cellular oxidation are maintained.

An admirable demonstration of the truth of these tenets is embodied in Dr. Lorand's lecture on the causation of senility and its treatment by hygienic and therapeutic measures.

Old age is caused by degenerations in the ductless glands (thyroid, ovaries, adrenals, pituitary body, kidneys, etc.,) which, in his opinion, also govern the processes of oxidation and the nutrition of the tissues

(Lorand, C. r. Societe de biologie of Paris, December 4, 1904). There exists in old age a condition of chronic autointoxication, due to degeneration of the ductless glands, whose powerful antitoxic properties have been demonstrated by the investigations of experimental pathology. It has been shown by Pineles, Lorand, and others that pathologic alterations in one of the ductless glands can induce changes in the others, and thus the extirpation of the thyroid, or its degeneration, is followed by interstitial hepatitis and nephritis. In consequence of the insufficiency of these two ductless glands a quantity of poisonous products is retained in the organism and a condition of chronic autointoxication is aggravated—a fact repeatedly emphasized in the past, as our readers know, by Sajous.

The degeneration of the thyroid is also constantly followed, according to Lorand, by alterations in the activity of the intestines (atony of the intestine, with chronic constipation, and of the skin, deficiency of perspiration in consequence of the atrophy of the sudorific glands), and thus the elimination of toxic waste products by these two important excretory organs is seriously impeded.

The treatment of senility, according to Lorand, is to limit the action of those agencies which are deleterious to the ductless glands (infectious diseases, overnutrition), especially the use of large quantities of meats, sexual excesses, frequent pregnancies, prolonged lactation, excessive indulgence in emotions, alcohol, and the like. A mixed diet, with much milk, little meat, cereals, stewed and fresh fruits and vegetables, is advocated. Aiding elimination of the toxic products by stimulating the action of the intestines, skin, and kidneys is an important feature of treatment. Special care should be taken to avoid substances which might irritate the kidneys and cause desquamation of the epithelium, with casts and albuminuria (such as condiments, strong sauces, black tea in large quantities, alcohol, too many drugs, etc.). Organotherapy, based on a knowledge of the physiology of the ductless glands, by small doses of the fresh thyroid, ovarian and adrenal glands, kidney extracts, is also recommended by Dr. Lorand.

At the request of the writer of the present article, to state whether his views had been sustained in Europe, Dr. Lorand wrote as follows: "My paper 'Sur les causes de la Sénilité' (Bull. de la Soc. roy. des sc. med. nat. Bruxelles, April 3, 1905), was commented on flatteringly by Dr. Buttersack, of Berlin, former assistant of Professor Leyden (Fortschritte der Medizin, July 20, 1906). Dr. Harry Campbell, of London, (Lancet, June, 1905) writing on 'Senility,' arrived independently, without knowledge of my previous findings, to the same conclusions. My

paper on senility was presented by Dr. Gley, professor of physiology and one of the best-known authorities on the functions of the thyroid, to the Paris Biological Society. My theory on the thyroid origin of diabetes has been confirmed by Prof. Friedrich Muller, of Munich at the last German Congress of Internal Medicine this year in Munich. At the last French Congress of Internal Medicine (in Liege, 1905) Prof. Bouchard, the eminent author on nutrition publicly endorsed my teachings on the importance of the thyroid in the pathogeny of diabetes, obesity, and gall-stone disease, and based his clinical lessons last year on my views on this subject (Bulletin médical, September, 1905). I addressed on similar subjects the Pathological Society of London, introduced by Dr. Pavy, February 21, 1905. I wrote two books on diabetes, published by Maloine, Paris, 1903, which also appeared the same year in German (translation published by August Hirschwald, Berlin). The importance of the action of the thyroid in the processes of metabolism and senility, shown by myself to be essentially a disorder of metabolism, was endorsed by Prof. von Noorden, as shown by the fact that Prof. Magnus Levy is publishing, in his elaborate new handbook on the pathology of metabolism, a special chapter on the ductless glands. Dr. J. F. Richter, of Berlin assistant to Prof. Senator, also reached the conclusion, in his handbook on metabolism, published in 1906, that it was practicable to treat many diseases of metabolism by organic extracts. I was among the first to show that diseases of metabolism stand in close relation to alterations of the ductless glands, in my book on origin of diabetes after alteration of the ductless glands. In criticizing my work, Docent Richter wrote (in the Deutsche Medicinische Wochenschrift, September, 1905), "It is of not inconsiderable value for the future of the investigations on the nature of diabetes, and that I had first drawn his attention to the importance of the ductless glands as factors in the pathology of this disease, which has been unduly neglected until now."

Sajous had already shown, in the first volume of "Internal Secretions" (published January, 1903) that the adrenal system, composed of the thyroid, pituitary body, and adrenals, was the source of diabetes through overactivity of the adrenals. Thus the views of Lorand harmonize beautifully with Sajous's conception. Especially does the strength of the latter author's conception become evident in view of the fact that Blum, Croftan, Herter, and others have shown that adrenal extract and adrenalin injections give rise to glycosuria, and that in animals in which this phenomenon is present, it can be increased by compressing the adrenals so as to increase the supply of secretion.

It is interesting to note the frank recognition of Lorand's observations by so many eminent investigators in Europe, including such authorities as

Bouchard in Paris and Pavy in London, men old in years, yet keen to perceive the evidences of important facts, new lines of thought in pathogenesis, and their bearings on clinical problems. The contrast with American investigators is self-evident, and we need no longer wonder why, on the continent of Europe, American medicine stands on a par with that of the most insignificant nations. It will never be otherwise until servility to foreign ideas will at least be mitigated by due recognition of the progressive work done in this country.

Sajous, anticipating much that has been "discovered" in Europe during the last four years, was first to urge (see also *Monthly Cyclopædia*, for January, 1903) that the thyroid gland supplies the blood with a secretion which increases the adrenal secreting functions and thereby augments the activity of oxidation processes. All of Dr. Lorand's valuable observations sustain him, since, by emphasizing the great rôle of the thyroid in various morbid states, they simultaneously emphasize the far-reaching influences of the adrenal system in disease and therapeutics.—*The Monthly Cyclopædia*.

SURGERY.

Foreign Bodies in the Esophagus, with Report of a Case.

By W. S. WIATT, M. D., East St. Louis, Ill.

Member of the Staff of Henrietta Hospital, Professor of Fractures and Dislocations and Cerebral Surgery, College of Physicians and Surgeons, St. Louis, Mo.

While a hospital interne the author was impressed with the difficulty of locating a foreign body in the respiratory or alimentary tract without the aid of the X-ray.

The case in question was that of a child who had a grain of corn in the respiratory tract. The patient was treated by the surgeons and laryngologists on the staff, and after several unsuccessful efforts to locate and remove it, was sent home. In a few days the attending surgeon received a letter containing the grain of corn, which the child had coughed up.

Foreign bodies may lodge opposite the cricoid, where the left bronchus crosses the esophagus, or where the esophagus passes through the diaphragm; however the point of lodgment will largely depend on the size and shape of the body.

The symptoms are variable. There may be dyspnoea so pronounced as to suggest the lodgment of the body in the trachea; but the esophagus accommodates a large body, and the patient quickly becomes accustomed to

its presence, so that dysphagia, or inability to swallow solid or semi-solid food, may be the only symptom complained of. Pressure symptoms, as aphonia, and complications due to ulceration into surrounding viscera, occur in long-standing cases.

Calvert reports a case in which a tooth-plate ulcerated into the thoracic aorta eight months after the patient swallowed it, and Lennox Browne another in which a tooth-plate was impacted in the esophagus three and one half years.

The history of cases where bodies have been impacted in the esophagus for days, months and years are so numerous as to justify the opinion that they must have given rise to little inconvenience, causing so few symptoms that a diagnosis was not made, nor a surgeon consulted.

The prognosis will depend on the size, shape and location of the body, also the length of time it has been impacted, for the longer the impaction, the greater the possibility of ulceration into surrounding structures or blood-vessels. No matter how long the body has been impacted without causing harm, the patient is never safe until it is removed, one case being reported in which a beef bone remained in the gullet nine years and then caused trouble.

Diagnosis. It is not always possible to get a history of a foreign body having been swallowed by a child; and if it is too young to tell its own story, we frequently can get no idea of the character of the body. It is only possible to palpate it when it is large and well above the manubrium. In the author's case it was impossible to palpate a collar-button lodged at the inner end of the clavicle, the small end of the button projecting to the front into the trachea. The child was greatly emaciated.

The esophageal bougie is not always reliable. A case is reported by Wyeth (1) which had been examined by several Cincinnati physicians and in which the bougie failed to locate a plate containing two upper incisors. The body becomes coated with mucus, the bougie slipping past it. In the child, unless anesthetized, the passing of the bougie is not an easy task, and the violent retching, incident to its passage, is fraught with danger, if the body be large, irregular in shape and impacted.

If the body be bone or metal, the fluoroscope is our most valuable aid in locating it and obtaining a correct idea of its size and shape. To illustrate, it is of great importance to know whether a safety-pin is open or closed in the esophagus; also if an irregular body of considerable size is impacted and its angular projections have caused ulceration of the esophagus. The fluoroscope, or an X-ray negative, will better enable the surgeon to determine whether he is justified in trying to remove the body with

forceps through the esophagoscope or whether he must do an esophagotomy or a gastrotomy at once.

Jackson (2) has called attention to the fact that the fluoroscope is unreliable, and that a X-ray negative should be made in two planes at right angles to each other, one antero-posterior and one lateral. The author's case was an exception to this rule, since the button was plainly visible through the fluoroscope, a correct idea of its size, shape and location being obtained.

It is beyond the province of this paper to describe the technic of using the Killian esophagoscope. It is often possible to remove bodies through this instrument with esophageal forceps, or the magnetic rod if the body be metal. If, however, it be large or irregular in shape and impacted, then any attempt at extraction is fraught with danger. The instrument is a great aid in diagnosis, especially in those cases where the X-ray cannot be utilized, viz., when the foreign body is neither bone nor metal.

Treatment. Many ingenious methods have been devised for the removal of foreign bodies from the esophagus. The old plan of inverting the patient is not entirely free from danger, and should be preceded by a tracheotomy.

Franck gave a patient a seidlitz powder, directing him to take the two separately and hold his mouth and nose shut, and thus forced a bolus of meat from the gullet into the stomach by pneumatic pressure.

The treatment in a given case will depend on the shape, size location and length of time which has elapsed since the body lodged in the esophagus. To apply safe and rational measures for relief, the surgeon must familiarize himself with the above facts.

If the body be irregular in shape, and has sharp projections, or if it be large enough to put the walls of the esophagus greatly on the stretch, the danger of efforts to extract it with forceps through an esophagoscope, or to push it down into the stomach, is obvious. The esophagus may be ruptured or lacerated, with injury to adjacent structures or infection of the mediastinal space.

King (3) reports a case which aptly illustrates this danger. In attempting to remove a foreign body from the esophagus with the Graefe coin catcher he had trouble in disengaging the instrument after it had become entangled with the body, and in so doing lacerated the esophagus so that the patient had empyema, following esophagotomy, and died.

Black (4) also reports a case which may have some bearing on this matter. On the sixth day after swallowing, an unsuccessful attempt was

made with hook, forceps and fluoroscope to remove a washer one inch in diameter, which was impacted in the esophagus. The patient died suddenly the following morning at 7 o'clock, after vomiting some partially digested blood and stomach fluids. Dr. Black did not hold a *post mortem*, but the vomiting of blood is significant.

If the body is small, and has recently been swallowed, it can frequently be removed with forceps through the esophagoscope. Even under these conditions protracted efforts are attended by danger, and an esophagotomy or gastrotomy is to be done if a reasonable number of trials fails to locate and remove it *per os*.

If the body is metal, magnetic extraction is safer than forceps, probang, or coin catcher, since it draws on the free end of the body, and the rod will be pulled loose from the body before traction of sufficient extent to tear the esophagus has been applied. Magnetic extraction is only possible through the esophagoscope, since the collapsing walls of the gullet pull the body loose from the magnetic rod.

One author suggests that a metal catheter be passed over a line attached to a fish-hook, and by thus getting close to the barb on the hook it is pushed out of the esophageal wall with as little laceration as possible.

The surgeon must avail himself of one of two methods, viz:—

(a) Removal with forceps, probang or coin catcher, aided with the esophagoscope or fluoroscope.

(b) Esophagotomy or gastrotomy.

McKenzie and Black both describe cases in which, with forceps in one hand and a fluoroscope in the other, they were able to guide the forceps to the body, seize and remove it. In Black's case the patient was anesthetized, the Roentgen ray tube being placed beneath the patient's head and assistant supporting the head in his hands. The operator held the fluoroscope in his left hand, and directed the forceps with his right hand.

If the body is lodged in the upper two-thirds of the gullet, esophagotomy is to be done when efforts to remove it *per os* fail. If lodged in the lower one-third, gastrotomy is the operation indicated.

Esophagotomy has a mortality of 23 per cent., septicæmia being the most frequent cause of death.

The following case of lodgment of a collar button in the esophagus is reported as well illustrating the importance of early diagnosis and removal of a foreign body in the esophagus:—

The patient was a negro infant aged 18 months, of previous good health, residing in Brooklyn, Ill., and was seen in 1900.

Six weeks ago, while playing on the floor, the child began to cough and retch, and the mother suspecting it had swallowed something did as mothers usually do, struck it several times on the back with her open hand, and ran her finger down its throat to make the child cough or vomit, but this failed to expel the body. The child was then taken to a clinic in St. Louis, where a tracheotomy was done, but the button was not removed.

Present Condition. Temperature 101; pulse 130; respiration 30. Crepitant, sonorous and sibilant rales heard over both lungs. Pneumonic areas scattered over both lungs, the process being in different stages in different areas. Great emaciation and inability to swallow solid or semi-solid food followed.

The child was taken to Dr. Wm. W. Graves and the button was readily seen through the fluoroscope.

After obtaining a clear idea of the size, shape and location of the button, and in view of the pulmonary symptoms present and the fact that the small end of the button was projecting forward and had been impacted six weeks, we surmised that it had ulcerated into the trachea, and did a tracheotomy, hoping to remove it, but failed, since the base, or large end, still remained in the esophagus.

Esophagotomy was then done, and the button removed without difficulty. The wound in the esophagus was left open, the skin wound being partially sutured and drainage carried down to the esophageal wound.

The child was fed per rectum, and given small quantities of concentrated liquid nourishment *per os* after the third day. It lived ten days, dying from pneumonia and the exhaustion caused by the six weeks' starvation.

Summary :

1. All foreign bodies in the esophagus should be removed at once to prevent impaction, ulceration, and its dangerous complications.
2. Prolonged efforts at removal through the mouth are to be condemned, as the esophagus, thoracic blood vessels, or viscera may be lacerated, causing fatal hæmorrhage or infection of the mediastinum or pleural cavity.
3. All bodies of *bone* or *metal* should be located with the X-ray before attempting to remove them.
4. Feeding through a stomach-tube (after esophagotomy) is not practicable in a child of 18 months, so it must be fed per rectum until the wound in the esophagus is sufficiently closed to prevent flooding into the neck during the act of swallowing liquid food.

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OPHTHALMOLOGY.

The Comparative Efficiency of Silver Nitrate, Protargol, and Argyrol.

By.

T. HARRISON BUTLER, M. D., OXON.

*Honorary Ophthalmic Surgeon to the Coventry and Warwickshire Hospital;
late Assistant Surgeon to the British Ophthalmic Hospital, Jerusalem.*

Every summer an epidemic of acute muco-purulent conjunctivitis breaks out in Palestine and Egypt, caused chiefly by the Koch-Weeks' bacillus. During this epidemic many hundred cases present themselves at the British Ophthalmic Hospital in Jerusalem. I have in consequence had ample material to make a comparative examination of the therapeutic effects of silver nitrate, protargol and argyrol in the treatment of this disease. For many years silver nitrate has been exclusively used at this Hospital, and it has given excellent results. Long experience has shown that it cannot be safely used in a stronger solution than 3%, and a 2% solution has generally been employed. A 2% solution of silver nitrate, even if neither neutralised nor washed out, never causes any irritation, nor do the lids, even in infants, ever show any signs of cauterisation. Any solution stronger than 3%, unless at once neutralised with salt solution, has a caustic action, leaving a faint film of destroyed epithelium. This is especially the case with infants, who form the majority of the cases. Accordingly, in making these tests, a 2% solution of silver nitrate was always employed. In adults the silver solution was neither washed out nor neutralised. In infants the eye was washed out with boric lotion, after the application of the nitrate. Protargol and argyrol were used in a 33% solution (33 grammes in 100 grammes of water). The solution was freely used and the excess was left in the eye. The solutions were always applied by means of small pellets of absorbent wool held in catch forceps. Drops for home use were always given—silver nitrate in 0.2% strength, or argyrol or protargol in 5% strength.

These comparative tests, which were made in the summer of 1905, were carried out as follows:—Cases were chosen in which the disease was in an early stage, and the two eyes nearly equally affected. One drug was applied to the right eye, another to the left, while the third was given for home use. The next day the eyes were inspected, and the differential treatment continued day by day until, either one drug established a superiority or it was certain that both were having an equal effect. Many of the patients were never seen again: probably the first application cured the case.

Forty-two cases in which silver nitrate was tested against protargol were followed up to a complete cure. The results were as follows:—

Protargol superior in 62% of the cases.

Silver nitrate superior in 10%.

Equal result in 24%.

In many of the cases in which protargol proved the better drug the difference was not great, but it was sufficient to demonstrate its superior therapeutic action.

In twenty-two completed cases, protargol was tested against argyrol with the following results:—

Protargol proved superior in 50% of the cases.

Argyrol proved superior in 0.45% of the cases.

Even result in 49.45% of the cases.

Or shortly: in half the cases the effect of the two drugs was the same, and in half, argyrol proved to be inferior in therapeutic action to protargol.

In many of the cases in which protargol gave the best result, the difference in its favour was very pronounced; in some of them the "protargolised" eye recovered after two to three days of treatment, whereas there was still a discharge from the "argyrolised" eye at the end of week. Some of these eyes at once recovered when protargol was substituted for argyrol. In four cases argyrol seemed to cause great irritation, a symptom which I have never seen caused by silver nitrate or by protargol. After 22 comparative tests the inferiority of argyrol to protargol had become so marked that the tests were discontinued.

In 13 cases argyrol was tested against silver nitrate. In seven of them the effects were equal, in six argyrol showed a slight superiority.

During the past summer (1906) I have used protargol for several hundred cases of acute muco-purulent conjunctivitis, and the results have in my opinion, been decidedly better than I obtained with silver nitrate in former years.

My conclusions are that protargol is a more satisfactory agent than either argyrol or silver nitrate for the treatment of acute muco-purulent conjunctivitis, and that argyrol is better than silver nitrate. Protargol is perfectly safe up to 33% and may probably be used in even stronger solutions. Its application causes much less pain than silver nitrate, but more than argyrol. Silver nitrate in strong solutions is a very dangerous agent. It has unfortunately become the custom in Palestine to use 10% and even stronger solutions with most lamentable effects. These results have been obtained in conjunctivitis caused by the Koch-Weeks' bacillus and do not in any way contradict the results obtained by others who have tested the colloid silver salts upon gonorrhœal conjunctivitis. There are several cases in the summer epidemic in which the gonococcus is present in large numbers, but they almost invariably lead to the non-ulcerative cases upon which this investigation was made.—*The Ophthalmoscope.*

Argyrosis: including a Preliminary Note on the Action of Silver Salts.

BY

J. BURDON-COOPER, M.B., B.S., B.Sc., F.R.C.S.E.,
of Bath, England; late Assistant Ophthalmic Surgeon, Royal Victoria
Hospital, Bournemouth.

My study of this subject has immediate reference to the behaviour of nitrate of silver when applied to the conjunctiva; the manner in which it produces the stain we are familiar with as argyrosis; and the nature of the chemical changes which take place.

Several views have been advanced to account for the staining. One, perhaps the most popular, sought the essence of the reaction in the decomposition by light of a hypothetical silver proteid compound, but we cannot hold such a theory at the present day in view of our extended knowledge of proteids; for it has been shown that proteids from which all trace of salts has been removed, give no reaction with silver nitrate. It would serve no useful purpose to go into the other theories, suffice it to say that it has now been definitely shown by two quite independent observations, that the all-important element in determining the stain is the chlorine of the soluble chlorides, which exist so abundantly in the inter-cellular material of the tissues generally and less so in the protoplasm of cells, but which is absent altogether from normal nuclei. It is this chlorine that determines the distribution of nitrate of silver when it is applied to the conjunctiva; and the writer has proved to his own satisfaction by experiments on the penetration of nitrate of silver into colloids

(egg albumen, gelatine, &c.) that not only is the distribution influenced, but the rate of penetration also, and the latter in such a remarkable way that it can be expressed almost as a law as follows:—"that the rate of penetration of a soluble silver salt into a colloid is, other things being equal, directly proportional to the chlorine in the latter, capable of reacting with the silver salt." The depth of penetration from similar experiments he has found to be dependent on the strength of the silver solution solely. It is not influenced by the chlorine. For those who are not quite familiar with what happens when nitrate of silver is allowed to penetrate into gelatine or egg albumen, it may be said that the precipitated chloride of silver is not deposited uniformly, but in layers, and Ostwald has explained this by assuming that precipitation begins only when the critical concentration of the advancing solution is reached, and continues until the solution is brought back to the metastable condition; when this has taken place another development of the labile condition obtains, and thus another stria, after an inter-striate zone is formed. As the silver salt becomes more and more dilute, critical concentration is attained later and later, and so no striæ are separated by inter-striate zones of increasing width. The writer does not pretend to infer that what takes place in these laboratory experiments occurs in a similar manner in the case of a living membrane such as the conjunctiva, but such experiments are suggestive, and throw a good deal of light upon the action of nitrate of silver. And the writer believes that something very similar occurs in practice, although, of course, the distribution of the chloride of silver in the conjunctiva is much less regular and uniform than in the case of the gelatin.

In view of what has been said, I had better allude to the seat of the stain at this point. This has been given variously by different observers, as in the lymphatics (Stephenson) and elastic tissue (Grossmann). The distribution of nitrate of silver in the conjunctiva is influenced, as we have seen above, by the soluble chlorides which by chemical affinity attract the nitrate along those channels in which the halogen is found in greatest proportion. The extent to which the nitrate obeys this influence is dependent on the strength of the solution applied. In this way, to my mind, the apparent discrepancy between two observations which are both correct in measure, is to be accounted for, as a stain will be produced wherever chlorides exist, but the exact delimitation is a function of the concentration.

We know that the nitrate which has penetrated into the conjunctiva is there converted into chloride of silver, AgCl . The alteration in color of this on exposure to light we are all familiar with, how a light brown color changes to dark olive brown which eventually becomes greyish-black.

The brown coloration is either a lower chloride of silver (argentous chloride) or an oxychloride, and as to the greyish-black stain that eventually remains, the writer is not quite certain as to whether this is the black oxide of silver, or metallic silver, it is usually put down to the latter. The writer has noticed that corneal stains persist longer in their brownish stage than those of the conjunctiva. Why, he cannot say; presumably the difference in the circulation has something to do with it. If the black stain is an oxide, then the term reduction staining should cease to be applied to the process of staining by nitrate of silver.

The bluish-white pellicle which follows the application of nitrate to the conjunctiva is not coagulated albumen, as is usually supposed, but chloride of silver deposited in the structure of the membrane, and this leads one to add a remark as to the form of application which is most likely to be followed by staining. The writer's experience is in favour of drops, and the explanation, I believe, is as follows:—a strong solution of silver nitrate (15 gr. to 1 oz.) will be precipitated in the cells to such an extent as wholly to destroy their vitality—they are cast off together with the chloride they contain, and in this way the greater amount of silver chloride is got rid of. Some nitrate, however, penetrates deeper, but the critical concentration, after the initial precipitation, is insufficient to determine a deposit of chloride in the cells, in sufficient quantity to destroy them (weak solution). This chloride undergoes the change above described. It is precisely this incapacity on the part of a weak solution of nitrate of silver to be precipitated in the cells in sufficient quantity to destroy them, combined with the frequency of application, that makes the weak solution most potent in causing a stain.

To recapitulate briefly then, as far as argyrosis is concerned:—

- (1st) The essential element in determining the stain is the soluble chlorides of the tissues.
- (2nd) It is chloride of silver that is decomposed by light, not an albuminous material.
- (3rd) The soluble chlorides influence the rate of penetration of silver nitrate.
- (4th) The depth of penetration is a function of the concentration of the silver solution.
- (5th) The seat of the stain is determined by the soluble chloride, and is also dependent on the strength of the solution.
- (6th) The brown stain is either argentous chloride or an oxychloride of silver.

(7th) The black stain is either metallic silver or the black oxide, probably the former.

(8th) Drops are more potent in causing a stain than an application of a stronger solution by the brush.

I should like to add a word upon the organic preparations of silver.

From my experiments, which were undertaken with a view to ascertain their penetrating power, as compared with solution of nitrate of silver, I must confess that my former faith in them, which never was very great, has now almost ceased to exist. One cannot go into them individually here; in fact, I have not tested them all yet, but one can speak of argyrol and of its ally collargol, which are, perhaps, the most disappointing specimens of the lot. The penetration of a 20 per cent solution of argyrol as compared with weak nitrate is practically *nil*, and one was not surprised to find this, as the molecules of these organic silver compounds must be large, and if so, must exert a powerful influence on the action of the body they collectively represent. Then again, we know that organically combined silver is very inert as compared with the inorganic form. The amount of silver such bodies contain is no criterion of their therapeutic utility. The all-essential point is, can any of the large amount of silver enter into a reaction whereby it changes its electrical state and stability from that of its initial to that of its final state. If so, then it has some potential energy behind it. Argyrol does not react with a soluble chloride, and most of the silver is deposited as such on adding a dilute acid. I believe it is wholly inert in the conjunctival sac, or at any rate almost so. Its intense colour is a false expression of its energy. I have read of an experiment which consisted in placing a piece of catgut in a solution of argyrol, and after some hours found it had percolated through and through. The experiment was to show its intense power of penetration. Untwist a strand of catgut and note the fibres it is composed of, and see how absurd it is to assume great penetrative power on the part of a liquid which finds its way between a few fibres of catgut. I think the time has come for us to cease playing at therapeutics, and to cast out of our pharmacopœia a lot of worthless material. Argyrol may have a mechanical effect, I do not deny this, and its sedative action is due to the large amount of silver it contains (metallic silver is sedative in its action), but when this is said I believe we have summed up argyrol. It is interesting to note the comparative rarity of staining by argyrol or any other organic silver compound. (Protargol gives a reaction with a soluble chloride, so I do not include it.) One is gratified to see from the report of the special committee appointed by the British Medical Association to investigate the bactericidal

action of the various silver compounds that their results are in accordance with those of the writer of this paper. Approached from an entirely different standpoint, they are led to conclude that the amount of silver a compound may contain is no criterion of its bactericidal power, and the same conclusion the writer would extend to properties other than bactericidal. I am quite aware, judging from the extensive literature on the therapeutic uses of the organic silver salts and the praise that has been accorded them, that my ideas rank with those who are in the minority, but they are based on convictions which, I trust are well grounded, and one's remarks are presented with all respect to those who have laboured in the same field with more favourable results.

I for one shall think twice of casting aside, and replacing with any such material as argyrol or its allies, the time honoured nitrate of silver, which has rendered such signal service in ophthalmology, and which is ever on the alert to enter into some reaction whereby its electrical state and stability of its ions are altered. Herein lies its virtue, as far as I can see.—*The Ophthalmoscope*.

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THERAPEUTICS.

The Treatment of Hæmorrhage by the Use of Drugs.

BY

WALTER E. DIXON, M. A. (CANTAB.) M. D. (LONDON.)

Professor of Materia Medica, Pharmacology and Therapeutics in King's College, London; Assistant to the Downing Professor of Medicine in the University of Cambridge, London, England.

So much misconception exists respecting the pharmacological action of the drugs commonly employed for the arrest of hæmorrhage that I have thought it desirable to give some account of their modes of action, especially with respect to their relative effects on different vessels.

They may be conveniently divided into two categories (1) those which act topically by constricting the blood vessels, and (2) those which are absorbed and pass into the circulation before reaching the seat of hæmorrhage.

When it is possible to apply a drug directly to a bleeding point the hæmorrhage may, as a rule, be stopped with certainty by bodies which

either coagulate proteid or constrict the bleeding vessels. The tannins and ferric chloride may be taken as examples of this group, and they act by blocking up the smaller vessels with the precipitated serum-proteids. This principle of treatment is correct, and such drugs may be employed beneficially in hæmorrhage from the stomach, the nose, the uterus, or other parts where the drug actually comes in contact with the bleeding point. As examples of the second group adrenalin, cocaine and digitalis may be mentioned. When the drug is absorbed and passes into the blood before reaching the seat of hæmorrhage, exactly what happens to the bleeding vessel is not easy to determine. First it is necessary to know what has become of the drug; has it, for example, undergone any change in the body which renders its action inert? Secondly, supposing the drug to have reached the blood, and to have retained its activity as a vaso-constrictor, it must exert its action on the vessels of the bleeding point, but not more on these vessels than on the other vessels of the body; and supposing the bleeding vessels in question are poorly innervated or poorly supplied with muscle, the effect on the other vessels may entirely overshadow the effect on the bleeding vessels, so that the large increase in blood pressure from the former effect may overcome the constriction of the more feebly innervated vessels.

The tannins, as is now well known from the work of Stockman and others, are not absorbed as such into the system; not more than about one per cent reaches the blood in the form of gallate of sodium. Gallate of sodium does not constrict vessels; indeed, any tendency it has on their caliber is always on the side of dilation, nor does it increase the tendency of the blood to clot, so that the tannins can not be regarded as drugs of value in the treatment of internal bleeding. The active principle of the suprarenal glands has been described as exerting a decided action in checking internal hæmorrhage, even when administered by the mouth. We know that adrenalin is destroyed in the stomach, and that none of the active constituent reaches the blood; at least, there is no evidence of its absorption, as shown by vaso-constriction or rise in blood pressure. I have verified these statements both in animals and on man; in the latter sixty minims of one in one thousand adrenalin well diluted, produced no effect on the blood pressure, as recorded by the Hill and Barnard instrument whilst in animals even larger doses have been given by the mouth without producing vascular changes. But if even a quarter of a minim of a solution of this strength is injected into the circulation of a cat, or if two minims are injected into the circulation of a man, there is a decided rise in blood pressure acceleration of the pulse, and the other signs of suprarenal action. Even when adrenalin is injected subcutaneously

it produces no effect on the systemic blood vessels. I have tried this by injecting under the skin of the forearm ten minims of a 0.1 per cent solution, and simultaneously observing the blood pressure on the opposite arm. The pressure remained constant. Similar effects have been observed by Janeway in America, and Elliot in Cambridge. The adrenalin produces a local effect, and is apparently destroyed locally. So that neither tannin nor adrenalin, when administered in the manner described, can reach the blood in a form in which it is possible for them to influence the vaso-motor system.

There are several drugs which induce vaso-constriction of internal vessels. Adrenalin, administered intravenously, will do this, and ergot, the digitalis group of drugs, lead and other substances are effective when administered, either by the mouth or subcutaneously. This vaso-constriction does not affect all the vessels in equal degree; some may be intensely constricted, whilst others, from an absence of nerve supply or poor development of the muscle in their walls, may remain almost or entirely unaffected.

In considering the condition of the blood vessels in any organ of the body, two factors must be noticed: (1) the general blood pressure, and (2) the tendency to constriction produced by the local action of the drug on the organ. The latter effect can only be obtained by perfusion of the isolated organ with defibrinated blood outside the body, for it is only in this way that the general effect of the drug on the other vessels, resulting in their constriction, and so of a general rise of blood pressure, can be avoided. Such experiments invariably show us that the vessels of the splanchnic area become constricted much more intensely than those of the muscles, brain or lungs.

If one may take a hypothetical case in which a drug is producing constriction of the vessels by acting on their plain muscle fibre, it will produce intense constriction of the splanchnic vessels, a somewhat smaller constriction of the vessels supplying the skeletal muscles, and a still smaller constriction of the lungs, liver and brain. This effect in the lungs, brain or liver is so feeble that the tendency to constriction is overcome by the rise in blood pressure from the more intense splanchnic constriction, so that instead of constricting, these vessels dilate, and the organ becomes congested. This statement is true for all the drugs in common use which are employed to produce vaso-constriction. The vessels of the intestines and splanchnic area constrict most, then follow the skeletal muscles, kidney, spleen, uterus, etc., and lastly, the liver, lungs, brain and coronary vessels. The lungs and coronary vessels receive no nerve supply to their muscles, whilst that

to the cerebral vessels and liver is of the most meagre description, if, indeed, it exists at all.

We are now in a position to examine in further detail the effect of those drugs which produce vaso-constriction. Adrenalin is the first, and this drug, as already shown, induces a specific action only when it is injected into the circulation. It has been shown that adrenalin acts upon the sympathetic nerve-endings in the muscles, and therefore, it induces vaso-constriction just in proportion to the development of these endings. Thus the constriction of the vessels of the splanchnic area is intense; it is less in those of the limbs, very feeble in the cerebral vessels, and absent in the coronary. Hence, supposing a dose of adrenalin is administered intravenously to a man, the blood pressure rises mainly as the result of the constriction of the splanchnic vessels, and the blood being squeezed out from these vessels collects in certain organs, the vessels of which do not respond to adrenalin—*i.e.*, which are not innervated—especially the lungs, and to a less extent the liver and the brain. Not only are the vessels of the lungs and the brain are constricted, but they are in a state of considerable congestion.

Adrenalin has a decided action on the heart by acting on the sympathetic endings; it beats much more quickly and vigorously, and I have often, by continued administrations of small intravenous injections, kept an animal poisoned by toxins alive which, when these injections are stopped, dies immediately from cardiac failure. I mention this fact to draw attention to the powerful cardiac action of adrenalin, which might be invaluable in tiding over an emergency, and which has not yet received proper therapeutic recognition.

The use of ergot in the treatment of hæmorrhage is also much misunderstood. It produces constriction of the vessels through its action upon certain nerve centers. It does not, like adrenalin, act on peripheral nerve endings; this has been shown by many observers, and I have verified their statements by perfusing the drug through peripheral vessels which, in all cases, tend rather to dilate than to constrict. Ergot, acting through the nervous system, produces effects somewhat similar to those produced by intravenous injections of adrenalin. Whilst it gives rise to intense constriction of the splanchnic and limb vessels, it induces congestion of the liver, lungs and meninges. There is another fact about ergot which has not received adequate attention. I refer to its action on the heart. Under the influence of this drug the vigor of the heart increases, and its output is augmented. This action is on the cardiac muscle since the effect can be produced on the isolated heart. It is quite a different effect from that of digitalis, since there is no slowing of the beat, and no action

on the vagal mechanism. The effect is considerable, more pronounced than that of digitalis, and thoroughly deserves the attention of clinicians. The objection to the use of ergot in any form is its want of uniformity; much on the market is quite inactive and has so feeble an effect as to be useless in the treatment of disease. Until it is suitably standardized these objections must continue to hold.

The great difference between the action of adrenalin and that of ergot, is that the effect of the former drug is very transient, being oxidized in a minute or two, whilst that of ergot is much more prolonged, the effect lasting several hours after the administration of a single dose. The practical effect of injecting ergot into a man is to produce a rise in the systemic blood pressure much greater than that which can be obtained by any of the digitalis group of drugs. This increase of pressure is mainly vaso-motor, but is partly cardiac. The vessels which do not constrict are the coronary, cerebral and pulmonary, so that the lungs and brain, being congested, any bleeding from them will certainly be augmented. Injections of ergot are legitimate for the purpose of arresting hæmorrhage only when the lesion is in some part of the splanchnic system.

Of the digitalis group of drugs three only require attention—digitalis, strophanthus and squill. Squill is much the most effective in constricting vessels, then follows digitalis, and, lastly, strophanthus, so that if the use of one of these drugs be desirable for vaso-constriction, that one should be squill. Now, squill produces its action on plain muscle in two ways—first, by exiting the nerve endings, and, secondly, the muscles; so that vaso-constriction does not, in this case, depend upon the presence of vaso-motor nerves. But, nevertheless, the effect of dosing with squill is much the same, as far as the vessels are concerned, as dosing with ergot—that is, the splanchnic vessels constrict, and the pulmonary and cerebral dilate passively. The latter vessels are relatively poorly supplied with muscle, and when the blood pressure rises the feeble attempt which the drug makes to diminish their caliber is overcome by the augmented blood pressure. On the coronary vessels the same order holds, as Dr. G. S. Haynes has shown in laboratory—that is, the squill is most active as a vaso-constrictor, and strophanthus least. This is particularly interesting because strophanthus is far and away the most toxic drug to the ordinary musculature of the heart, a good tincture of strophanthus being eight or nine times as toxic as a good tincture of digitalis, and yet it has comparatively little effect on the muscle of the heart vessels.

There are still other drugs which are occasionally used for their effect on vessels. They are veratrine, barium and certain of the heavy metals, particularly lead. These drugs act directly on all terms of muscle, and

produce tonic contraction. Hence they produce considerable and very persistent constriction, lasting longer than that produced by a nervous action. But, again, what has already been said about squill applies also to these drugs; it is doubtful if they produce other effect than passive congestion of the liver, lungs and brain. Their only legitimate use is for intestinal, uterine or other hæmorrhage from the splanchnic vessels, and even here it may be questioned whether their action is desirable.

I maintain that the tannins, adrenalin, digitalis and its allies, ergot, veratrine, barium and lead, are all worse than useless for hæmoptysis or hæmorrhage from the brain or the liver. Upon what drugs, then, can the physician rely in these conditions? First, it is of the utmost importance to prevent any stimulation of the heart or vaso-constriction, either of which may be produced very readily reflexly by any mental disturbance. The most efficient prophylactic is to diminish all sensory reflexes by means of morphine. Morphine has no action on the heart or vessels directly, but by inducing quietness, placidity and a desire for sleep, it prevents sudden movements, excitement, and other effects which induce cardiac acceleration and reflex of blood pressure. In this way it will probably do more good than any other drug.

There is another type of drug which it is possible to employ advantageously, that is one which augments the clotting power of the blood. Calcium is *par excellence* the drug for that purpose. It should be administered preferably in a dissociable form, such as the chloride. If the salts of calcium are taken by the mouth a certain time must elapse before sufficient reaches the blood to produce an effect on its time of clotting. Unfortunately, however, most cases of bleeding are urgent, and such that the administration of calcium by the mouth is of little value. In these cases the drug should be given subcutaneously. One or two grains administered in this way will diminish the time of blood-coagulation of a healthy man to about a half. For this purpose the calcium chloride should be neutral, and injected deeply into the subcutaneous tissue, so that as far as possible the local irritant action of the drug may be avoided. In these cases of hæmorrhage perfusion with saline is occasionally performed. Dr. C. J. Colemann has lately shown that such dilution of the blood increases the time of clotting sometimes to two or three times that of normal. Perfusion is, however, rarely undertaken until the bleeding has ceased.

I should like to point out that it is a well-known clinical fact that most cases of internal hæmorrhage, such as hæmoptysis, stop without assistance. It is not possible to draw correct conclusions as to the action of a

drug from its administration in two or three isolated cases of bleeding. The cessation of hæmorrhage after the exhibition of a drug, is, in itself, no proof that the effect was produced by the drug, and I cannot doubt that in many instances where such drugs as ergot have been employed to stop hæmorrhage, that their action has been rather to delay the desired effect.—*The Medical Brief*.

The Important Art of Prescription-Writing.

BY

W. A. WEIGHTMAN, M.D.

When we consider the totally inadequate facilities that medical colleges possess for the instruction of their students in the art or science of prescription-writing it is difficult to understand how physicians in general manage to acquit themselves as creditably as they do in that line. Nevertheless, any pharmacist, if he chose to keep a record of the various errors made by physicians, could cite hundreds of examples which, while not being necessarily dangerous to the patient, violate the rules of "elegant pharmacy" and in a great many instances are extremely disagreeable to the patient. A little knowledge of the fundamental rules of prescribing would have helped him to avoid making an unpalatable mixture and inspire in the patient, if not more confidence in his ability, at least less dread of his medicines. Can anybody wonder under the circumstances that the laity as a rule spend so much money for patent medicines which are almost invariably pleasant to take in preference to consulting a physician. Physicians realizing their weakness in this respect have also universally drifted into the habit of prescribing the so-called ethical preparations in many of which the only virtue is the ease with which they can be prescribed. The U. S. Pharmacopœia and National Formulary contain many formulæ which under various other names are manufactured by the different pharmaceutical houses and advertised as new and wonderful remedies, all other similar preparations being described as base imitations foisted by unscrupulous and designing merchants upon an innocent and trusting physician. Of these preparations I could mention many examples but a few will suffice. Look at the formula of Liquor Antisepticus in the Pharmacopœia and consider for one moment the innumerable names of almost identical compounds on the market, no one of which is superior, in efficacy and most of which are much less effective. The cost of the ingredients in all of this class varies from ten to fifteen cents a pint and you know what you pay for them under the proprietary

names. The same may be said of Cataplasma Kaolini which costs to make about ten cents a pound, but under the various names given it by the various pharmaceutical houses you will find the price varies from seventy-five cents to a dollar and a quarter a pound. It is a business maxim with these houses that no preparation will bear the expenses of advertising, etc., and pay a net profit unless the gross profit is at least four hundred per cent. and there are many instances where it runs over one thousand per cent. and yet physicians are surprised when a druggist substitutes in their prescriptions the same drug under another name. While personally I am extremely antagonistic to anything that even savors of substitution I am inclined to believe the substituting like this is like giving four quarters where a dollar is ordered and I do not think I would feel it my duty to go out of my way to fight the battle of the manufacturing house as against both the retailer and the patient.

All druggists in New York State and particularly in Greater New York are required by the Board of Pharmacy to have all their official preparations conform to the standards given in the Pharmacopœia and under no circumstances can they be altered. However, under the Pure Food Law the manufacturer of a proprietary article can change the ingredients every day of the year without anyone else being the wiser, provided he comply with a few simple phases of the law. Thus a physician may be prescribing an article in absolute ignorance of its constituents.

Besides the two articles already quoted I will also mention the following with the one remark that not one physician in five hundred will be familiar with more than a few of their names although under proprietary names he is prescribing them every day. He then forces his patients to pay fourfold their value. Liq. Cresolis Comp., Thymol Iodide, Wine of Cocoa, Sulphonethylmethane, Sulphonmethane, Acetphenetidin Ext. Cascara Fl. Aromat., Elix. Digestive Comp., Elix. Viburnum Opulus Comp., Liq. Auri et Arsenii Bromidi., Liq. Ferri Peptonatis Mangano, Magma Magnesia, Pulvis Antisepticus and Ung. Resorcin Co. All these are standard preparations with their formulæ in one of the two books mentioned.

Many physicians seem to think that by prescribing some particular make of a drug they are more certain of obtaining a reliable preparation. If there is any difference the contrary is the case for two reasons; the first I have just given; the second is that a dishonest druggist had rather substitute where an unofficial preparation is ordered than where one of the standard articles is prescribed, because the standard article he keeps in

stock and is always liable to have analyzed whereas the other he will not keep in stock unless there is a constant demand for it. By substituting here he runs a very slight risk of being found out, and if caught he is seldom fined, while he always is in the former case.

This article is not intended to condemn the entire list of proprietary medicines as there are a few which are unlike any in the pharmacopœia and again a few which cannot be made by the retail druggist.

But to get back to the subject. In order to prescribe intelligently it is necessary to be familiar with certain requirements among which are the following:

1. To know what you want to give.
2. To know in what form or forms it comes.
3. To know the dose of each ingredient.
4. To know the characteristics of each ingredient; that is, whether it is soluble in or miscible with the vehicle in which it is to be given.
5. To know whether the several ingredients are or are not therapeutically incompatible.
6. To know whether or not they are chemically incompatible, and if so whether or not such a relation is desired, as in many instances, a chemical reaction is desired.
7. To know whether any of the ingredients have had their strength altered by a revision of the Pharmacopœia; otherwise the dose given may be too weak to be efficient or too strong to be safe.
8. To be familiar enough with the taste, odor and appearance of each ingredient, to be able to judge intelligently whether the prescription as compounded by the pharmacist has been properly dispensed.

Under the first of these heads I will make no comment as that properly comes under the heads of therapeutics and practice of medicine.

In the second class the vehicle of the prescription may be water, alcohol, alcohol and water, glycerine, syrup, oil or one of several others and the preparations made from the same drug may contain an entirely different class of active principles. For instance in digitalis there are two constituents both known under the name of digitalin one of which is very soluble in water while the other is almost insoluble; thus the infusion will contain none of one, while the tincture would contain the entire amount. There are numerous instances of this kind.

As regards dosage, most physicians are familiar with the doses of the drugs they commonly use, but when they desire to use a less common

drug they find their hands tied and compromise by giving a dose too small to be effective or use a more familiar drug.

Under the fourth class I have seen such combinations as alcohol combined with mucilage of acacia, Fld. Ext. Cannabis Indica with Elix. Simplex and others too numerous to mention.

Regarding therapeutic incompatibility it is difficult to give any general rule as drugs which are incompatible in one disease may agree perfectly in another, even strychnia and morphia may work harmoniously together; and as no drug has its therapeutic uses confined to one organ, a stimulant may be given to work on one organ and a depressant combined with it to prevent its acting on another.

Under chemical incompatibility we have a large number of preparations the incompatibility of which are intentionally utilized and are necessary to produce the desired results, as Lotio Nigra, Lotio Flava, etc., but I have seen Acid Sulphuric and Potass. Iodid in the same prescription. Another frequent error is giving Syr. Scillæ with Ammon. Carb., the physician forgetting that there is Acetic Acid in the Syrup which, if the prescription is rapidly dispensed will later cause an explosion. Potass. Bitart and Mist. Rhei et Soda are occasionally given together, the physician forgetting about the reaction.

Most of these reactions would of course be harmless to the patient but the physician can see that he would not be giving the drugs he thought he was and might be disappointed in their effects. There are others, however, where the effect might at least be unpleasant as for instance the mixing of Spts. ether nitrosi with antipyrine. This makes a beautiful green mixture but one that is not quite as satisfactory in its action as might be desired. Another common error is that of mixing alkaloids and their salts with acetates, bromides, etc. Thus in the following:

R	Quinin Sulph.	grs. x.
	Potass. Acet.	grs. xx.
	Acid. Sulph. Dil.	gtt. v.
	Aqua Cinnam.	oz. i.

the quinin would be precipitated as an acetate making the mixture so thick that it could not be poured.

In the following prescription:—

R	Strych. Sulph.	gr. i.
	Potass. Brom.	dr. vii.
	Aqua ad.	oz. viii.

The strychnia would be precipitated as an insoluble bromide and if the bottle were not shaken all the alkaloid would be given in the last dose with fatal results.

Under the seventh heading any physician who is posted on the changes in the Pharmacopœia will know that the strengths of a large number of the official preparations have been altered. For instance, Tr. Aconite from 35% to 10% and Digitalis, Hyoscyamus, Gelsemium and others from 15% to 10%. This makes considerable increase necessary in the dose while in others as Capsicum and Strophanthus the dose must be halved.

Another item with which both doctors and druggists are familiar in the legibility or rather illegibility of physician's writing. I have seen prescriptions in which one ingredient has been taken for half a dozen different drugs by as many readers, and if the doctor cannot be reached who is to decide?

Again in prescribing mixtures whose dose is given in drops, who ever saw a physician prescribe a minim dropper? There is generally a dropper ordered but drops of different liquids run all the way from thirty to two hundred and fifty drops to the fluid drachm when the same dropper is used. How about it when the droppers vary in size? Of course in some mixtures, as in eye drops, the size of the drop is of no material consequence but in giving Potass. Iodide the patient may go up to ninety drops at a dose and then break his dropper and the next one may give him twice as much in the same number of drops. A large number of other important considerations also enter into the subject of prescription writing, but limit of space forbids their mention here.

In conclusion, I will give a few hints which may be of service.

In prescribing capsules see that the total quantity ordered in a capsule is not so large as to require a capsule of a size difficult to be taken by the patient. It is easier to take two small capsules than one of a large size.

To avoid chemical precipitation, learn the solubilities of the different salts and remember that one of the rules of chemical reaction is that when an insoluble salt will be produced by a reaction that reaction will take place.

To avoid pharmaceutical incompatibility, do not prescribe tinctures, etc., containing gum-resins, balsams, etc., with others in which water is a large constituent, unless something is added to suspend any precipitation that takes place. Again, a prescription which may be perfect in

appearance may, when added to water by the patient in order to be taken precipitate and stick to the glass while if given in milk, wine or some other vehicle may cause no separation whatever.

In a great many instances such details as emulsifying, straining, filtering may be safely left to the pharmacist, but remember that he is not allowed to change, add or subtract any ingredient which will alter the character or dose of the prescription.—*The Post-Graduate*.

Cases and Comments.

A CASE OF NASO-PHARYNGEAL TUMOUR.

BY

F. T. WATSON, L.M.S.,
Assistant Surgeon, Cocanada.

Nagamah, a female aged 42 years, was admitted into the Municipal Hospital, Cocanada, on the 24th November 1906 for difficulty in deglutition. On examination a firm globular tumour was found, about the size of a small orange, filling the whole of the naso-pharynx, protruding into the nose and pushing the soft palate forward. There was great difficulty in deglutition, fluid nourishment only being taken. There was also great dyspnœa, and articulation was very indistinct. The growth was of 3 years' duration. On the 9th December 1906, she was placed under chloroform, and a preliminary tracheotomy was performed by Captain G. M. Illington, I.M.S. The administration of chloroform was then continued through the tracheal opening, while the tumour was being dealt with. The mouth having been opened with a gag, the soft palate was split, and the growth freed as far as possible with the finger. There were adhesions to the hard palate which were broken down with the finger. After the growth had been freed in this way, it was possible to pull it well forward, and then an ecraseur was slipped over it and tightened. While this was being done, the tumour was gradually drawn forward when the whole of it came away followed by a profuse gush of blood. The bleeding was arrested by cramming a sponge firmly into the naso-pharynx, the space around the sponge being packed with gauze. The growth was a fibroid one having a pedicle about two inches long and of the thickness of the thumb. It came away about the spot where the ecraseur was applied. Freeing the growth with the finger must have freed it partially at the base, and pulling the growth forward with the ecraseur

exempted the removal. The tracheotomy tube was removed the following day and the patient made a good recovery.

Elephantiasis of the Sheath of the Penis and Scrotum.

BY

PETER M. LAKSHMANAN, B.A., M.B., C.M., (MAD.) M.R.C.S.,
ENG. L.R.C.P. (LOND.)

*Surgeon, Medical officer in charge of District Hospital, and
Superintendent, Victoria Jubilee Hospital, Quilon.*

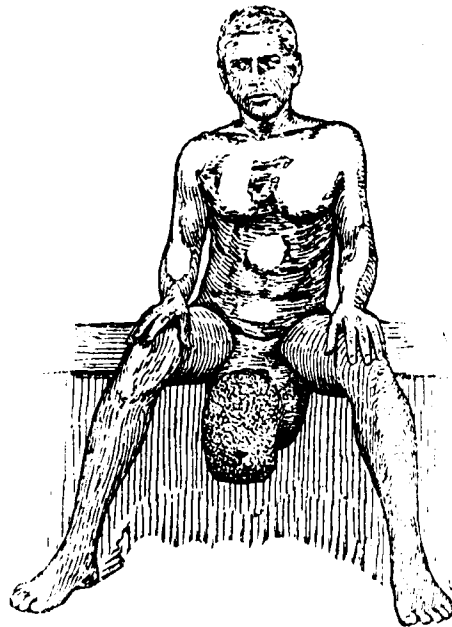
Elephantiasis of the limbs or of the scrotum are such commonplace manifestations of filarial disease that a clinical description of either condition must be uninteresting to most South-Indian readers and therefore uncalled for. But the special case forming the subject of this communication, I presume, possesses some interest both on account of its rarity in surgical practice and because of its not finding a place in many text-books and monographs on the subject.

The most usual condition when the scrotum is hypertrophied from filarial disease, is a thickened and enlarged scrotal tumour with the penis retracted and buried in its upper and front aspect and its existence indicated merely by an opening in the upper end of the median raphæ of the scrotum where "the sheath of the penis is incorporated in the scrotal mass, the prepuce being dragged on and inverted so as to form a long channel leading to the glans penis." The sheath of the penis may however "be specially hypertrophied standing out as a sort of twisted ram's horn-like projection on the anterior surface of the tumour; this however is unusual."—(Manson).

The hypertrophy of the sheath of the penis according to Manson therefore, is rare and even then the enlargement is described as but a projection from the main scrotal mass. But the subjoined case as may be seen from the photograph below, was one in which the hypertrophy of the penile sheath was more distinctly marked and larger than that of the scrotum.

The patient, one I...an Indian christian ryot, aged 40, from Koonathur, was admitted into the General Hospital, Trivandrum, on 22nd December 1902 for enlargement of the scrotum and penis. A fairly well-built man of medium stature and suffering from scabies, he gave a distinct history of periodical attacks of fever for about 10 years followed by an increment of swelling of the scrotum and penis at each attack with the result that he presented the condition seen on admission. To briefly

describe the main characters, the scrotum was a little larger than a large-sized unhusked cocoanut and that which represented the penis appeared to arise from the junction of the middle with the upper third of the scrotal tumour on its anterior aspect and overhung it down up to a little below the knees. The length of the affected penis was $14\frac{1}{2}$ inches from its root. The penile sheath thus hypertrophied presented a much more rough and coarse appearance than the scrotum, being covered by nodular rounded masses varying in size from a grain of mustard seed to a half-sized marble. The preputial orifice was small and almost hidden from view at the distal end of the organ by folds of dense tucked-in skin and admitted a probe to a distance of 13 inches.



The patient's blood was examined for embryo filaria but with a negative result.

He was treated for itch and given a bath daily and made ready for operation on 8th January, 1903.

After the preliminary preparations, the patient was placed on the table, the tumour masses held up for about 5 minutes to drain as much as possible of venous blood from the same into the general circulation and to restrain and control hæmorrhage a rubber tubing was applied according to McLeod's method just outside and above the operation area with a strip of bandage steeped in perchloride of mercury lotion which was passed underneath the crossing of the rubber tube over the pubes and

another similar one under the tube at the perineum to enable one to prevent the slipping of the tube during or immediately after the excision of the tumour. By a longitudinal incision on either side of the scrotum in front, the cord and testis of each side was secured; then the sheath of the penis slit up to almost the very top where the glans penis was found deeply imbedded and small. The whole of the hypertrophied penile sheath as well as the scrotum was excised and removed when the penis was found much thinned from pressure. Pockets were made from the skin of the upper and inner side of the thighs for reception of the testes and these latter were there fixed and the pockets so formed brought together and sutured to make a scrotum. Next the penis was attended to. The patient's right thigh was washed and cleaned and rendered as much as possible aseptic and four strips of skin removed and grafted on the bare surface of the penis so as to cover the entire organ and the necessary dressings were applied. (The minor details of the operation have been omitted). The wound healed by first intention and the grafts took very well except a small piece on the dorsum of the penis at near its anterior end over an area of about half an inch square where it granulated and healed. The patient was discharged quite well a month later from the hospital.

It is now fully four years since he was operated on, and to assure myself of his present condition I sent for this man a month ago and he was good enough to go to Quilon to show himself to me when I found him free from any fresh manifestation of filarial disease and his genital organs quite as good as normal.

I may add here that I operated on two other patients in Quilon about two years ago for a similar condition of the penis and scrotum but only a fourth as large, and saw early in 1902 in Chingleput another patient from Pallaveram in whom the enlargement was half as large, but who refused operative treatment.

[*Note.*—"Disease of the labia," writes Maitland, "does not appear very common" and quotes (then Surgeon-Major) Branfoot who writes: "I have for years been on the look out for cases of elephantiasis with disease of the lymphatics and filaria in the blood but have not come across such cases*....." In these parts on the western coast, however, elephantiasis of the labia in women is not quite so very rare. During the past 3½ years I have been here I have had three such cases for operation.]

*Elephantiasis and Allied Disorders, page 35, by John Maitland. 1891.

THE ANTISEPTIC.

MARCH, 1907.



INOCULATION FOR SMALL POX.

THE world moves but slowly, slowly, and the practice of inoculation with small pox virus, which used to be fashionable at one time, and which has long since been condemned as dangerous, seems to be still flourishing in certain parts of the Madras Presidency. In April last the Deputy Inspector of Vaccination, Madura Range, reported to the President of the Madura District Board that the dangerous practice of inoculation with small pox virus was regularly carried on in a dozen villages within his range; that the practice had the active support of some of the Village Munsiffs and other leading men in the locality, and requested the President of the District Board to take the necessary steps to stop the practice. The Deputy Inspector of Vaccination was unable to have an interview with the village inoculator and to learn the methods of his operation at first hand. The unauthorized operator took good care to give a wide berth to the Deputy Inspector of Vaccination. We are, however, told that the usual fee paid to this inoculator is "half a rupee and a chicken" for each case inoculated. The inoculator must be in a fairly flourishing condition if he is paid at that rate, and if, as the Deputy Inspector of Vaccination suspects, over 200 cases have been inoculated in his own range. On receipt of the report the President of the District Board remarked that no action could be taken in these cases by the magistracy in the absence of a complaint, as the offences under Section 268, Indian Penal Code and Section 116 of the Local Boards Act are both non-cognizable. On this the Sanitary Commissioner wrote to the Madras Government and said: "Inoculation with small pox virus is very harmful and fraught with danger, and I am afraid that it is practised in other districts than Madura. I therefore request that some deterrent Law be passed to prohibit such practice." The Government however seem to think that no special legislation is necessary as Section 190 (1) (c) of the Criminal Procedure Code is sufficient. "The District Magistrate and the Sub-Divisional Magistrate have power to take cognizance of the offence of inoculation upon information derived from any person or upon their own knowledge. The provisions of the law as they stand are sufficient for the

1907].

THE ANTISEPTIC.

175

purpose of preventing the practice of inoculation, and it lies with the District Magistrate to put them in operation." So say the Madras Government. Perhaps the Madras Government are right in their view of the legal aspects of the question. But all the same we cannot help joining our feeble voice to the request of the Sanitary Commissioner for special legislation to put down this most pernicious practice. The practice of inoculation is a very ancient one. It has been recognized from the earliest times that one attack of small pox prevents subsequent attacks in the same individual. The recognition of this fact has been practically universal. In this country as well as in China and certain parts of Africa the practice of inoculation has prevailed from time immemorial. The operations were performed by medical men and quacks. They were also performed in a variety of ways. The Jesuit Father Escherolles describes the Chinese method of small pox inoculation. It consists in powdering the crusts of small pox vesicles and using the powder as snuff. The Chinese also put threads soaked in small pox pus into open wounds. Inoculation was introduced into England by the efforts of Lady Mary Wortley Montague about the year 1715. She had seen the practice in Constantinople and she was greatly impressed with the efficacy of the process. She had her own son inoculated while he was in Constantinople, and on her return to England she got an English Surgeon, Mr. Maitland, to inoculate her daughter. This was the beginning of inoculation in England, and very soon the practice spread and came into general use. In 1754 the Royal College of Physicians published a commendation of inoculation for small pox. But even before the days of Jenner the drawbacks of the practice seem to have been noticed. It was found that inoculated people were quite capable of conveying the disease to susceptible persons, and it was also noticed that a certain per cent of inoculated people died. These considerations led to the promulgation of a decree prohibiting the practice of inoculation in Paris, in 1763. It was about the year 1775 that Jenner began his observations on cow pox which led to the publication of his "Enquiry into the Cow pox." Jenner heard a dairy maid in Gloucestershire remark that she would not have small pox because she had already had the cow pox. This remark set Jenner thinking and experimenting, with the result that he arrived at the conclusion that those who had been inoculated with the cow pox were uninoculable with the virus of small pox. Jenner's conclusions were accepted by the leading members of the medical profession and that acceptance was published over the signatures of Abernethy, Cline, Lettsom and others in the year 1800. In 1802 a committee of the House of Commons started an inquiry into the subject, and after taking a good deal of evidence, made a report

to Parliament with the result that a vote for £ 10,000 to be paid to Jenner was passed. In 1807 another £ 10,000 was paid to him by Parliament, in which year also the Royal College of Physicians published a report strongly approving of the practice as a means to put an end to the ravages of small pox. In spite of these publications and the change of professional opinion on the subject, inoculation for small pox did go on in various parts of the United Kingdom, as they are going on in India at the present time, till the practice was prohibited by Act of Parliament in 1840. In this country the Government is rather disinclined to introduce special legislation regarding Public Health questions. But seeing the great dangers of inoculation for small pox, or variolation as it is called, the Government may go a little out of its way and pass a special Act on the lines suggested by the Sanitary Commissioner. Section 190 of the Criminal Procedure Code may be very good, but a special legislative prohibition will be better. In England the difficulty of passing special legislation is in getting any Bill through the House of Commons. We have not heard of any congestion of business in the local Legislative councils, and a Bill of this nature ought to go through in one afternoon.

[We have received the following circular from the Director of Pasteur Institute, Coonoor. We publish it in the hope that the appeal will meet with a ready response from the Public of this Presidency. :—Ed. A.]

Circular soliciting contributions towards the funds of the Pasteur Institute of Southern India, Coonoor, the Nilgiris.

The Pasteur Institute of Southern India has been established at Coonoor in the Nilgiris for the purpose of treating any person who may be bitten by a dog, cat, jackal, monkey or any other animal which appears to be suffering from rabies, or commonly speaking, seems to be, or is suspected to be, mad.

Experience all the world over has shown that, although not every person bitten by a rabid animal subsequently develops hydrophobia, as the disease is termed when it occurs in human beings, yet a very large proportion of those bitten do develop it, and the disease is invariably fatal.

The treatment first devised by Pasteur about 1884, and now followed with modifications in some 35—40 Institutes in different parts of the globe, has proved so successful that less than 1 per cent. of the persons treated has developed the disease and thousands of lives have been saved thereby.

The Pasteur Institute of Southern India has been partly built and equipped with the sum of one lakh of rupees placed at the disposal of His

Excellency the Viceroy by Mr. Henry Phipps of the United States, America. This money has proved insufficient for the requirements; so, the Government of Madras has liberally allotted further funds and has expressed the intention of handing over the buildings complete and free of debt to the Committee. It is a private Institution managed by a Committee and depends on the subscription of the public for its up-keep. The treatment of patients will in all cases be free.

The preparation of the remedy can only be carried on at a comparatively low temperature; so, it is necessary for the Institute to be situated in the hills.

It is expected that a considerable proportion of the patients as at Kasauli, will be poor villagers who will not only require free treatment but also free lodging, food, firing and warm clothes during the 20 days or so they may have to stay in Coonoor.

Doubtless each of the patients who can afford to do so will desire to contribute something to the funds of the Institute after his course of treatment is ended, but casual subscriptions such as these cannot be depended upon as a source of income and the promise of an annual grant which can be counted on is of far greater value. The public are therefore earnestly solicited to aid by their contributions this beneficent work initiated in South India.

Rule 2 of the articles of the Association runs as follows:—"Every subscriber of not less than Rs. 5 annually to the funds of the Association shall be a member of the Association during the currency of his subscription, provided he shall have paid the entrance fee hereinafter mentioned and have been accepted as a member by the Central Committee. Every member shall pay an entrance fee of Rs. 5."

Rule 3.—"Every member shall be entitled to attend at, and take part in, all meetings of the Association, and on application to receive gratis copies of the reports and other publications issued from time to time by the Association, and shall also, in the event of his requiring it, be entitled to free treatment at the Central or any branch establishment of the Association by inoculation against rabies or any other disease so far as the Association may be in a position to afford such treatment."

Coonoor,
24th December 1906. }

J. W. CORNWALL,
CAPTAIN, I.M.S.,
Director of the Pasteur Institute, Southern India.

We acknowledge, with thanks, receipt of the following journals :—

The Polyclinic. The Bristol Medico-Chirurgical Journal. The Medical Brief. The International Journal of Surgery. The California Medical Journal. The Alkaloidal Clinic. The Dietetic and Hygienic Gazette. The Good Health. The Indian Medical Gazette. The Practical Medicine. The Madras Review. The Viveka Chinthamani. The British Journal of Children's Diseases. The Sanitary Record and Journal of Sanitary and Municipal Engineering. The Northumberland and Durham Medical Journal. The Canada Lancet. The American Journal of Ophthalmology. The China Medical Missionary Journal. The Medical Review of Reviews. The Post-Graduate. The St. Louis Medical and Surgical Journal. The Therapist. The Canadian Practitioner and Review. The Australasian Medical Gazette. The American Practitioner and News. The Caledonian Medical Journal. The Montreal Medical Journal. The Louisville Monthly Journal of Medicine and Surgery. The Monthly Cyclopædia of Practical Medicine. The Buffalo Medical Journal. The Brooklyn Medical Journal. The Ophthalmoscope. The Dental Era. The Madras Law Times. The Interstate Medical Journal. The United India and Native States. The Medical Notes and Queries. The Calcutta Medical Journal.

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Original Articles.

* ON SOME VARIETIES OF LUMBO-SACRAL PAIN.

BY

J. DUNLOP LICKLEY, M. D.

Late House Surgeon, St. Mary's Hospital, Manchester.



FULL consideration of all the causes of pain occurring in the lumbar and sacral regions would provide material for a volume rather than for a short article of this nature. In every general practice, however, cases are constantly presenting themselves in which "pain in the back" is either the outstanding, or the only symptom of which complaint is made and for which relief is sought. Too commonly these cases are slumped together under a diagnosis of "Chronic rheumatism" or "Lumbago" and are relegated to the class of uninteresting cases. A closer enquiry into the ætiology however, reveals many points of interest and incidentally indicates the rationale of certain empirical methods used in the treatment of these conditions. Anatomically the lumbo-sacral region consists of two portions—the lumbar, moveable, and the sacro-coccygeal, more or less fixed. The lumbar vertebræ form the lower end of the moveable spinal column and on them falls a considerable part of the weight of the trunk and upper extremities. The movements allowed are flexion and extension and these are effected by the summation of small gliding movements between the articular processes of the individual vertebræ. An important point to notice in this connection is that these small joint movements are amongst the most constant in the body. Only when the body is in the recumbent or semi-recumbent posture are they at rest; in other postures they are constantly in action, to meet the changing conditions related to the alterations of the position of the centre of

* Specially contributed to "The Antiseptic."

gravity of the body. The soft tissues are composed chiefly of a series of small muscles combined to form on each side a large muscular mass. Overlying these are dense fascial sheets which greatly strengthen the ligamentous structures of the column, and at the same time, by limiting the range of movement, prevent damage to the small muscles. From the foregoing considerations it will be evident that the conditions present will tend to exaggerate a small lesion in this region, and also that repair of such a lesion will be slow and difficult.

The sacral region may be regarded as including the sacro-iliac synchondrosis. In most individuals these articulations scarcely allow of movement, but, in a few cases, synovial cavities may be developed and a fair amount of movement between the bones thus rendered possible.

The scope of the present observations on lumbo-sacral pain may perhaps be best defined by elimination. Pains due to gross lesions of this region, or to general systemic diseases in which the lumbo-sacral pain is of subsidiary importance, will not be included. Such cases of direct injury as give rise to lesions ranging from bruising of the overlying tissues to fracture-dislocation of the spine are omitted. Also are omitted, the general febrile diseases (including secondary syphilis) the most noteworthy of these in this relationship, smallpox, being simply mentioned on passing. No mention is made of pain arising from diseases of the spinal cord or nerves.

The following rough classification will facilitate description:—

1. Pain arising from small local lesions following slight injury.
2. Pain due to morbid conditions in the muscles, fasciæ, and articular structures.
3. Referred pains.
 1. *Local lesions.*
 - a. Rupture of muscle or tendon.
 - b. Hæmorrhage into muscle.
 - c. Rupture of fascia.

From violent flexion or extension, or as the result of a sudden lateral deflection during these movements, rupture of some of the small spinal muscles may take place. In the majority of these cases, the rupture affects merely a few fibres of the muscle or a portion of the tendon and there is no external evidence of injury. Pain on movement is, however, felt over the affected side and tenderness on pressure can be elicited. Rupture is more liable to ensue where the muscle is not in a healthy condition. Thus, its occurrence is predisposed to by the general atrophy of the muscles in old age or by the degenerative muscular changes which follow fevers and other debilitating diseases.

The condition may be a slight one or may be complicated by an excessive amount of hæmorrhage into the muscle. In an extreme case or injury from strain there may be rupture of some part of the lumbar fascia. Healing in all these cases is slow and is effected by the formation of fibrous tissue, an element of weakness being thus introduced which renders the patient more liable to future attacks.

The diagnosis of the slighter forms of these injuries frequently presents difficulty, as only slight pain is felt at the time and even this is not persistent. The pain becomes much more evident after a resting interval and then the cause has generally been forgotten.

Falls on the feet may sometimes lead to slight local lesions in the lumbar portion of the spine. Ludloff has pointed out the anatomical importance of the hiatus which exists at, and around, the lumbo-sacral articulation; it is this weaker portion that jarring will most affect. Small injuries received in this way may be the cause of long persistent pains in the back.

A condition, which in the present state of our knowledge is somewhat difficult to classify, may meantime be included in this category, viz., Bechterew's disease. This is now regarded as a meningo-myelitis; in some cases it has apparently an hereditary origin whilst in others it follows trauma. Associated with the diminished mobility of the spine there are violent pains in the back and limbs.

2. *Morbid conditions of the articular and surrounding structures:*

- a. Structural defect or weakness—
 1. General Debility.
 2. Spinal curvatures.
 3. Laxity of the Sacro-Iliac articulations.
 4. Neurasthenia.
- b. Inflammatory conditions—
 1. Rheumatism.
 2. Rheumatoid conditions.
 3. Tuberculosis.
 4. Tumours, &c.
- a. Structural defect or weakness.

The simplest condition in this group is general debility. The muscular tone being deficient, the ligamentous action of the muscles is impaired with the result that a considerable strain is thrown on the ligaments of the column. Naturally this is felt most acutely at the lowest part of the column where the greatest weight falls. In slight cases there is no distinct

pain—merely a dull heavy feeling of weakness in the back, but where movements are persisted in, pain across the loins soon becomes evident. The pain is rarely acute; it usually assumes the character of a persistent ache.

In scoliosis pain of a similar character develops. The scoliosis may be due to either developmental or acquired alterations in the articular, muscular, or nervous arrangements. From whatever cause arising, the disturbance of the normal curves of the spine leads to greater strain on the weakened structures of the lumbar column. An aching pain in the back and loins with a feeling of lassitude and dragging pain in the limbs are present. In the grosser forms or where the condition has been long persistent the pain is much increased by the overstretching of the ligaments and where bony changes have taken place there may be actual pressure on the nerves.

Reference has already been made to the fact that the sacro-iliac synchondroses sometimes become arthrodial. This change has long been recognised as practically confined to pregnant women but recent work by Goldthwait and Osgood shows that it occurs occasionally in men. Associated with the feeling of pelvic instability to which the condition gives rise to an aching pain is felt across the sacral region.

A steady aching pain in the lumbar region is a very constant symptom in neurasthenia. Occasionally the pain instead of being spontaneous is present only on pressure or movement. Local tender spots may sometimes be elicited. In some of the cases the pain is of neuralgic origin and type; in others it is merely, as in general debility, the pain of over-stretched weakened structures, whilst in a third group of cases the weakening of the muscular structures has a sufficiently defined pathological basis to justify the term *amyosthenia*.

b. Inflammatory conditions.

The chief place amongst the local inflammatory disturbances in the lumbo-sacral region must be given to rheumatism. Rheumatic manifestations may occur either in the fascia, in the muscles, or in the articular structures. The muscles and fasciæ are involved together. Lumbago is the term usually employed to denote this condition although opinions are by no means unanimous that the disease is a true rheumatic myositis.

Chronic inflammatory changes in the fascia lead to thickening and impairment of pliability, each attack predisposing to another. The involvement of the muscles and fasciæ may in a few cases be primary and in other isolated cases it is associated with chronic rheumatic changes in other regions. In many cases, however, the muscular and fascial changes

are merely those arising from impairment of the movements of the joints with which they are associated. Chronic rheumatic changes in the articular and periarticular structures of the vertebral articulations are probably of fairly frequent occurrence, although exact observations on this point are not numerous. Better known are the changes that occur in what may be called the "rheumatoid" diseases. Thus in arthritis deformans or spondylitis deformans there are inflammatory changes with deposition of bone in the periarticular structures. The pain of this condition varies much in intensity and in position and with the gradually increasing stiffness may extend over a long period. There is a considerable amount of work to be done in separating these rheumatoid conditions into groups. The most notable example of this is that presented by the recently defined Marie-Strumpel type in which there is ankylosis of the articulations of the shoulder and pelvic girdles and of the rib articulations—the small joints of the spine escaping.

In young subjects tuberculosis as a cause of lumbar pain must be considered. An acute osteomyelitis of the vertebral bodies is very rare, but tubercular disease of the bodies of the dorso-lumbar region is not uncommon. The pain in these cases is a dull aching one, subject to acute exacerbations, and often associated with pains round the trunk and in the front of the abdomen. Over the rigid portion of the spine tenderness can be elicited. The diagnosis from hysterical spine is a most important one in relation to this condition.

Tumours affecting the bodies of the lower vertebrae are rare. The body may be directly invaded by the tumour tissue, or there may be merely pressure changes. Abdominal aneurism may also give rise to pressure symptoms. The pain at first is constant, dull and boring, but if the nerve roots become involved the pain changes to the neuralgic type.

3. *Referred Pains*.—There is a proportion of cases, not yet clearly defined, of lumbo-sacral pain, in which the pain is not due to any local condition but is referred to some visceral disturbance. In some cases this cause may be the only one acting, but in many others it forms an accessory cause which may persist when the local cause has ceased to act.

The exact manner in which the pain is referred is difficult to explain, but that such reference does take place cannot be doubted. One has merely to consult the literature of the vendors of quack remedies to note how frequently the so-called kidney pains clear up under a mild purgative treatment. Some other explanation of this pain must therefore be forthcoming.

The viscera are supplied by sympathetic nerves which are related to definite segments of the spinal cord. The original segmentation of the viscera is thus correlated to the original segmentation of the body wall. In other words every visceral area has a correlated area on the trunk surface. The sympathetic nervous system is incapable of translating painful impulses; the substance of a viscus is insensitive to pain. If, however, the anatomical or physiological relations of the viscus be disturbed, pain is felt, but not in the viscus; the pain is referred to the correlated area on the body wall. For practical work where greater generalisation is required it may be stated that the pain is referred along the somatic nerves. In most cases the pain is felt along the areas of distribution of the anterior primary divisions of the corresponding somatic nerves, but in some cases the posterior primary divisions are chosen.

So far the inference has been that it is simply a nerve impulse, or series of impulses, which has affected the sensory centre of the somatic nerve but recent work tends to show that a definite infection may travel along the sympathetic nerve and affect the spinal segment.

The great intestine receives its segmental nerve supply from the lowest dorsal and upper lumbar segments. A chronic or subacute catarrhal condition of the colon may therefore give rise to pain over the loins in the kidney region. Pain over the sacral region may be referred from the rectal area and is frequently present in carcinoma rectæ, hæmorrhoids &c. Internal hæmorrhoids, with constipation, often give rise to a very acute pain in this region.

The problem of the exact mode of development of the pain in chronic catarrhal colitis is, however, a very complicated one. There may be, as indicated above, simply an error in translation by the nerve cells, or, this may be added to some slight local lesion present. On the other hand, it may be, that, as the result of the catarrh, toxic products enter the circulation and produce results similar to those of the rheumatic toxins. That some of these alimentary toxins show a similar predilection for joints and periarticular structures is well known and it is possible that the small articulations of the lumbar spine are thus implicated. A third possible explanation is that in some cases the disturbance of the segment of the cord leads to the production of neuropathic changes on the articulations—changes of the nature found in Charcot's disease. When the question of referred pains from the female generative organs is considered the problem is simplified by the elimination of the toxic element. The most striking demonstration of the presence of referred pains from these viscera is that afforded during child-birth. In the early stages of labour, before the dilation of the os, the pain is seated chiefly in the upper lumbar

region and shoots round the loins and down the front of the thighs. As the os dilates and the foetal parts descend the pain is felt most in the sacral region and down the back of the limbs. In the later stages the pain is a local and not a referred one, due to the actual stretching of perineal structures by the foetus and by the associated muscular actions.

A similar sequence of uterine and cervical pains, but of a much milder type, is frequent in congestive dysmenorrhœa with stenosis of the internal os.

Ovarian pain when felt in the back is in the lower dorsal region but uterine pain is referred to the lumbo-sacral region. Pain due to pathological conditions of the body of the uterus may be felt on the lumbar region and over the gluteal areas; pain from lesions of the cervix, over the sacrum. These latter pains are extremely common amongst multiparæ and their most frequent cause is a lacerated cervix with accompanying slight paracervicitis and endocervicitis.

With regard to the nature of these pains—their ultimate origin is of course in muscular viscera. They are of a dull boring nature, but are liable to exacerbations during the muscular contractions, in the one case, of the intestine, in the other of the uterus. These exacerbations have an irregular rhythm and may be extremely acute. Localised tenderness can only rarely be elicited.

* DILATATION OF THE ANAL SPHINCTERS.

BY

CHARLES J. DRUECK, M. D., CHICAGO.

*Professor of Surgery at the National Medical University; also
Professor of Rectal Surgery at Jenner Medical School.*

When preparing this paper I had misgivings lest I was taking up your time with apparently a very trivial procedure, but in looking through the text books on surgery and even the authorities on rectal diseases, I found very brief or no mention at all made of this subject about which even well informed general practitioners are often uncertain as to the best method of procedure.

Divulsion of the sphincters, literally interpreted, means to tear or rend asunder, and that is what usually occurs when the patient is chloroformed and the muscle stretched by introducing the thumbs through the anus and dragging them sideways until they touch the ischial tuberosities. Such brutal traumatism is seldom necessary in modern surgery. What

* Specially contributed to "The Antiseptic."

we wish to accomplish in the majority of instances is simply to overcome the natural or exaggerated contractility of the sphincter so that we may open the anus sufficiently for examination or operation. If this can be accomplished without a general anesthesia, it brings within the scope of office and ambulant treatment many cases which were formerly attended only in the hospital. It is my object to outline here a plan of treatment which in my hands has yielded thoroughly satisfactory results in properly selected cases, obviating the dangers of chloroform without adding any other disadvantages or complications. As this method is applicable to both examination and treatment, I offer it as having a well defined field.

Stretching the sphincters forms an important step in the treatment of most rectal diseases, because it produces certain anatomical changes and definite physiological results. Stretching a muscle also stretches the fine nerve filaments in its substance and produces a paralysis of these fine twigs. The action is the same as is produced when stretching the Sciatic nerve. Localized inflammatory products are broken up and as a result sphincteric spasm, pruritis and hypersensitiveness are mechanically relieved. In many instances pent up secretions are thus provided with free drainage. If this traumatism is limited to the nerve branches in and about the sphincter, the regeneration of the nerve soon occurs and the paralysis is only temporary. If, however, the larger nerve trunks toward the ischial fossa are injured, regeneration is more remote and it is possible for cicatrization and atrophy to occur in the muscle before new nerve is built up and the paralysis may be more or less permanent.

Every thorough examination of the rectum includes a digital exploration and the introduction of the finger puts the sphincters on sufficient tension to demonstrate many important things. The finger thoroughly anointed with white vaseline or olive oil (not glycerine because that stimulates the bowel to evacuation) is gently insinuated with a boring motion, remembering the direction of the rectum forward toward the pubes until the sphincters are passed and then backward toward the sacrum. As soon as the finger touches the sphincter the latter contracts spasmodically. If, however, the finger is held firmly against the anus for a minute the muscle relaxes and in many instances the finger may proceed without difficulty. The sphincter is now slightly stretched and the degree of contraction, or bite, informs us of the tone or irritability of the muscle. This digital stretching is always essential before the specular examination in every new case, because it demonstrates not only the condition of the muscle itself but also determines many diseased conditions and thereby permits the operator to subsequently dilate the sphincter instrumentally.

without causing much pain in many instances. In new-born infants stretching the sphincter with the obstetrician's little finger is one of the most powerful respiratory stimulants and in older children it will be noted that the introduction of the enema tip is often sufficient stimulus to bring on defecation without the use of liquids.

If, in a given case, the finger has been introduced and the sphincter and rectum found normally patulous the anoscope or a speculum may be slowly introduced without causing pain and the lower rectum dilated enough for examination or treatment. If, however, certain diseased conditions exist which have caused an irritable and hypersensitive sphincter the muscles will be found to bite the finger abnormally and the anus needs preparation. To temporarily overcome these conditions we have recourse to local anesthesia, a condition which may be produced by a number of agents, the most popular of which is cocaine. This drug, in weak solution, may be used with perfect safety so long as the total amount used at any one sitting is less than one half grain.

By placing the hands on either buttock, the finger tips resting close to the anus, the external sphincter may be gradually drawn open (everted) until one half inch of mucous membrane rolls out. This surface is then sprayed with a four per cent cocaine solution to which is added one half of one per cent of 1 in 1000 adrenalin solution. The buttocks are now relaxed and the anal canal treated by injecting ten to twenty minims of the same solution from a short nozzled piston syringe. The patient is then placed in a semi-recumbent position for about five minutes, until the full effect of the drug may be obtained.

The adrenalin solution in the mixture prolongs the anesthetic effect, limits the rapidity of absorption of cocaine and lessens the venous congestion which sometimes produces an annoying tenesmus for several hours following this procedure. It may be well to add that the solution is always warmed to nearly the body-heat before it is used, because warm solutions are more efficient than cold, and also that the use of normal salt solution instead of plain water increases the absorbability of the cocaine.

After waiting five minutes, the surface is fully anesthetized and any exposed hemorrhoidal nerve is quieted, but the sphincter muscle itself is not interfered with, and we are now ready to begin the instrumental dilatation for examination or treatment just as we would in a normal unirritated anal canal.

This instrument, Kelly's calibrator, is warmed to about the body-heat, thoroughly anointed with any lubricant except glycerin, and gently pressed

against the anus. By exercising a couple of pounds pressure the instrument is inserted with a boring motion. The sphincter can usually be dilated up to two inches in diameter in about five minutes. The pressure on the calibrator must be slight, but steady. Any undue haste only excites spasm of the sphincter and retards our progress.

If in the case at hand the sphincters are very irritable it may be advisable at the first treatment to distend the fibers to only one inch, and at each subsequent visit to increase the distention. The object being to speedily stretch the muscle to a diameter considerably larger than is ever produced by any fecal mass, and therefore, when the bowels are evacuated the distention is relatively slight. Having dilated the anus as much as desired the calibrator should now be retained *in situ* for ten or fifteen minutes until the sphincteric grasp is released. When the sphincter has been thoroughly dilated the calibrator may be slowly withdrawn, the last half inch of the instrument being withdrawn very slowly and crowded against the anterior quadrant of the sphincter. Firm pressure against the posterior wall of the anus with the examiner's free hand also prevents sudden spasm.

It occasionally happens that even with the use of cocaine a thorough dilatation at the first sitting is very painful. If the patient complains of pain the distention should be diminished to a point where he is fairly comfortable and the physician must content himself with a partial dilatation at the first treatment. The treatments in such a case should be repeated each day, gradually increasing the dilatation until the muscle is relaxed sufficiently for all purposes.

Case I. Mr. H. S., a stockyards' commission merchant, complained of sharp cutting pain in rectum following defecation, itching at the anus and bowels constipated. Examination showed the anus to be tightly contracted. Digital exploration was too painful to be satisfactory to either patient or myself. The anus was sprayed and the cocaine injected as I have outlined above and after waiting five minutes I completed my examination painlessly and satisfactorily.

When disease exists above the sphincters this same method may be followed and when the calibrator is withdrawn the anoscope or speculum may be introduced easily and without exciting spasm. The anal canal or rectum may be examined or treated just as easily as if the patient were anesthetized, as plenty of room is obtained for the treatment of diseases of the lower inch and one half of the bowel. In the treatment of internal hemorrhoids, rectal ulcers and villus tumors or other conditions, requiring minor operations or treatments upon the rectum, the parts can usually be distended

sufficiently without a general anesthetic; only it must be performed slowly and patiently.

In the early part of this paper I called your attention to the importance of digital examination preceding the instrumental dilatation, because it furnishes the examiner precise information regarding the tone or contractile power of the sphincter. If you can introduce your finger into a patient's rectum easily and without feeling the bite or spasm of the sphincter be very careful about introducing a speculum and distending the anal canal, because what little contractile power is present may be easily dissipated and a partial or complete paralysis result. Example:—

CASE II. Mrs. B, at the age of 26 years, was delivered instrumentally of a large boy. The perineum was ruptured, but was promptly repaired; the patient recovered and enjoyed good health having complete control of the bowels. Four years later she was operated upon for hemorrhoids and since that operation had complete paralysis. The surgeon who operated informed me that he was positive no undue traumatism was used. I mention this case to show that where the nerve supply of the sphincters has been previously injured an instrumental dilatation may be fatal to good results and a previous digital examination is indispensable.

In operating within the rectum and particularly when it may be necessary to drag upon the parts, the nerve must be anesthetized as far back along its trunk as the traction will be appreciated because a nerve may be perfectly numbed at the point at which it is cut or clamped, but very much alive one half inch farther on, and if this sensitive part is dragged when examining, it will be appreciated by the patient as being at the nerve end because the same fibers are affected. Therefore if in dilating the sphincter it is necessary to move or stretch the deeper nerves, especially if exudation or inflammation extends outside of this muscle, it will be necessary to thoroughly cocaine the nerves outside of this area. In such cases infiltration of the deeper nerves is necessary.

Having discoursed at some length upon the advantages of dilating, and hinted at operating upon the anus under local anesthesia, allow me to remind you that this method has its limitations. While cocaine may relieve the sensations of pain they do not remove the fear or terror of being operated upon, and a highly nervous or excited patient may not be able to keep quiet or calm while he is conscious and realizes that the surgeon is at work. In a number of such cases I have completely failed to obtain any reasonable benefit from cocaine. In selected cases, however, I believe this method brings within the field of office work many patients who would otherwise be confined to their bed for several days or weeks and also those who object to an anesthetic or in whom its administration would be

inadvisable, and who therefore continue for years with very painful and annoying ailments which might be promptly and easily relieved by their doctor.

• THE ABUSE OF DRUGS.

BY

JAMES BURNET, M.A., M.D., M.R.C.P., EDIN.

*Senior Clinical Medicine Tutor, Extramural Wards, Royal Infirmary;
Registrar, Royal Hospital for Sick Children, Edinburgh.*

In olden times venesection was practised for practically every known ailment. Heart disease, pulmonary affections, abdominal pain due to a variety of conditions, were all indicated for the removal of blood from the patient's body. The medical practitioner's sheet anchor in those days was the lancet. Those were the days in which only a few drugs were known, and even at the beginning of last century the writer finds such notes as these made in a physician's manuscript book—"Nitrous acid cures pox without mercury;" "Muriate of potash cures diabetes;" "A grain or two of powdered toad stools cures fits." We are inclined, perhaps, to laugh at such notes, but in all probability our successors will have just cause to scoff at much of our present day therapy. Blind ignorance too often stamps our treatment of disease. Drugs are, unfortunately, more often abused than otherwise; and consequently we find that our results are not always such as we fondly expect them to be. Much of our failure arises from lack of knowledge of the properties of the drugs we are using. If we take some of the commoner drugs even, we find that this is so. Many practitioners prescribe remedies without in the least knowing how they act in any particular case. To be successful therapists we must know how each drug acts, in what combinations it may be given, and for how long a period its administration may be continued with advantage in any given disease.

One remedy which is sadly abused in practice is digitalis. No sooner do some practitioners find that the patient's heart is impaired than they order digitalis to be given. Of course it should only be used when heart failure is in evidence, not merely because we hear a murmur or observe a thrill. But that is not all, for even then the use of digitalis is not by any means good in every case of heart failure. Digitalis is a very powerful agent, whose administration must in all cases be closely watched by the

* Specially contributed to "The Antiseptic."

physician. If we overstep a certain limit the remedy will only do harm. Moreover, sudden death from syncope may be caused by digitalis therapy when it is given recklessly and without due regard to its action on the particular heart-lesion under treatment. This remark applies with equal force to the hypodermic administration of digitalis in cases of emergency or where it is evident that the patient is moribund. Time after time the writer has observed death ensue within a few minutes from such injections for the simple reason that the sudden stimulus given to the failing heart has proved too much for it. Under the strain it has given way, with the inevitable result that the patient has died a little sooner than he otherwise would. We should always, therefore, be extremely careful how we give digitalis to moribund patients lest we receive not praise but blame for our rash zeal in respect of treatment.

A class of drugs which is sadly abused is the coal-tar group. These are veritable poisons and should be used as seldom as possible. Unfortunately, too, the public, largely owing to lack of medical fact and discretion, have got into the habit of prescribing these agents for themselves. Poisons they are, and despite what is said and will continue to be said in their favour, they must never be used indiscriminately. Certainly they should never be given to patients suffering from heart disease as they markedly depress the heart's action and enfeeble the circulation. In cases of fever their value in reducing the temperature is inferior to other and safer methods. Many practitioners give phenazonum habitually as a remedy in cases of influenza, but this is a great mistake. Influenza is above all a depressing disease. With its onset and during its course, the heart and circulation are markedly weakened, and surely anything which will tend to weaken them still further ought to be avoided in the treatment of this disease. We well remember an old gentleman who was taking on his own prescription ten grains of phenazonum every two hours while he was suffering from a sharp attack of influenza. After three doses he began to suffer from great vertigo and breathlessness, and was only restored after being freely stimulated. The introduction of the coal-tar products into our pharmacopœias is not a step in advance unless they are used with greater care and discrimination than they are at the present time.

Then, again, take some of our newer remedies. Handed by writers and even by competent authorities these are being prescribed in preference to the older and better known drugs. Thus calomel, potassii acetat, sodii sulphas, and even oleum ricini are in danger of becoming displaced by newer rivals with longer names and more high sounding titles. Year after year shoals of remedies come in, and most of them go out as they came. Heralded by advertisement, literature and samples they pass away to join

the thousands of wanted remedies which are found on thorough investigation to be not only useless but positively harmful. The wise man is he who does not use it as remedy until he has either tested it himself or studied carefully the observations of disinterested parties regarding its properties and value as a therapeutic agent. Nothing has served more to increase the abuse of drugs than the manufacture of new remedies by enterprising firms who always claim that they have discovered the best form of a particular drug or the best cure for a particular disease. Personally we have tried several of such agents, only to find that they did not come up to our expectations. This is so with many hypnotic substances now before the profession. As each fresh member of this class is brought forward it is weighed in the balance and found wanting, and the physician must needs look once more into his store of older remedies to find a balance wherewith to soothe the sleepless patient or to alleviate his pain. In medicine old things are often best, and although we sometimes look askance at the old physician who knows nothing of opsonines and serum therapeutics and who never examined tuberculous sputum under the microscope we must rather regard him with reverence when he is able to detect an early case of pulmonary tuberculosis which all our laboratory knowledge has failed to reveal.

The abuse of drugs is a theme regarding which much might be said, but perhaps these remarks will suffice to point the moral which we wish to bring out. In the treatment of disease we must ever be discriminating, guarding against neglect our patient's symptoms on the one hand, and against meddlesome interference on the other. Nature herself is often the best physician, and she should be allowed to do her work so long as she is doing it well. To interfere with Nature's modes of treatment is often to deprive the patient of his best chances of recovery. Many a patient has succumbed who might have lived had the physician followed Nature and made less trial of uncertain remedies and unknown modes of treatment.

Our Contemporaries.

MEDICINE.

On the Treatment of Graves' Disease with Thymus.*

BY

PROFESSOR H. DOR.

Lyons, France.

As Professor Kocher said in a recent lecture (21st May, 1906) before the Medical Society of London: "The phenomena associated with deficiency of the thyroid secretion are well-known, but the same could not be said of the character of the group of cases usually classed with exophthalmic goitre." He said, at the same time "that of all the classic symptoms the exophthalmos was the least constant. He thought, in consequence, that the name should be given up and a more general, as Graves' or Basedow's disease, employed instead. The different authors did not agree about the nature of the disease. Basedow sustained the hæmato-genic theory; he believed in a primitive alteration of the blood as in chlorosis; Charcot believed in an alteration of the ganglion cells of the brain cortex; Sattler in a division of the sympathetic and vagus nerves; Möebius, 25 years ago, initiated the thyrogenic origin, which is certainly the most frequently admitted to-day."

I do not need to waste a word on the symptoms, which are well-known to all of you, but I would like to insist on the different methods of treatment. Extirpation of the gland, first proposed and performed by Tuillant, is now given up on account of the well-known consequences of myxœdema, cachexia strumipriva, etc., and is generally replaced by *partial excision*. About the latter operation, the results, as a rule, are satisfactory enough. I will only quote the last one of Kocher and Curtis. Of 176 cases of varying degrees of severity operated on by Kocher, 9 had died, but all the others had benefited, and some were really cured. A cure might be promised if the operation was done in due time. The operation should be preceded by weeks of medical treatment, small doses of potassium iodide, or, perhaps better, of phosphoric acid, absolute bodily and mental rest, and the operation itself should be done in stages. Perfect recovery might be looked for. Curtis' results are less satisfactory (*Annals of Surgery*, March 1906). On 14 cases of partial thyroidectomy, he had 4 deaths, 1 relapsed after 2 years (in one case he afterwards performed sympathectomy), and 9 cases were really better.

* A communication read at the Oxford Ophthalmological Conference, July, 1906.

Kutt Schultze† (Bonn) performed resection of the largest part of the goitre. On 50 cases, 36 (72 per cent.) cures, 6 bettered, 1 without result, 7 deaths, 7 relapsed, but later cured, either spontaneously or by internal treatment (Mœbius's antithyroidin)

Sympathectomy, first performed by Jaboulay and then by Tounnesis, gave respectively the following results:—

On 17 cases, 10 were healed, 5 bettered, and 2 without result.

On 27 cases, 9 were healed, 11 bettered, and 2 without result and 5 not indicated.

In many cases good results were obtained by organotherapy, by Mœbius, Battens, Enriquez, and others. Mœbius cites the serum of ethyroidised calves, Lanz the rodagen, that is, the dried milk of ethyroidised goats (5-10 grains daily), Hullion the hemothyroidis. The results of pure thyroid are not so good. But if the organotherapy can boast of successes in some cases, the number of unsatisfactory results is larger than that of successes. Some successes have been obtained by X-rays by G. Murray, Beck, Stegmann, Widermann, and others (for Bibliography, see Rheis's *American Medicine*, June, 1906, p. 164-168). Beck (*Munchener klin. Wochenschrift*, 15 May, 1905) quotes two cases and concludes, "In the slighter cases with the general treatment, one must make an energetic use of X-rays; in more severe cases one must first excise half of the gland, then proceed to radiotherapy as soon as the wound is healed. In very severe cases, one can use the Rontgen rays before the surgical intervention, but it is important to remember that in consequence of vascular change, that proceeding increases the danger of hæmorrhage during the extirpation of the goitre. To the Medical Society of Vienna (11th January 1906) Widermann reports about the results of radiography in 5 typical cases of Basedow's disease. The rays were applied directly to the thyroïdal tumour. The disease has not been much modified; the exophthalmos and tachycardia persisted, but the nervous symptoms were sensibly relieved in two cases. The weight of the body increased considerably, although the conditions of life remained the same; so much so, that in one case it became necessary to diminish the quantity of food. As to the use of radium, I know of one success only, namely, that reported by Robert Abbe.

I must, to be complete, mention yet the *dechlorisation cure*, proposed by Alt (*Semanie Medical*, 20 June, 1906). One must bring down to 4 gr. the daily dose of ingested chlorides and reduce the amount of fluid. He

† *Mitteilungen aus den Grenzgebiet der Medizin und Chirurgie*, xvi. Bd. fasc.— 2 June, 1906.

quotes a woman with Basedow's disease and psychosis with trials of virides. She had got down to 34 kilos. After four months all the psychic symptoms had disappeared; after six months she had gained 23 kilos and cure was complete.

The foregoing is a short history of the actual state of the question, but my intention in speaking is to apologise for introducing a new treatment belonging to the class of animal organotherapy.

A few years ago, an Englishman, Dr. Owen, wishing to use thyroid, took by mistake extract of thymus, and obtained a good result. His example was followed by some, generally with success. My son and myself have cured many slight forms of Graves' disease, by simple feeding with fresh thymus; this is mixed with meal and some salt, worked up in little bullets, and swallowed chewing (15-25 and even 100 grs. daily).

I may quote here a case published by my son (Dr. L. Dor), in the *Revue Generale d'Ophtalmologie*, 1904 p. 247. A young woman 24 years, had suffered from Graves' disease for 10 years, but lately her sight had failed, and for the first time she consulted an oculist. My son found in both eyes, a keratoconus in the left eye, with an opaque central spot, V. = $\frac{1}{20}$, a clear one in the right V. = $\frac{1}{2}$. He treated the left eye by galvanocautery; left the right without treatment; and ordered fresh thymus. A month later the neck, which measured 45 cm., came down to 36 cm., the tachycardia from 180 to 140, the exophthalmos was less, but at the same time the keratoconus of the right eye had disappeared and V. = 1. How to account for it? That is the question.

But it is not always easy to get daily fresh thymus, and I replaced it by extracts of thymus prepared like all organic extracts for opotherapy, and kept in sterilized and sealed tubes, and the result of that treatment was such that, notwithstanding the unsatisfactory cases of Tutz, I thought it worth while to make you acquainted with the plan.

I will quote two observations:—

Mrs. F., a widow 48 years old, who still menstruated regularly, was first seen on the 2nd February last; her chief complaint was migrainic headache and palpitation, but on examination, she had all the symptoms of Graves' disease, tachycardia (119 pulsations), goitre, slight exophthalmos, trembling of the hands, etc. Her sight was 0.4 but that could be accounted for by a hypermetropia 1.25.D = A_e and Hm 1.50, axis 80°, which, corrected, gave normal sight and might have been the cause, or one of the causes, of the migraine. From February to May she received every

second day an injection of thymus, half a Pravaz syringe, and from May to the 6th of July twice a week. To-day the exophthalmos and the goitre have completely disappeared, as well as the migraine. The beatings of the heart are still a little too strong, pulse 86. Patient says that she is quite cured, that she feels well and strong, but I advised her to continue the injections once a week for some months. This is certainly a success, but as the case was, on the whole, a moderate one, I lay no undue stress upon it. It is different, however, in my second case. Mr. Th—, 61 years old, has suffered from Graves' disease, for 18 years. This was such a typical case that I told him at once that if he did not improve in two or three months I would ask Prof. Jaboulay to perform the operation of sympathectomy. He was referred to me by Dr. Tuillant, of Nantes. Besides all the ordinary symptoms, he complained of diplopia, which was not due to paralysis of one of the eye muscles, but simply to the impossibility on account of the enormous exophthalmos, to move the eyes equally together when looking to the side or below or upwards.

I first saw him on the 16th of October, 1905, and began at once the treatment by a daily injection. He came back on the 22nd of November, stating that he had lost his diplopia, and that he felt much better. I thought that he was a little improved, as the tachycardia was less strong, the goitre began to diminish, but the exophthalmos, although less, was still so pronounced, that when the patient looked straight forward, the aperture of the lids still measured 20mm., for the right eye, 18mm. for the left eye. I did not see him again till the 15th of June last, I was then myself struck by the amelioration. The aperture of the lids was 15 mm. on the right eye and 12 mm. on the left: the movements of the eye almost as extensive as in a normal eye. The goitre had so much lessened that he first wore collars No. 45, then 43, 42, 41, and now 40. The tachycardia still exists a little, pulse 84. He has now used four boxes of 10 tubes, and is beginning the fifth; each tube is sufficient for three injections—that is, on the whole, 120 injections. I advised the patient to continue for six weeks three times a week, then one month's rest, one month's injections, and so on, and I do not doubt that in the course of six months Graves' disease of eighteen years' standing will be cured.

I must confess that I did not myself expect cure in a case so far advanced, although in the last three or four years I have used another treatment, and always with satisfactory result, and that is the reason which engaged me to bring this observation to the notice of a society which includes some of the best known oculists in England.—*The Ophthalmoscope.*

Psychoses and Neuroses of Urethral Origin.

BY

NOAH E. ARONSTAM, M. D., DETROIT, MICH.

Member, Northern Tri-State Medical Association, Michigan State Medical Society, Wayne County Medical Society, Medico-Legal Society (New York), etc.

Maladies of a neurasthenic and psychic nature, bordering on the brink of insanity and mental aberrations of minor import, are apt to follow in the wake of diseases of the genito-urinary tract, especially those of the urethra and its adnexa. It is incredible with what persistency the mind of a patient will dwell on pre-existing affections, even if all traces of them have been satisfactorily eradicated. That class of patients is apt to become a burden not alone to themselves, but a positive annoyance to the physician as well, who, after repeated and painstaking examinations, becomes convinced that there is *nothing of any pathological significance* in the entire genito-urinary apparatus, and thus accordingly acquaints the patient of this fact and endeavours to remove his morbid conception. To his dismay, he will, however, discover that this is not so easy. The patient stubbornly clings to his fixed idea that there is something very grave in his urethral tract. No manner of persuasion and reasoning will avail under these circumstances, to dispel his delusion; the patient will run the gamut of a number of physicians, until either some charlatan by divers surreptitious means will actually alleviate him of his fancy or suggestive affection, or else time alone will effect a cure.

It would be very interesting to learn the underlying etiological factors that give rise to this type of nervous manifestations coincident to the diseases of the male urethra. Various theories have been advanced. One of these goes so far as to ascribe the neurasthenical symptoms to the absorption of a *virus* from the urethra, which, acting upon the nerve centers, is capable of creating a host of manifestations of a nervous or psychic character. Another of the theories propounded contends that unless a predisposing tendency to unbalanced mentality or a highly nervous temperament exists, such sequelæ are not prone to develop, the presence of a urethritis at some time merely acting as the exciting or determining factor. The latter seems to be the more plausible of the two theories, a feeble nervous mechanism and the perverted volition are wholly responsible for these morbidities in the mental sphere.

Among the diseases of the genito-urinary system that have been known to be instrumental in the production of the above disorders with

their attendant train of symptoms may be mentioned *gonococcic urethritis*. In the author's opinion it is the most frequent causative factor in the province of venereal diseases. Of less importance in an etiological sense are the diseases of the urethral adnexa, namely, that of the prostate, seminal vesicles and epididymis. This article does not attempt to encroach on the territory of the purely psychical, pertaining primarily to the sexual domain. It only intends to discuss the neuroses and psychoses coincident to or following the various inflammatory conditions of the urethral canal, and prominently to that due to the invasion of the gonococcus. Every physician is liable to meet with cases of urethritis accompanied by some form of mental disturbance during the acute, subacute and chronic stages of the affection. But there are well authenticated cases on record, and their number is not inconsiderable, where, even after the total destruction of the micro-organisms as ascertained on microscopical examination, and after the complete cessation of the discharge and the disappearance of shreds and flocculi from the urine, in fine, after the patient is apparently cured he will absolutely insist that he does not feel well and express the opinion that he is not absolutely free from his gonorrhœa. The train of subjective symptoms that he enumerates is very uncertain and ill-defined. He will admit that he can detect nothing abnormal in the urinary stream; he experiences no pain or burning sensation on micturition; there is no "morning drop," but there is a peculiar, piercing or darting pain in the glans penis of a very evanescent character coupled by indefinite painful sensations in the vesical and hypogastric regions, and occasionally in the back. But it is the shooting pain in the glans that makes him apprehensive. Urinary examination will reveal nothing of importance; the urethroscope likewise will only elicit negative results, and still the patient keeps on clamoring for relief. If the latter is not accorded to him, he will invariably drift into other hands with similar success and will eventually become an inveterate melancholic or hypochondriac. The above is the only symptomatology that can be obtained on a close and careful examination of the patient. There is nothing pathologically palpable in his make-up. We have solely to rely upon his own subjective interpretation of his condition. To illustrate the above the author desires to append three cases taken at random from his record, as follows:—

Case 1.—S. F., æt. 29; single; family history negative. Past history: Had a gonococcic urethritis three years ago and fully recovered from it in about six weeks. *State present.* Specific urethritis contracted five months ago. No discharge on last examination, three weeks after the cessation of all symptoms referable to the urethra; no gonococci demonstrable; normal and painless micturition. Flocculi and shreds absent

from the urine on three glass test examinations with and without primary flushing of the urethra (confirmatory three glass test). Urethroscopic examination—anterior and posterior—negative. Complains of vague and migratory painful sensations in the hypogastric and both inguinal regions. He believes he is not entirely well from his urethral trouble. Attempts to convince him of the contrary proved unsuccessful. Nervines and tonics seemed but little to influence his condition; neither was persuasion any particular value in ridding him of his imaginary trouble. He commenced to lose weight rapidly, and refused to be treated any longer, all the time vehemently begging for relief from his urethral disease. He left for the east to visit his parents. Their family physician informed the author later that his patient contracted the fulminant type of phthisis pulmonalis and is rapidly dwindling away. This case illustrates the *far-reaching effects of gonococcic urethritis* and the possible consequence of this to some practitioner's trivial affection of the urethral mucosa.

Case 2.—M. B., æt. 20, fruit vendor; unmarried. Family history negative. Past history: Has had repeated outbreaks of herpes preputialis and two years ago multiple chancroids. *State present.* Prepuce considerably elongated. Gonococcic urethritis for the first time. All urethral symptoms have completely disappeared, save for a few thin, curly and twisted shreds in the urine in the first glass without preliminary irrigation of the channel. Microscopic examination of the deposit procured on centrifuging 4 cc. of urine—by grams, stain was devoid of any positive results. He complained bitterly of pain in the back and hypogastric region. Urine normal; no pathological constituents, save indican. Sp. gr. 1.024. Temperature and pulse normal. He attributes these painful sensations to the uncured urethral disorder, which he maintains is not perfectly well as yet, although the most scrutinizing urethroscopic examination in addition to the above evinces the opposite. The pain in the lumbar and vesical regions is getting worse from day to day; his mind unceasingly ponders over his imaginary condition, which he regards as serious. Internal medication intended to improve his general and nervous tone, supplemented by proper hygiene and diet utterly failed. At present the patient is yet under surveillance and it is difficult to foretell at the present juncture how this case will terminate. In this case a circumcision was performed with a view of diverting patient's morbid attention.

Case 3.—L. G., æt. 23; single; clerk. Past and family history negative. *State present.* Gonorrhœal urethritis for the first time was treated. Duration of disease and treatment 14 weeks. Urethral symptoms absent for nearly four weeks. No flocculi or fibrillæ in urine. Micturates regularly and normally. No gonococci found on

repeated examination with double stain. Complains of pain in the meatus urinarius independent of urination. The urethroscope reveals the urethra intact. (Combined inspection.) Urethra patulous and no strictures present (28 French). He claims that the pain is worse at night, of a darting or shooting character, and of but brief duration. His appetite is poor and he is losing flesh. The high cerebral stimulants avail but little. Persuasion and reasoning proved futile. He acquired a haggard, pinched, hang-dog expression, walks stoopingly and haltingly, though formerly he was robust and his gait was straight and manly. He has consulted a number of physicians and nearly all of them pronounced neurasthenia or "nervousness." He ultimately returned to the author, intimating that he was on the verge of committing suicide, if his condition does not assume a more favourable aspect.

These are only a few of a number of instances from the author's records coming under his observation, that proved exceedingly rebellious and unyielding to any form of therapeutics, on account of the *psychic or suggestive features of the malady*. It is very likely that the suicidal inclinations of the patients thus affected may at times be realized by them, or else they drift into an asylum as the unhappy recipients of various mental disorders, the origin of which can *doubtlessly be expressed to the previous existence of some pathological condition of the urethral canal and its adnexa, pre-eminently to gonococcal or specific urethritis*. Under a systematic vigilance in a retreat or asylum, with the aid of proper hygiene and dietetic treatment, compulsory but wholesome outdoor work and exercise, whereby the mind will receive an impetus towards a different direction, together with both mechano-therapy and general massage, a cure may be reasonably expected in time. The fact, remains, however, that these cases furnish the most unsatisfactory class that falls to the lot of the genito-urinary surgeon.—*The Canada Lancet*.

Some Observations on The Therapeutics of Chronic Heart Disease.

BY

FRANK J. WETHERED, M. D., F. R. C. P.

Physician to the Hospital for Consumption and Diseases of the Chest, Brompton; Assistant Physician to the Middlesex Hospital.

The methods which should be adopted in the treatment of chronic heart disease are well worthy of careful attention, both on account of the number of patients afflicted with some condition accompanied with heart failure, and on account of the great relief which may be afforded to the sufferers.

The chief varieties of chronic cardiac disease met with are degeneration of the myocardium, either fatty or fibroid; valvular disease, the result of former rheumatism or due to atheromatous changes, and to these must be added the difficulties to the proper performance of its functions forced on the heart by changes in the smaller blood-vessels (*arterio-capillary fibrosis*). The symptoms complained of by the patients are somewhat similar in all cases:—Shortness of breath, pain across the upper part of the chest, more or less severe on exertion, irregular action of the heart, sleeplessness, apprehensiveness, digestive disturbances, especially flatulence, and in the later stages œdema and ascites. These symptoms naturally vary both as regards degree and frequency. The differential diagnosis as to the nature of the cardiac lesion and between organic heart disease and functional disorder (including purely gastric trouble) is often difficult, but I do not propose to discuss these differences here, but only to offer some suggestions as to the therapeutic measures to be adopted when evidences of chronic cardiac disease manifest themselves.

The main indications for treatment are two in number, (1) to stimulate the action of the heart, and (2) to reduce the peripheral resistance—these two are of equal importance, although the latter dictum is too often forgotten. Symptomatic treatment also needs consideration, as most of the more distressing symptoms can generally be relieved by appropriate remedies.

In commencing a course of treatment the arterial tension must be carefully observed. If it is high, vaso-dilators are of importance, whereas if low tension prevails, cardiac stimulants hold the first place. In the majority of instances a combination of these two classes of drugs is called for.

The most popular cardiac stimulant is probably digitalis, administered either in the form of the tincture or of the fresh infusion. If cardiac failure is marked, digitalis is certainly called for, whatever the lesion may be, but in the majority of instances it should be given in combination with drugs which will cause dilation of the smaller vessels. The particular drug to be used must depend upon the degree of pulse tension. Iodide of sodium or potassium in doses of from 3 to 5 grains will be found useful in this respect, as will also the bicarbonates of potash and soda. A prescription I have found of considerable value under such circumstances is:—Tinct. Digitalis *m* v. (to xv.), Sodii. Bicarb., gr. x; Potass. Bicarb., gr. v., Sodii Iodidi gr. iii.; Tinct. Card. Co. 3 *m* Aq. Cinnamomi ad 1 oz. T.D., S. If the arterial tension is considerable, Liq. Trinitrini *m*. 4 to *m*. 1 will be found useful. In the case of elderly patients particularly, a vaso-dilator is indicated when giving digitalis. When digitalis is being continually employed, the effect of its action can be to a large extent estimated and

regulated by the amount of urine passed. An increase in the secretion may not be apparent for three or four days, but subsequently the diuretic action of the drug manifests itself.

Strophanthus in the form of tincture may with advantage be occasionally substituted for digitalis. If the latter drug causes vomiting, Strophanthus may be well borne. It is in those cases, however, in which a cardiac stimulant is required which does not markedly raise the blood pressure that Strophanthus is of value, as for instance in cases of chronic renal disease with evidences of heart failure. I regard Strophanthus, however, as rather a dangerous drug; at any rate, as one that has to be given with caution when large and repeated doses are employed. Digitalis gives warning when too large quantities are being given, and the drug can therefore be withdrawn. But very serious symptoms occasionally arise without any warning when large doses of Strophanthus have been administered.

Citrate of caffein is also valuable, being a cardiac stimulant which does not raise peripheral tension. The employment of squills in cases of heart disease is often of value, and the beneficial effects are speedily apparent. Of convallaria I have had but little experience, although its value is highly estimated by some physicians. In old age strychnine administered either by the mouth or by hypodermic injection, or tincture of nuxvomica, are useful adjuncts or substitutes for the drugs previously mentioned, but their use causes a rise of arterial tension which must be carefully regulated. Before leaving the subject of the purely drug treatment of chronic heart disease, the old method of prescribing a "blue pill" occasionally must not be forgotten, for it is a therapeutic measure of considerable value.

Turning now to other points in the treatment of chronic heart disease, the mechanical form of treatment has for some years claimed a considerable amount of attention. The hill-climbing of Oertel, the apparatus designed by Zander, the resistant exercises introduced by the brothers Schott, and the effervescing baths first elaborated at Nauheim have all from time to time had their adherents. At the present day the employment of natural or artificial effervescing baths has been strongly advocated by some physicians in this country, as well as by Continental authorities. Many theories have been expounded as to the cause of the undoubted benefits derived from a course of baths in certain forms of chronic heart disease, but personally I believe that the stimulating effects on the skin of the bubbles of carbonic acid gas cause a general dilatation of the superficial vessels, so acting as a vaso-dilator. I have not found the same benefits from the artificial baths that I had from the actual baths at Nauheim.

A similar explanation applies to exercises such as those of the brothers Schott. A muscle in action requires more blood than a muscle at rest. By the sustained action of the muscles such as is brought about during the performance of these exercises a considerable amount of blood is retained in the muscles, with consequent relief to the heart. Combined with the exercises and baths a strict *regime* of the general course of life must be maintained. The diet, amount and kind of exercise, and hours of rest must be duly regulated, and these precautions form an all-important part of the treatment at Nauheim and other resorts where these therapeutic measures are carried out. The same precautions may, with advantage, be taken in the management of patients in their own homes. Care must naturally be taken in the selection of cases for "baths and exercises." Those which do best in my experience are those in which there has been some cardiac overstrain, but in which the acute symptoms have subsided; cases in which there is a strong neurotic element; instances of early fatty or fibroid degeneration, and cases of mitral regurgitation in which compensation is not quite satisfactory. I can add but few words here about diet, suffice it to say that as a general rule it should be as dry as possible, and that only the most easily digestible articles of food must be allowed.

Much may be done by symptomatic treatment, that is to say, by giving drugs designed to relieve special symptoms.

Sleeplessness is often one of the most prominent causes of distress in chronic cardiac disease. Of all drugs I have found Chloralamide the most satisfactory. It may be given at first in doses of from 20 to 30 grains, suspended in mucilage or dissolved in rectified spirit. The dose may be increased until from 60 to 70 grains are given nightly. The use of the drug should, however, be suspended at intervals, and of course, if possible, the dose should be gradually lowered. Veronal (gr. v.) I have also found useful in cardiac cases. Sulphonal, trional and tetronal have not yielded such uniform results in the cases in which I have prescribed them. Sleep is essential in cardiac cases, and occasionally resort must be had to opium or morphia, although symptoms giving rise to anxiety are sometimes manifested, particularly if there are pulmonary complications. Apprehensiveness, irritability, restlessness are prominent symptoms of failing heart. The addition of bromide of sodium or hydrobromic acid to the treatment suggested above will often have a calming effect.

Dyspnoea may be relieved either by increasing the cardiac stimulant, or by a mixture of carbonate of ammonia and spirits of ether. Inhalation of oxygen gas at frequent intervals will assist the oxygenization of the blood and also tend to induce a feeling of restfulness or even 'sleep.

The occurrence of oedema or ascites must be treated by rest, the administration of cardiac stimulants, and, if necessary, by removing the fluid from the legs and abdomen.

Pain in cardiac disease may of course be a prominent symptom, but the differential diagnosis between pain due to the heart and that caused by digestive disturbances may be difficult. For the relief of pain due to the heart, inhalation of nitrite of amyl, nitro-glycerine, or some preparation of opium are generally employed according to the nature of the affection.

Digestive disturbances may be relieved by regulation of the diet and the use of drugs which aid digestion and prevent fermentation.

In this short article I have only been able to consider very briefly the means which may be employed in cases of chronic heart disease, and need scarcely say that each case must be carefully studied both as regards the lesion present and the individual nature of the patient. To bring about ease in working and so combat the effect of disease must be the aim of the practitioner. This may be accomplished by the aid of the medicines suggested above, together with careful advice and guidance with regard to the daily life of the sufferer.—*Folia Therapeutica*.

SURGERY.

The Surgical Treatment of Empyema.*

BY

SAMUEL LLOYD, M. D.

Professor of Surgery, New York Post-Graduate Medical School and Hospital; Attending Surgeon, St. Francis' Hospital.

It is not the province of the surgeon to deal with the symptoms or the cause of empyema. Its diagnosis must essentially depend upon the internist, and to my mind it is a just criticism from the point of view of the surgeon, that these cases are not recognised earlier in the course of the disease, and that they are not submitted to more systematic and radical treatment.

Only a few days ago a medical man connected with this institution made the statement that in his opinion everything should be done to keep patients from having surgical operations whenever possible, because the surgical treatment is at its best mechanical and offers only a mechanical cure. In the abstract this may be true, but as a matter of fact there are certain conditions that will invariably be surgical and that can be met only by a radical and prompt mechanical treatment.

* Read before the Clinical Society of the New York Post-Graduate Medical School and Hospital, January 18, 1907.

In this class the purulent effusions in any part of the body naturally fall.

It has always been a surprising thing to me that while medical men, as a rule, readily operate upon and drain pus cavities in the superficial areas of the body, they should delay treating purulent effusions in the closed cavities in the same way. I cannot see that there can be any difference between the superficial abscess and the treatment of one located in the deeper tissues. Removal of the pus, drainage of the cavity, and its final obliteration by whatever means may be necessary to accomplish that result, is the only way of effecting a satisfactory cure. In my opinion this determines the method of procedure in the purulent affections of the pleural cavity. Whether the empyema be primary, due to trauma, perforations from other regions of the body or viscera, communications from abscesses of the lung itself, or any other cause, a radical operation, looking to a restoration of function if possible, or an obliteration of the suppurating spaces, is essential. I doubt if in the present status of medicine and surgery any physician would postpone an opening of the pleural cavity in traumatic cases, or in cases of known perforation from the esophagus, the stomach, or abscesses in the abdomen; nor can I see any reason for postponing operative interference in cases where the purulent affection is due to pyogenic organisms.

Operations upon the pleural cavity date back to the earliest times in surgery. Hippocrates, Celsus, and others, speak of the methods of treating abscesses of the pleura and of the lung. In my opinion the statement made by Ziemssen and Ewald that old cases of pyothorax should not exist, is absolutely true and cannot be too strongly emphasized. The presence of pus in the pleural cavity should be recognized, and, as soon as recognized, should be evacuated.

I appreciate the fact that it is sometimes difficult to determine at just what period a pleuritic effusion becomes purulent, and that it is also difficult frequently to determine the presence and the exact location of localized abscesses within the pleural cavity or between the lobes of the lung. Perhaps more difficult still is the determination of those cases where the pus is localized between the diaphragm and the lung.

As Musser says, "it is not credit to the profession at the present time to send to the surgeon a patient with the chest half-filled with pus or even with half a pint or a pint of such accumulation." Any large amount of fluid in the chest cavity resulting from inflammatory changes must necessarily result in more or less crippling of the lung itself, and interfere with its ultimate restoration to full function. It is very

important, therefore, in my opinion, that the physician should strive in every way possible to recognize small collections of fluid in the chest cavity and to determine the conditions which have led to their formation, and also to thoroughly study the causes for this secretion.

I think we may safely say that a primary empyema is a very rare condition. It is ordinarily due either to a pleurisy with effusion, typhoid fever, subphrenic abscess, cancer of the esophagus or some other contiguous organ, abscess of the lung, tuberculosis, or some trauma applied to the chest wall or the ribs. The great difficulty that I have observed in watching these cases is that the physician, as a general rule, does not recognize the transition from a simple serous effusion into a purulent accumulation. The change is so insidious that in a great majority of cases he looks upon it either as a tubercular condition or an unresolved pneumonia, and does not avail himself of existing means of determining the exact condition of affairs. The longer he postpones the accurate determination of the presence of the pus, the greater will be the accumulation of the pus and the damage, by compression and adhesions, to the pulmonary tissue itself, and by absorption to the general condition of the patient.

Considering this question from the viewpoint of the surgeon, I am convinced that exploratory puncture should be made more frequently and earlier in all cases of so-called unresolved pneumonias and serous pleurisies. I am perfectly well aware of the general dread that the profession has of introducing an exploratory needle into the chest. That death has occasionally resulted, is undoubtedly a fact; that pneumothorax has been caused not infrequently is also true; and that pyopneumothorax may occasionally result, I do not deny. But that an aspiration of a serous pleurisy, made for diagnostic purposes, under the proper precautions, causes empyema, or is likely to produce dangerous symptoms, is one of the superstitions of surgery, handed down from the period before Lister taught the necessity of cleanliness in ordinary surgical procedures.

I am not in agreement with Musser's statement that unresolved pneumonias do not occur. Jaolson has also pointed out the infrequency of the occurrence of an unresolved pneumonia. I am obliged to confess that I have occasionally noted instances of unresolved pneumonias in operating for empyema. I am sorry that it is impossible for me to say how many times we have been able to determine the presence of a pneumonia at the time of operation. But within the past two months I have had two cases where the consolidation of the lung was evident, and where it was possible to demonstrate it to those who were witnessing the operation. I am very certain that I have seen it fifteen or twenty times in the course of operations upon three or four hundred cases of empyema.

In examining the histories of 376 cases operated upon within the past fifteen years, I cannot find records of more than six, but I am convinced that I have seen it more often than this. We must, however, conclude that the great majority of the so-called unresolved pneumonias are cases of localized empyema, and that by the proper application of the diagnostic aids at our disposal, the presence of pus could be determined. There can be no question but that in a great majority of these cases the aspirating needle is the best means of determining whether the case be one of localized empyema, or whether some other conditions exist as a cause for the symptoms.

One should not forget, however, in this connection, that the X-ray is a valuable aid in diagnosis, and that it should be applied wherever available. I do not believe that this method of diagnosis should be used except by those who are expert, and where the exposure can be as short as possible—as the dangers of prolonged exposure to the X-ray and the possibilities of error through the improper direction of the angle of light are too great to be intrusted to the inexperienced operator.

It is evident from what I have already said, that I favor the early aspiration of the pleural cavity; and I believe thoroughly that we should adopt a certain mode of procedure. As soon as the physician is convinced, or has a suspicion of fluid in the pleural cavity, if it is showing signs of becoming purulent, or if he has an unresolved pneumonia, or a tuberculosis—and I want to emphasize the latter point, because I know I am in this regard at least taking a position absolutely opposed to the consensus of medical opinion—he should introduce a large sized exploring needle, and withdraw a sufficient amount of fluid to submit to microscopical examination, and staining, for the presence of micrococci. If these are present, an aspirating syringe should be attached to the needle, and all the fluid withdrawn. During this procedure, the patient should invariably be in the recumbent position, lying on the back with the chest wall beyond the edge of the table so that the needle may be introduced at the most dependent position of the pleura while the patient is in this position. Many writers claim that the whole quantity of the fluid should not be withdrawn at a single sitting, but in my opinion, all should be taken away that will escape through the needle. Sometimes during the withdrawal of the fluid, severe attacks of coughing, and even of syncope, supervene. Whenever these conditions occur, the withdrawal of the fluid should stop, and the opening should be sealed with collodion dressing. It is unnecessary for me to say at the present stage of surgical work, that the whole chest should be prepared exactly as though you were intending to do a capital operation; that the needle and all other instruments employed should be boiled; that the

operator's hands should be just as carefully prepared as though he intended to perform a laparotomy; and that all of the surrounding areas should be covered with sterilized towels. The use of an exploring needle that has not been properly sterilized, pushed through skin that has only been washed off with alcohol, by hands that have not even been washed, is an invitation to serious infections for which the operator should be held criminally liable.

I have already said that pneumothorax, or pyopneumothorax, may occasionally be produced by the introduction of the needle; but they will only be occasional accidents, and in case they occur and are recognized at the time of the aspiration, the surgeon should proceed at once to an opening of the chest cavity, and to thorough drainage of the pleural space. If in the course of the aspiration it is determined by auscultation that the lung is coming down and expanding to fill the chest cavity, the operator may be perfectly satisfied with the simple removal of the fluid. If, on the other hand, it is found that the lung does not expand, and that the breath sounds cannot be heard over the whole of the chest wall, he should proceed at once to anesthetize the patient and perform a more radical operation.

In cases of emphysema, which occasionally result from aspiration, thoracotomy should be performed.

I have been asked in what cases I might expect a cure through simple aspiration. Of course this question applies to cases where empyema is fully established. I have found that the best results have been obtained in the pneumococcus cases. Here frequently the fluid is localized, and a single aspiration results in a definite cure. The fluid will reaccumulate in many of these cases in a very few days. Within the past week I have operated upon a woman at St. Francis' Hospital, from whom three quarts of fluid just beginning to change was withdrawn, and two days later a second aspiration, gave two and a half quarts. I operated the second day after the last aspiration, and two quarts more escaped at the time of the operation.

Thoracotomy should be performed in all cases where it is demonstrated that the fluid is purulent, and that the lung is still capable of expansion. The question of the removal of a rib is one that should be left to the judgment of the surgeon. The problem in all of these cases is the obliteration of a pus cavity and this can only be obtained by complete evacuation of the contained fluid and coaptation of the abscess walls. If there is sufficient room between the ribs to provide for complete drainage of a cavity, and the lung expands so as to fill that cavity when the fluid is withdrawn no further operative procedure should be employed; but the surgeon should take into account that in all these cases there is at least a temporary, and sometimes permanent retraction of the chest wall, and

that this may be enough to bring the edges of the ribs so close together that the drainage tube will be occluded. In these cases a section of rib should be removed.

Expansion of the lung can only take place where the adhesions are not too firm, and where there is not an unresolved pneumonia or an extensive tubercular focus. A too rapid expansion of the lung is also dangerous, and is the cause, in my opinion, of some of the deaths that have resulted from aspiration. The fluid has been withdrawn too rapidly, allowing the lung to expand suddenly, and this rapid expansion causes an aspiration of the pulmonic veins, with their consequent collapse. The pressure of the blood from the heart is not sufficient to re-expand these vessels and allow of the return of the blood through its natural channels. The same thing may occur by a too rapid evacuation of the fluid in any method of operating, and pains should be taken to see that the expansion of the lung does not take place suddenly, but that it is very gradual.

In the tubercular conditions, it is very important that a too rapid expansion should not occur as a dangerous hemoptysis might result. In those cases where the lung does not expand, and where it is evident that a large cavity will remain, unless some further operative measures are undertaken, the operator should proceed at once to adopt some course that will provide for the proper occlusion of the cavity.

A few years ago the Estlander or Schede operations were the ones invariably adopted to bring about this result. These operations consisted in the removal of large areas of the ribs, so that the chest wall might fall in against the pulmonary pleura and become adherent to it. In both of these methods of operating the shock was considerable and the resulting deformity very marked. In 1893, Fowler and Delorme both suggested— independently and almost simultaneously—that an opening should be made in the chest of sufficient size to enable the operator to incise the pulmonary pleura and separate it from the lung tissue, allowing the lung to expand through the incision of the pleura. This was based upon the idea that in these contracted and adherent pleuræ, expansibility was lost. This was a mistaken notion, as the pleura retains its power of expansion quite as well as the pulmonary tissue does, provided it is released from its retaining adhesions, and proper methods are applied to expand the contracted lung.

This method of operating was a decided advance on the Estlander and Schede methods, because it allowed for the expansion of the lung itself, and consequently gave the patient a larger amount of useful pulmonary tissue; but there are a number of cases in which it is not applicable.

Unfortunately this cannot be determined beforehand, but incision of the pleura does not always allow of expansion of the lung, and it is sometimes impossible to separate the pleura from the pulmonary tissue without great danger of injuries to the lung, and without prolonging the operation beyond the bounds of safety. In these cases the only recourse was to the Estlander or the Schede method.

Within the past year Ransohoff has demonstrated that it is possible to obtain the same result by multiple rectangular incisions through the pulmonary pleura, allowing the lung to expand along the lines of these different incisions. This he has called "Discission of the Lung."

All these methods are, in my opinion, based upon an improper conception of the mechanics of pulmonary expansion. They are dependent upon certain timeworn statements that have been handed down through generations of surgeons until they have become accepted as surgical axioms. First, the idea is that the pulmonary pleura, which has become the wall of an abscess cavity has become insensitive; second, that the pleura which has been bound down for a considerable length of time by adhesions, is no longer capable of expansion; and, third, that the lung is necessarily collapsed in all cases where the chest cavity has an opening made in it larger than the diameter of the main bronchus.

In order to obviate the last condition a great many operators have devised drainage tubes fitted with valves, so that they would gradually produce a vacuum and aid in the expansion of the lung by producing a negative pressure in the pulmonary cavity. All of this is absolutely unnecessary, if one undertakes a very simple mechanical device. A great many of the operators, at least in this city, and some of my friends throughout the country, have for some time past, been in the habit of breaking up the adhesions about the collapsed lung, but it is obviously useless to break up the adhesions unless at the same time the lung is compelled to expand so that the two pleural surfaces may come into contact and obliterate the cavity.

Expansion of the lung may be obtained by the method that I have demonstrated so frequently before the class in this institution that it is hardly necessary for me to elaborate it at this time. A detailed account of the operation will be found in the *Annals of Surgery* in March of this year.

There is no question that surgeons should adopt the simplest procedure that will lead to a complete cure. While, under certain conditions, even marked deformity may be necessary to bring about this result, yet, as far as possible, methods should be adopted which will avoid deformity and

restore organs to their natural function. There can be no question that if it is possible to expand the lung in its own pleura, that the results will be better than by decortication. It has been demonstrated that in decortication of the kidney a new capsule develops which, as a general rule, is thicker and more inelastic than the natural one, and the same thing undoubtedly will occur in the case of the lung. The tendency of cicatricial tissue is to contraction, and the formation of these new capsules has a tendency to compress the viscus to a greater extent than the original did. The physiological conditions, therefore, are better fulfilled by a simple breaking up of these adhesions and expansions of the lung than by any other radical measure that has been suggested. The shock is distinctly less than in the Estlander, Schede, or Fowler-Delorme method, and the mortality is no greater than in the same class of cases treated by simple thoracotomy. The greatest advantage of the method is that the lung is expanded, and that the consequent aerating space for the blood is increased over that offered by any other method.

I have said in an earlier part of this paper that I advocated this operation even in tubercular cases, and I believe that at the present time in pulmonary surgery a tubercular empyema should be treated surgically just as much as a tubercular peritonitis. In a distinctly tubercular case, I should advocate a large opening of the chest wall and a thorough clearing out of the tubercular focus by means of the curette and the Paquelin cauterizer, nor shall I, if the proper opportunity arises, hesitate to apply this method of treatment to the lung itself.—*The Post-Graduate*.

The Surgical Treatment of Sterility in the male.

At a meeting of the American Association of Genito-Urinary Surgeons held at New York last year Dr. Edward Martin of Philadelphia brought forward a new and simple operation for sterility in the male, which is published in the *Boston Medical and Surgical Journal* of Dec. 6th, 1906. Sterility is an occasional result of gonorrhœa when it is due to occlusion of the vas deferens on both sides from double epididymitis, where induration often may be felt. Adopting this view, Dr. Martin, in conjunction with Dr. Carnet, Dr. Levi and Dr. Pennington, performed experiments on dogs to ascertain whether it was possible to short circuit the vas deferens and the head of the epididymis and to provide a new route for the spermatozoa. The vasa on both sides were cut and ligatured a short distance from their origin in the epididymis and the proximal end was split and sutured into an opening made in the head of the organ. Subsequent ejaculations contained a normal number of motile and seemingly healthy

spermatozoa. There appeared little tendency towards closure by cicatrization of the communication between the vas and the epididymis. The question remained, however, whether the spermatozoa thus short-circuited were fertile, since these bodies normally undergo some development in their passage through the epididymis. In the first case in which the operation was performed in man, there was the usual history of repeated gonorrhœa, double epididymitis, a childless marriage, a wife treated by gynecologists, and finally the discovery of azoospermia. The operation was performed on the left side; 14 days later the semen showed active motile spermatozoa, although not as many as normal. Marital relations were resumed 11 days after the operation and 281 days later the patient's wife was delivered of a child who strikingly resembled him. The spermatozoa again disappeared but returned after a long course of prostatic massage. The operation was performed in five other cases. One patient was lost sight of and conception did not follow in the other four cases, but in each there were other reasons for this result. The technique of the operation is very simple. Dr. Martin has operated under local anæsthesia without giving pain, but he prefers to use ether. An incision one and a half inches long is made over the head of the epididymis in the back of the scrotum. The vas is freed from the cord. The epididymis is exposed and a small fragment of it is snipped out. A slit one-third of an inch long is made in the vas. This is best done with a sharp pointed tenotome and a probe-pointed knife, similar to that used in incisions into the lachrymal duct. Four sutures, of silk or fine wire, are then passed with needles slightly curved, like those used by ophthalmic surgeons. The needle is passed from the outer to the inner surface of the epididymis, and thence from the inner through the outer surface of the vas, one stitch being placed at either end of the incision and one at each side. The sutures are not tied until they are all passed. The tunica vaginalis is closed by buried catgut sutures and the wound in the skin by a continuous suture of either silk or catgut. The testicle is swathed in sterile cotton and immobilised by strapping. The patients were allowed to get up on the following day and to resume sexual relations within a week.—*Lancet*.

OBSTETRICS AND GYNÆCOLOGY.

Pubiotomy: Case Report.

BY

DAVID JAMES EVANS, M. D.

Assistant Obstetric Physician, Montreal Maternity Hospital.

E. M., aged 24, III-para, was admitted to the Montreal Maternity Hospital, Sept 8th, 1906. Her two previous pregnancies had been terminated

at term by craniotomy. The last had taken place a year ago. This was followed by prolonged sepsis, and she was admitted to the General Hospital where she spent nearly a year. There she underwent an abdominal operation, one tube being removed.

The last menstrual period began January 1st, 1906. Patient first noticed fetal movements in May, 1906. There had been persistent nausea and vomiting throughout the pregnancy, and moderate severe frontal headaches. There had been edema noticed at times, but no disturbance of vision. The bowels had moved regularly with cathartics. The patient stated that she had learned to walk at twenty-four months of age, and that she was married in 1903. Her previous pregnancies had gone to term, the children being lost as above stated. There was no history of any previous disease. The kidneys were normal.

On examination the fundus uteri was found to be two finger breadth below the ensiform cartilage. The abdomen was in the condition of a full term pregnancy. There was a scar of an incision in the middle line half way between the symphysis and the umbilicus. The child was presenting in R. S. A, the presenting part being well above the brim. The fetal heart was heard from 144 to 156 on the right flank at the level of the umbilicus.

The pelvic measurements were Sp. 26. 5 c. m.; Cr. 28 c. m.; Troch. 32 c. m.; Conj. Diag. 9 c. m.; the true conjugate was estimated at 8 5. c. m. The pubic arch was very wide, and the transverse diameter of the outlet was 12.75 c. m. A diagnosis of flat rachitic pelvis was made.

She had been seen in the out-door department on August 29th, 1906, and her measurements having been taken at that time, she was advised to come into the hospital when the pains began, and it was the intention, if the condition warranted it, to deliver her by means of abdominal Cesarean section. In accordance with this plan she was to put to bed when admitted, as she was having irregular abdominal pains, and small doses of morphia were given to secure rest.

On the night of September 10th, patient began to have frequent and severe pains. My attention was called to her on the morning of September 11th, when I had her removed to the labor room and prepared for examination. The position of the fetus was found unchanged by external examination, the fetal heart being heard in the same position, and at the same rapidity. On vaginal examination the parts were found relaxed. The vagina was short and there was nothing unusual about the vaginal discharge. The sacral cavity was markedly accentuated from above downwards, and decreased laterally. The promontory could easily be reached by the finger. The os was found three-quarters dilated, and the left

hand of the fetus prolapsed into the vagina. The fetal breech was felt above the internal os in R. S. A. position.

No record could be obtained as to when the membranes had ruptured. Under the circumstances I decided that to deliver the patient by the abdominal route would necessitate a Porro operation, so I decided to attempt delivery by means of pubiotomy.

The patient having been prepared for operation in the usual method, she was catheterized in the dorsal position, and the catheter was allowed to remain in the urethra as a guide. A short incision was made parallel to the upper border of the left ramus of the pubes, down to the bone. The finger was inserted behind the symphysis, stripping off the bladder, and a Bumm-Stockel needle was then passed carefully down behind the symphysis, guided by the internal finger, and brought out midway on the left labium majus. A Gigli saw was then attached to the needle and drawn back through the wound. The bone was sawn through exceedingly easily, but it did not separate with any sudden snap. Just as the bone had been sawn through there was a gush of blood, which was readily checked by pressure from gauze packed into the wound and over the pubes. The legs were now flexed and held in position by assistants.

Dr. Little, who was assisting me, undertook the delivery. The right foot of the child was seized and brought down, and the body as far as the umbilicus delivered without difficulty. The right arm was found to be displaced upwards, and around the child's neck, and it was removed without much difficulty, but the child could not be turned to allow the biparietal diameter to come down on the left side, as is directed in such cases. Some considerable force was necessary to bring the head down into the pelvis: as it passed the brim the pelvic bones separated to the extent of 2 c.m.

The child was deeply asphyxiated on delivery, but was resuscitated with hot and cold baths and insufflation. After the birth of the placenta, which was expressed without difficulty, the patient was examined internally. A deep tear was found extending high up into the uterine segment on the left side. As it did not bleed it was decided not to suture. The skin incision was then closed with four silk-worm sutures, the lower wound being covered with iodoform collodion. The pelvis was surrounded by a broad strip of adhesive plaster, and sand bags applied along either side. A small band was placed about the knees of the patient to keep them together. After operation the patient's pulse was very weak, but soon after being put to bed it became about 116 per minute. She was given a saline solution of 700 c.c.

About three-quarters of an hour afterwards the patient showed evidence of collapse, the lips and finger nails becoming deeply cyanosed. There was no definite sign of hemorrhage, nor was there marked abdominal tenderness, though the pulse rose to 144 per minute. Under prompt treatment she rallied.

The child was a male and weighed 2,600 grammes. The Bi. P. diameter was 8.75 c.m.; Bi. T. 8 c.m.; O. M. and the O. F. 11.5 c.m. The further history of the child was uneventful. It weighed when it left the hospital, 2,670 grammes. The mother was unable to nurse the child, and it was fed on a cream and whey preparation.

The recovery of the patient was on the whole uneventful. The highest temperature recorded was 101.5, which was reached on the fifth day. As a rule the temperature remained below 100. The patient required to be catheterized but twice, when she regained complete control of the bladder. She complained of considerable pain over the right sacro-iliac-synchondrosis throughout.

The incision was dressed on the sixth day and everything was found in good condition. There was marked swelling and induration of the left labium. On the eleventh day dressings were removed, the wound was dressed, and the sutures removed. A quantity of peculiar blood-stained fluid escaped from the outer edge of the wound at this time, and more could be expressed by pressure. This sinus was somewhat enlarged by a probe, a sterile gauze drain was inserted, and the wound was dressed every day or two until this discharge ceased.

The patient was a very sensitive and rather complaining type of woman, and very apprehensive about beginning movements of her limbs. She sat up for the first time on the thirtieth day and was discharged on the forty-seventh day. She was detained longer than necessary in the hospital in order to permit of certain examinations being made. On discharge the pelvic examination showed the cervix lacerated on the left side. The uterus was well involuted, not tender, and in good position. The adnexa were free. The Diag. Conj. twice measured 9.25 c.m., showing a slight permanent increase. The left ramus of the pubes was markedly thickened in its entire extent, but there was no definite callus noticed at the line of division. The genitalia were practically in the same condition as when the patient was admitted. The patient could stand on either leg without difficulty, and there was no evidence of undue movement in the pelvis.

This operation was first suggested by Gigli, in 1894, his object being to retain all the advantages, and do away with some of the dangerous

features of the operation of symphysiotomy. He proposed that the pubic bone should be sawn through to one side of the symphysis by means of a fine wire saw which he had designed for the purpose, since known as the Gigli saw. The operation was first performed by Bonardi of Lugano, in May, 1897. The operation was first introduced into Germany by Doderlein in 1904, who largely improved the technique. Since then the operation has been done in practically all the German clinics, and in France. The operation has been steadily growing in favor and the results have on the whole been very satisfactory. It has been performed many times in the United States, and once in Canada by Laurendeau, of St. Gabriel de Brandon, who reports a case in *La Union Medicale du Canada*, Jan., 1906.

As has been suggested by Gigli the operation consists in making a large vertical incision to one side of the symphysis pubis and then sawing through the bone from the outside. Doderlein's modification has made the operation practically a subcutaneous one. The operation performed in the case here reported is practically that of Doderlein.

Bill, in a recent paper on this subject to which I am much indebted, claims the following advantages of the operation over Cesarean section.

(1) The fact that the peritoneal cavity is not opened, and that the field of operation does not connect with the generative tract, allows of its being done in cases in which there is infection already present, or where there is a suspicion of infection on account of examination under doubtful asepsis.

(2) The greater simplicity allows of its being done in a private house, and the fact that it may be done subcutaneously greatly lessens the danger of infection.

(3) The operation includes nothing which might interfere with future labors. The uterine wall is not incised, and this decreases the danger of weakening it.

The complications which attend the operation are, according to reports hitherto published, hematomata of the labia, and at the site of the operation; lacerations of the bladder and of the vaginal wall, which in some cases connect with the field of operation; and thrombosis of the veins of the leg.

Bill has been able to collect records of 157 cases in which the operation has been performed, with eight deaths. There is no doubt that many other operations have been performed which have not been recorded. In but one of these fatal cases could the death be said to have resulted from

the operation, and the cause of death in this was thrombosis and embolism. Several of the other cases died of sepsis, but in each one of them sepsis was present at the time of operation. One case died of chloroform during the operation, and another of typhoid fever twenty-five days after operation. The results for the child have not been so uniformly good as for the mother, but on the whole could be said to be very satisfactory.

The increase in the true conjugate which may be obtained depends upon the degree of separation of the cut ends of the bone. A separation of 6 c.m. between the cut ends of the bones will give an increase in the true conjugate of 2 c.m. This degree of separation of the cut ends of the bones has as yet not been recorded. The maximum of separation Doderlein records is 5 c.m., which was not attended with any injury to the soft parts. The operation is limited in flat rachitic pelvis to 7 c.m. C. V., and in general contraction to $7\frac{1}{2}$ c.m. C. V.

The enlargement as a result of the operation is an asymmetrical one. The pelvic diameter on the side opposite to the incision is as a rule most markedly increased.

Bill reports having been unable to record a single case where the bony surfaces did not unite after the operation; as a rule there is no mobility and in no case is there any record of the patient being affected as a result of the operation. Some observers have reported the presence of callus in considerable quantity after the operation. Van des Vale and Kannegiesser have reported cases in which pubiotomy had been performed, and at a subsequent labor there had been spontaneous delivery, the enlargement of the pelvis evidently being permanent.

My own opinion is that the operation has a distinct, though limited, field, and on the whole I am satisfied with the technique of the operation as performed in this case. The hæmorrhage, which may be moderately severe, was, in nearly every case recorded, easily checked by pressure, and arises chiefly from the crura cavernosus clitoridis, and usually comes at the moment of the separation of the bone. The saw should be used through as wide an arch as possible to avoid bending, and so breaking it, and it should not be removed until perfectly satisfied that the bones have been completely severed. Drainage, if required at all, should be done from the upper wound.

J. C. CAMERON, M. D.—Dr. Evans is to be congratulated on the result of his operation. It certainly seems to have been an ideal case for pubiotomy. The estimate which was made beforehand of the pubic dimensions was very accurate; the Conj.-Vera, estimated at 8.5 c.m., was found to be 8.6 c.m. by actual measurement when the patient was examined for

discharge. After listening to the report of this case the first question which we should probably ask ourselves is, whether the result was better than it would have been had C. Section been performed, and if so, in what respects. In my opinion that woman left hospital in far better condition than she would have done had C. S. been done, and, moreover, the child was living and in good condition. The C. Section operation would have been a Porro; the patient would have been mutilated even if she had recovered, and the child would probably have perished on account of the time lost in dealing with the adhesions.

The chief value of pubiotomy seems to be the narrowing of the field for C. Section, especially for the *relative* indication. Of course there can be no question of putting it against C. Section for the *absolute* indication. In minor degrees of pelvic contraction at the brim, pubiotomy will be of the greatest service; but the smaller the C. V. becomes, the more dangerous will the operation be for the child. Here in this case we have a pelvis with C. V. of 8.6; the child was born asphyxiated and was resuscitated with difficulty; if the C. V. had been 1 c.m. less or had it been 7 c.m., which is usually regarded as the lowest limit, there can be very little doubt that the child would have perished, and what gain would there have been over the results of previous deliveries where craniotomy was done? It would seem, therefore, that pubiotomy is to be preferred in cases of slight or moderate contraction of the brim.

With regard to the method of performing the operation, there are several practical points which this paper brings up. First, with regard to the amount of enlargement of the C. V. obtained by means of the operation. It has been the clinical experience in Germany, confirmed by Roentgen ray photographs, that the closer the incision is made to the symphysis, and the more nearly parallel it is to the middle line, the greater will be the widening of the cut ends and consequently the greater the gain in the C. V. Conversely when the incision is made three or four fingerbreadths from the symphysis or in a line oblique to the central line of the joint, the gain will be correspondingly less. If I had occasion to operate on a case where the C. V. was below 8 c.m., I should take great care to make the incision as near as possible to the symphysis, and parallel to the middle line.

With regard to the subcutaneous method, I very much question whether it is altogether an advantage. There is always considerable effusion of blood after the bone is sawn through, and it must go somewhere. If it is not allowed to escape, it will form a hematoma more or less extensive in the labia or elsewhere; but if it is allowed to escape through a small opening, such a hematoma is not so likely to form, and

the hemorrhæge need never be severe, for it can be checked promptly by packing some moist gauze into the wound. Our experience herewith of symphysiotomy has been that the best results are obtained by one small incision down upon the top of the symphysis, through which the finger can be passed, the knife guided during the cutting, and the operation done almost subcutaneously. It seems to me that the same technique applied to pubiotomy should give equally satisfactory results. Another point which struck me in this case was made before discharge from hospital, the uterus was found to be in good position, and the soft parts involuted and in excellent condition. In our symphysiotomy cases, although the patient seemed to be in good shape when discharged from hospital, prolapse and subsequent trouble developed. The good success in this case was attributable, largely, I think, to the fact that the patient was kept so long in bed, and that involution had a chance to be well established. In the earlier days, there was great haste in getting patients up and out of hospital; experience has proved that to have been a mistake in symphysiotomy. I think that it would be equally a mistake in pubiotomy. This case is extremely interesting from many points of view, and I think we may safely conclude that in pubiotomy we have an operation which has a definite field, and that it limits considerably C. Section for the relative indication, especially in flat pelvis where the flattening is only slight or moderate; but where the flattening is extreme, pubiotomy is too dangerous for the child and C. Section is to be preferred.—*Montreal Medical Journal*.

The Genesis of Sex.

Dr. Louise G. Robinovitch concludes that (1) Woman's highest potential energies, during menstrual life, correspond to a period about ten days, more or less, before the onset of menstruation. (2) A male child is most apt to be the issue of a conception taking place at such a period. (3) The Jews, to whom marital intercourse is forbidden during the period comprised between the last five days preceding and the seven days following menstruation, give birth to more male than female children in comparative excess over other nations. (4) In advanced countries the superfluity of women is gradually dying away. (5) In advanced countries marriages take place at an age corresponding to the height of neuro-muscular vigor. (6) College-bred women marry later in life and marry educated and professional men; they give birth to more male children (55%) than do the non-college-bred women (45%). (7) The only reasonable interpretation of these facts is that in advanced countries the level of mentality and neuro-muscular potentiality of parents is higher

than in backward countries, and that this high potentiality must certainly have a decided effect on the decrease of female births. (8) If the supposition presented here, regarding the correspondence between the male issues and high cellular potentiality of the women at the time of conception is correct, we have a valuable clue to the study of the genesis of the sexes. (9) If we were to acquire positive knowledge of this correlation, we should have a valuable means of controlling and directing the male and female population of the world.—*Jr. Ment. Path.*, Vol. VIII, No. 1, 1906.

THERAPEUTICS.

On Yeast Therapy.

BY

PROF. E. ROOS,
FREIBURG i/B.

Yeast has been in use for a long time past as a popular remedy, being particularly held in regard as a so-called "blood-purifier;" it was likewise occasionally prescribed by the medical profession, and was recommended for various diseases, such as infectious fevers, diabetes, and many others. The purpose of this paper is not to discuss these various modes of administration, based, many of them, on insufficient data, but to restrict our attention to that aspect of yeast therapy concerning which sufficient and reliable observations exist.

We find that in the year 1832 Dr. Neumann of Aix-la-Chapelle recommended yeast for the treatment of scurvy. The results obtained by this treatment were so excellent that "he is convinced that those who follow his example will not look for another medicament for the treatment of scurvy." These favourable results were corroborated by some, but were disputed again by others, as for instance Duchek, who was not convinced of the rapid cures attributed to this treatment.

The therapeutic value of yeast is best established in cases of furunculosis, acne, and similar skin diseases. The earliest mention of it in this connection is made by an English physician, Dr. Mosse, who, in a communication to *The Lancet* in 1852, relates that during an epidemic of furunculosis, he made use of it in obstinate cases which had not yielded to any other treatment, and found that when treated with three table-spoonsful of yeast daily rapid recovery resulted. In 1894, a French physician, Debonzy, reports that influenced by the popular custom to take yeast for furunculosis, he administered the remedy to himself with excellent results.

These communications remained more or less unnoticed.

It was not until during the course of the last six to eight years that dermatologists—such as Lassar, Brocq, Paschkis, Durand, and others—called attention to this treatment of furunculosis, acne, and similar skin diseases accompanied by suppuration, on the basis of extensive personal experience.

They established the fact that even chronic and obstinately recurring furuncles frequently healed under the influence of this treatment, and that those eruptions which appeared during the course of treatment were usually much less purulent and painful, and finally disappeared entirely. Lassar considers the action of yeast in cases of furunculosis to be obviously curative. Brocq experimented on himself, and declared that in the course of four years, during which time he took yeast for an attack of anthrax from which he was suffering, he had no recurrence of a single carbuncle—"qui ait évolué complètement." However, the authors all agree that the action, like that of nearly all medicaments, is not absolutely reliable; some sufferers show no improvement under this treatment. With some patients the yeast, which is usually administered as beer-yeast, 2-3 table-spoonsful a day, does not agree; they are affected by stomach troubles, such as flatulence and diarrhoea.

These intestinal symptoms following on the consumption of yeast have been observed in varying degrees, and are readily explained by its property of inciting fermentation.

Further investigations showed that these symptoms of fermentation cease when nourishment free from carbohydrates is taken; that they increase when fermentable food is taken in considerable quantity. Relying upon this intestinal action, yeast was frequently administered for intestinal troubles, such as dyspepsia accompanied by diarrhoea or constipation, the assumption being that the yeast cultivations, growing rapidly, extinguished the noxious micro-organisms of the intestine. Nevertheless, experiments in vitro with cultivations of bacteria and yeast have not given consistent results. According to the exhaustive researches of Nobecourt, certain bacteria were undoubtedly arrested in their growth; others, however, such as coli bacilli, and streptococci appeared, if anything, to flourish more abundantly in the presence of yeast. This question is, therefore, up to the present day, by no means solved; but there is no doubt that an influence on the processes in the intestine is exercised by yeast, and for this reason the therapeutic action of yeast on the skin is usually associated with its action on the intestine. In accordance with this view French authors regard the forms of dermatosis—"d'origine interne"—as especially suitable for treatment with yeast. If this is so, there is no difficulty in explaining

why it is that not all furuncles are influenced by this treatment, since some of them are of a traumatic character or called forth by some other external injurious agent.

The curative properties of yeast are by most authors attributed unhesitatingly to its most obvious peculiarity, viz., that of inciting fermentation. Since beer-yeast in a fresh and pure state as required for curative purposes is often difficult to obtain and does not keep for long, numerous processes have been devised for obtaining preserved yeast preparations in the form of dry powder. In accordance with the prevalent view as regards the active principle, particular care has been taken to preserve the enzymatic action—the power of inciting fermentation. Preparations of this kind are zymine, furunculin, levurine, levurettine, and others. All the attempts which were undertaken to isolate the therapeutically-active principle in yeast consisted, therefore, in endeavours to separate the pure ferment; such preparations, however, failed to exhibit the curative action and could not be kept. In the course of some experiments, I made an observation which induced me to adopt another view as to the nature of the therapeutically-active principle of yeast. Whilst investigating the action of various micro-organisms on the intestine, I discovered to my surprise that yeast which, as already mentioned, possesses certain aperient properties, still acts on the intestine after it has been heated for a length of time and its fermentative properties destroyed. There are no more unpleasant symptoms, such as flatulence, diarrhoea, etc., nevertheless, in cases of constipation, a mildly laxative action was still observed in a considerable percentage of cases. This action can, of course, no longer be attributed to the fermentation. It cannot be called forth by the ferment of the yeast, but must, on the contrary, be induced by some other substance contained therein.

In collaboration with Dr. Hinsberg, I conducted an extensive research in order to effect the isolation of this body. Yeast was subjected to extractions with alcohol, and the fatty acids thus obtained were fractionally separated by conversion into the corresponding calcium or lead salts. The various fractions separated in this manner were then severally applied to a series of constipated patients. It was found that the mildly aperient action of sterilised yeast was due to a fatty substance contained to the amount of about three per cent. in dried yeast. This substance contains unsaturated fatty acids hitherto unknown. We have designated the substance Ceridine and examined its action on the intestine, in a large number of cases. We have found it to be mildly laxative; the symptoms connected with the fermentative action are totally absent. A prolonged

administration of an average of two pills, containing 0.1 gramme of Ceridine, twice daily, or even less, will bring about regular motion of the bowels in eighty per cent. of such cases in which the constipation is not too severe or due to some organic alteration. Frequently, regular motions, once or twice a day, occur without any symptoms of irritation. Occasionally the action is insufficient; in such cases it may be advisable to use Ceridine as an aid to dietetic or oil treatment. Frequently an interval of several days occurs before any action can be noticed. In some cases, even after larger doses, there is no action whatsoever. At times the influence produced by the pills gradually diminishes. Other patients find that they can manage with continually decreasing doses. An important fact is that no tendency to constipation remains after treatment with this substance; on the contrary we have frequently observed a prolonged laxative action, long after the medication had ceased. In view of these qualities, Ceridine must be regarded as a valuable medicament for assisting, in a mild and non-irritant manner, the combating of chronic constipation. It is in no way suitable as a purgative, for instance as a substitute for castor-oil.

Having established the fact that Ceridine, which in consequence of its mode of preparation, can contain no sort of enzymatic substance, exercises an influence upon the intestine, it naturally interested us to test whether this substance likewise possessed the curative action of yeast in regard to the skin diseases enumerated above. As I pointed out above, the general opinion is that the therapeutic action of yeast is to be associated with its action on the bowels, but this opinion has not hitherto been successfully corroborated by bacteriological research. Nor have sundry examinations of the variation in the amount of indoxyl or æther-sulphuric acid in the urine after taking yeast or Ceridine given reliable results. This method may be considered with certain reservations to be a fair test for intestinal putrefaction, but in some of the cases here mentioned the quality of the above substances decreased, which would mean a diminution of intestinal putrefaction; but in other cases it was not so. Nevertheless we may still regard as the most plausible explanation, the assumption that the action on the skin takes place from the intestine, just as all the various "blood-purifying" infusions in vogue amongst the masses for the treatment of skin eruptions, contain aperient drugs. Be this as it may, experience has shown that Ceridine likewise acts on the skin affections in question. In the twenty-seven cases of furunculosis which I have had the opportunity of treating up to now—all of which had had a duration of some months, or at least weeks—five were not distinctly affected by the treatment, inasmuch as the formation of furuncles continued during the medication, or only decreased imperceptibly. In the remaining twenty-two

cases improvement was shown, either the production of fresh furuncles ceased, or the new ones were milder, less painful in character, healed more rapidly, and finally disappeared altogether. Although furunculosis is remarkable for its atypical course, and may after indefinite stay suddenly decrease or heal, yet these cases of improvement on the administration of Ceridine are too numerous to admit of the assumption of a coincidence between medication and cure.

Even more convincing are the results obtained in the treatment of acne. This is a complaint which, especially in young people, usually remains chronic for years or returns at intervals, seldom healing spontaneously as does furunculosis. Of thirty moderately severe cases, only three gave no signs of benefit, all the rest exhibited a great improvement in the complexion and a greatly diminished reappearance, or complete cessation of new pustules. Occasionally, fresh eruptions occurred, which, however, did not suppurate. In some cases the improvement in the complexion was exceedingly rapid and astonishing in its effect. In other cases two to three weeks elapsed before improvement took place. Frequently the patient was simultaneously cured of existing constipation. But in some cases there was no alteration in the action of the bowels and the skin affections improved in spite of this. We cannot, therefore, attribute the therapeutic action merely to the slight aperient effect produced. On the strength of our experience it must be regarded as an established fact that the specific dermic action of yeast is attributable to its fatty substance Ceridine. The administration of "fermentative" yeast, which of course contains zymine as well as the fat substance, does not appear to give any better results; consequently the fermentation resulting in the intestine, which often enough must have injurious consequences, can well be dispensed with.

Various other authors have experimented with Ceridine, and report good results. Meisels and Brauner have successfully treated furunculosis and constipation. Of sixty-one cases of obstinate constipation resulting from various causes the majority yielded to the treatment. V. Feissl reports very favourable results in the treatment of acne vulgaris, sycosis, and folliculitis. Toff has used Ceridine for furunculosis, acne, and folliculitis with success: he likewise reports favourable results obtained in local application for leucorrhœa, endometritis, etc.

Manifold advantages may be derived from the observations recorded above. In the first place, we possess in Ceridine a medicament of unvarying composition, which allows of the administration of much larger doses than does yeast, without fear of causing any appreciable secondary

symptoms. The results possess considerable scientific interest, inasmuch as hitherto no action of the fatty acids upon the organism has been recorded.

Though yeast has been administered for a number of other pathological conditions, its therapeutical value for other complaints is not definitely verified. Possibly the different results obtained by different authors are attributable to the difference in constitution of the various cultivations administered, so that we may expect a greater coincidence of results when a preparation of definite composition is made use of. In any case, it is an established fact that the action of yeast is one that often sets in gradually and is difficult to follow, so that conclusions on its action should not be drawn except on the basis of a long series of observations.
—*Folia Therapeutica.*

The Therapeutic action of Glycerophosphates in combination with Albumens.

BY

J. SNOWMAN, M.D., M.R.C.P. (LOND.)*

UNDOUBTEDLY the tendency of modern therapeutics is towards increasing the number of medicaments which are products of animal metabolism, the products of the thyroid, the pancreas, and suprarenal glands have and become well established substances of organotherapy. The advance in physiology afforded by the study of internal secretions has rendered possible these important additions to the armamentarium of drugs—all of which possess true physiological action as distinct from pharmacological action.

It is definitely known that the nervous system contains large quantities of a highly complex substance, allied to a fat, called lecithin. Phosphorus enters into the composition of this substance exactly as iron enters into the composition of hemoglobin. This lecithin is found mainly in the myelin sheath of the nerves. It is therefore reasonable to assume that diminished absorption or utilization of the phosphorus naturally present in food will interfere with the physiological efficiency of the myelin substance. When myelin undergoes degeneration, the resulting products are stearic acid, choline, and glycerophosphoric acid.

It is most important to realise that phosphorus enters into the composition of the lecithins as glycerophosphoric acid. Lecithin exists not only in nervous tissue, but is also found in abundance in the yolk of eggs and the eggs of fishes, and is contained both in red and white

* An extract from the *Birmingham Medical Review*.

corpuscles. It is also a remarkable fact that phosphorus enters into the proteid constitution of tissue just in that portion of the cell which is responsible for multiplication and reproduction. It is the nuclei of the cell which contain the phosphorus. So far it has not been ascertained in what chemical state this element exists in the proteid molecule, but we do know that as the proteid substance breaks down in ordinary metabolism, the phosphorus becomes oxidized to phosphoric acid, and combining with bases is excreted in the urine as phosphates.

In phthisis, pyrexial states and other conditions, when the combustion processes of the body cells are excessive, and consequently there is an increased excretion of urea, the elimination of phosphates keeps pace with this increase.

It should be remembered that not all proteids require phosphorus for their constitution. The albumens with their acid and alkali derivatives, globulin and peptones contain no phosphorus, but the *nucleo-albumens* and the *nucleo-proteids* do contain it. Of these two bodies, the former is the more simple, and casein of milk may be taken as a type of a nucleo-albumen, of which the decomposition products are an albumen and phosphoric acid.

A *nucleo-proteid* is a more complex substance. It splits up into (a) an albumen, and (b) a nuclein. The phosphorus is contained in the nuclein, which is itself a chemical compound of albumen and nucleinic acid.

This disintegration goes on normally as a process of metabolism, and the decomposition of the phosphorus-containing cells is an important source of the phosphates to be found in the blood. The calcium phosphate is derived from the food ingested, but the sodium and potassium salts are dependent to a great extent on the oxidation of the phosphorus-holding cells in the body. The acidity of the urine, as is well known, depends upon the presence of sodium phosphate in the blood, which in the kidney becomes acid sodium phosphate, and it is a very striking fact that to the extent of a few milligrammes daily, the phosphoric excretion in the urine is in the form of glycerophosphates.*

These considerations help us to understand the precise position of organically combined phosphorus in the physiological chemistry of the organism.

It is clear that where there is a rapid breaking down of tissue due to some toxic cause, it is necessary that the multiplication of cells should

* Garrod (Art., Urine), Ency. Medica.

be maintained *pari passu* with the destruction. This is a demand for the nutrition of the cell nuclei, to which the glycerophosphates contribute in due measure. Again, where the disturbance in health affects the nervous structures of the body, and there is presumably malnutrition of the cells of the nervous system, either in the direction of exaggerated katabolism or insufficient assimilation, the administration of glycerophosphates would clearly go towards helping to re-establish its normal physiology.

The writer advocates the preparations of glycerophosphates in combination with albuminous substances, and gives a very interesting account of his own and other authors' observations, which makes his paper unusually instructive.—*The Therapist*.

Digitalin in Angina Pectoris.

FRIESSINGER (*Journ. des Prat.*), from a consideration of the possibility of there being cardiac distension in cases of true angina pectoris, has treated patients affected with this trouble with small doses of digitalin, and in many cases with very great benefit. Since in these patients arterial tension is frequently high, and is still further heightened during the paroxysms, only small doses of digitalin should be given; and to combat the high arterial tension theobromine may simultaneously be given. The author advises that five drops of a 1 in 1,000 solution of crystallised digitalin be given daily, and that 0.5 gr. of theobromine be administered before the mid-day and evening meals. After ten days the digitalin should be stopped, to be resumed after ten to fifteen days. This treatment is not always successful, but appears to have its best effects in those cases of angina in which between the attacks the patient suffers from dyspnoea on exertion. Patients should be very abstemious as regards eating and drinking. If fat, suitable treatment should be carried out to reduce the excess of adipose tissue; and by these means the author has been able to obtain "cures" in men of 70 years or upwards.—*British Medical Journal*.

Death from an Overdose of Chlorate of Potash.

THE use of chlorate of potash has been so popularised in recent years by its inclusion as the principal or sole drug in various troches and tablets that it is generally regarded as a safe and harmless drug by amateur prescribers, but the recent death of a middle-aged man at Scarborough from an overdose of the salt shows that it is too potent a remedy to be played with. At the inquest it was stated that the deceased had a sore throat, and was advised by a "friend" to take chlorate of

potash tablets. He went to a local chemist and bought an ounce. He dissolved half-an-ounce in water and sipped the solution frequently during the day. In the evening he dissolved the remaining tablets in water and drank the solution at intervals until the afternoon of the following day, when he was taken so ill that two doctors were called to attend him. They diagnosed poisoning by a caustic drug, but unfortunately they were unable to relieve the patient, and he ultimately died. Dr. Thornley, who was called to see the deceased, said he had no doubt whatever that death was due to chlorate of potash poisoning, and a post-mortem examination was quite unnecessary. Anything over twenty grains would be an overdose, and the deceased had taken at least four hundred grains in about twelve hours. He had known 225 grains taken in five days have a fatal effect. The jury returned a verdict to fit in with the evidence given by Dr. Thornley, and the Coroner remarked that chemists should exercise care in selling drugs calculated to be injurious, and persons should be more careful in recommending the use of drugs of which they had not a proper knowledge:—*The Medical Times and Hospital Gazette*.

Iron in Neurasthenia.

LAMOINE (*Progres Medical*) advocates the employment of iron in certain cases of neurasthenia, on account of its action in changing hæmoglobin into oxyhæmoglobin, and thus oxygenating the most remote cells of the organism. The nervous system, being the most functionally active, has need of most oxygen, and its cells are the first to suffer from an impoverishment of the same. Premising that his first cases were treated quite empirically, he goes on to say that he has found so much benefit, both in hospital and private practice, from iron used in neurasthenia that his opinion on the subject is now quite decided. While some cases have been markedly anæmic, others have shown either no signs of anæmia or only slight indications, insufficient to account for the severity of the illness and yet all have been cured by iron. He combines its administration with that of hydrochloric acid, to improve digestion, and, in following up the course of treatment with natural mineral waters, he selects preferably those of Saint Pareze, which contain salts of lime and manganese to prevent constipation.—*British Medical Journal*.

Phenalgin.

From time to time new coal-tar products are introduced, and very often these disappear within a few months after they have been brought to the notice of the profession, simply because they do not prove of special

value, or else have been found to exhibit dangerous properties. Not so with phenalgin, which is a product put upon the market by the Etna Chemical Company (London agent: Mr. E. T. Reid, Basinghall Avenue, E. C.). Phenalgin is ammonio-phenylacetamide. Like products of a somewhat similar composition it possesses three distinct properties. It is an analgesic. In this respect it bids fair to rival completely phenacetin, and is of special service in cases of neuralgia and headaches of various kinds. In dysmenorrhœa it is likewise of great service, small repeated doses frequently acting as a charm in relieving this distressing complaint. Then again it is useful in reducing temperature. Here it finds a useful application in the hectic fever of tuberculosis, small doses being given with marked benefit in such cases. In fact Phenalgin is one of the best all-round anti-pyretic agents known, and is more reliable than any other product of similar origin. Lastly, it acts as an hypnotic, partly by relieving pain and partly also by allaying nervous restlessness, so often met with in diseases of various kinds.

The product is chemically pure, and is put up in pink-top capsules and in tablets. These capsules are made of the best gelatine and are absolutely free from all impurities, retaining their strength, it is said, for an indefinite period. The tablets contain $2\frac{1}{2}$ grains of phenalgin and the capsules 5 grains each of the powder. The dose ranges from $2\frac{1}{2}$ to 10 grains, repeated in half-an-hour if necessary. In cases of dysmenorrhœa ten grains should be taken every half-hour until relieved. At least these are the directions given by the manufacturers, but probably much smaller doses will be found sufficient. From personal trial of phenalgin we can strongly recommend it as a valuable substitute for phenacetin. Its great advantage is that it is not known to the public, whereas phenacetin is, and apart from this it is a distinctly pure product from which good results may always be confidently expected.—*The Medical Times and Hospital Gazette*.

Veronal in the Vomiting of Pregnancy.

The following case is of interest, both from the gravity which it at one time assumed and from the markedly beneficial effect produced by large doses of veronal administered rectally at a time when the question of procuring abortion was seriously under consideration.

A healthy primipara, aged twenty-nine, developed serious symptoms of vomiting at the end of the second month of pregnancy. Nothing was retained by the stomach, and the retching and vomiting prevented her obtaining any sleep for more than a few minutes at a time. No improvement resulted from treatment by any of the following measures, namely:

iced champagne, effervescing saline mixtures, vinum. ipecac. *mj* every hour, oxalate of cerium gr. v four-hourly, complete rest, careful constant nursing, entire rectal feeding, everything by the mouth being stopped. Hypodermic injections of strychnine were given to improve the pulse, which became rapid and feeble. Pot. brom., gr. xxx, was given in one of the nutrient injections, and repeated in two hours, without any appreciable effect, and no relief followed morphine, gr. $\frac{1}{4}$, hypodermically. At the end of three days veronal, gr. xxxii, in powder was administered in a nutrient injection. The patient fell asleep within half an hour, and slept well for eleven and a half hours, and at intervals afterwards for the next six hours, merely rousing up while the nutrient injections were given. No vomiting occurred for twenty-five hours after the administration of the veronal, but after that time it gradually returned, though not to the same distressing extent as formerly, and during the following ten days small quantities of Brand's essence, kreochyle, drachm doses of pepsin wine, peptonised milk, lime-water and barley-water were occasionally retained for a few hours.

At the end of that time, as sleep was chiefly being obtained in snatches of one to one and a half hours, and as the patient was not getting on, another dose of veronal, gr. xxxii, was administered by the rectum. This was followed by ten and a half hour's sleep with no ill effect other than a purpuric rash on the arms, which passed off in twenty-four hours.

Vomiting recurred at intervals, but the patient gradually began to take more varied nourishment by the mouth, the nutrient injections being continued as well for a time. Sleep was obtained naturally in longer periods each day, and a week after the veronal she was getting from five to nine hours daily without the aid of drugs.

The intervals between the attacks of vomiting became longer, and by one month from the commencement of the illness she was convalescent, taking ordinary food, and getting out each day. Since that time, four months ago, she has remained quite well, and quickening took place normally.

The sleep obtained by the veronal was apparently sound and peaceful, and the patient awoke refreshed and feeling better in every way. Apart from some amount of dysmenorrhœa and an attack of ovaritis (?) two years previously the history was good, and there was no evidence of any co-existing renal or cardiac mischief, and the position of the uterus was normal.—*The British Medical Journal*.

DERMATOLOGY.

Ringworm and its Treatment.

BY

A. WINKELRIED WILLIAMS, M. B., C. M. (EDIN.), D. P. H. (LOND.).
Physician to the Skin Department, Royal Alexandra Hospital for Sick Children, Brighton, England.

No. I.

The subject of ringworm is always of interest and often, unhappily, of distress to practitioners of medicine, to parents, and to teachers. The uncertainty of results of treatment in scalp cases, the peculiar obstinacy of the fungus in some children, have led to such serious delay in their education that the subject is one of great national importance. The recent improvement in the methods of using X-rays, and the great success of this treatment *when available*, makes the present time a suitable one for a general review of the disease and its treatment.

The study of this subject is a curious chapter in the history of medicine, a chapter illustrating confusion and forgetfulness on the part of physicians, dermatologists and pathologists working on the subject between 1843 and 1893.

In 1843, Gruby described the fungus of small-spored ringworm, but his work was neglected and forgotten until Sabouraud published his work on the varieties of ringworm.

The work of Sabouraud was accompanied or followed by a host of other investigators, prominent amongst whom are Adamson, Blaxall, T. C. Fox, Malcolm Morris, Leslie Roberts, and others. A huge variety of fungi have been described, many of which are sub-varieties produced by differences in mode of culture.

The following table includes the maximum number of varieties that can be said to have clinical significance:

Ringworm.	Small spored fungus (<i>microsporon audouini</i> .)		
	Large spored fungus.	(a) <i>Trichophyton megalosporon endo-thrix.</i>	{ (1) Resistant. (2) Fragile. } Mycelium.
		(b) <i>Trichophyton megalosporon ecto-endothrix.</i>	

CHARACTERISTICS OF ABOVE VARIETIES.

I.—MICROSPORON AUDOUINI.

Common type of scalp ringworm of children, rare in adults, occasionally found in domestic animals. Rarely infects children after the age of fourteen years. Body patches usually insignificant. Most extremely contagious. Scalp lesions usually obstinate.

Scalp Lesions. (1) *Onset progress.*—Small, red papule about orifice of follicle, spreads peripherally and scales develop, the hairs lose gloss, look dusty, become thickened, lose elasticity and then break off.

(2) *Fully Developed Untreated Patch.*—Distinctly circumscribed, round or oval shape, reddish tint, peripheral red ring, scalp slightly raised at patch. Usually a dirty, scaly look, crusts. Patch studded with hair stumps, which are surrounded for a short distance above the skin with asbestos-like collarette.

Glabrous Skin Patches.—Generally confined to head and neck, but may be universal. *Type A.* Commoner, small, irregular, scaly patches; slight redness. *Type B.* Raised red rings, with double contours; sometimes a second ring inclosed in first. Spread centrifugally.

Microscopic Examination. (1) *Hair from Early Patch.*—Few large spores and perhaps a loose meshwork of large, peculiarly transparent mycelium scattered over shaft. Hair cuticle intact.

(2) *Further Advance.*—Mixture of large and small spores large and small mycelia; hair cuticle loosened and separating or separated in places.

(3) *Fully Developed Stump With Collarette.*—A sheath of small spores extends from just above junction with bulb to some distance up shaft; no definite arrangement in the closely-packed doublecontoured spores. A mycelial fringe extends below sheath. Septa in mycelia irregularly placed and generally far apart. Above the complete spore sheath are situated here and there irregular masses of spores. Below spores on surface of shaft a mycelial meshwork extends upwards to broken end of shaft.

Natural History.—After infection giant spores form on surface of hair, then giant mycelium penetrates and develops as a meshwork inside root sheath. From the giant mycelial threads fine shoots (*hausteria*), grow out and pierce cuticle and secrete a kerato-solvent matter which digests and strips cuticle from hair shaft. Then a fine meshwork of mycelia closely envelops shaft from which small spores rapidly develop, and form spore sheath, and the giant spores disappear.

II.—TRICHOPHYTON MEGALOSPORON ENDOTHRIX.

It is doubtful whether the *two types*—resistant and fragile mycelium—are really different species of fungus.

General Clinical Features Common to Both Types.—Infection may occur in much older children than in case of microsporon. It is, however, less virulently contagious, and generally less obstinate. The scalp patches are cleaner than micro-sporon. They are smoother, and not raised and

covered only with broken hairs and stumps. Body patches common, usually small, well defined, raised, red and scaly. Beard and nails not attacked.

Microscopic Appearance Common to Both Forms.—Larger size of spores. Spores inside hair. Arrangement of spores in lines, giving string of beads or ladder-like appearance.

III.—TRICHOPHYTON MEGALOSPORON ENDOTHRIX AND RESISTANT MYCELIUM.

Clinical Features.—*Scalp patches* generally smaller than microsporon; few or numerous patches. Some cases with no distinct patches; only groups of stumps; scattered stumps and black dots; usually a general seborrhea-like scurf.

Microscopic Appearance of Hairs—Early Stage.—Strings of jointed mycelium, and spores outside hair. *Fully Developed.* Inside hair are long mycelial rows, more or less broken up into spores. Many spores are square (ladder-like look of row of mycelial spores). Some spores separate and are rounded or oval. A mycelial fringe stretches down at bulb. Mycelial threads larger than microsporon.

IV.—TRICHOPHYTON MEGALOSPORON ENDOTHRIX WITH FRAGILE MYCELIUM.

Clinical Features.—Found at time in adult scalp. *Scalp Lesions.*—Patches, when present, are more or less rounded, size variable, surface generally smooth and bald (resemble alopecia areata). Patches sometimes so small and scattered that disease is unnoticed. Hairs are often found in scattered groups of stumps or stumps isolated and scattered over scalp. The stumps are very short and so fragile that epilation may be almost impossible.

Microscopic Appearance.—Fully Developed in Hair.—Entire hair filled with big spores, spores rounded, arrangement in strings distinct in places; in other parts difficult to recognize. Mycelial fringe at bulb. Cuticle usually present, not easily recognized in much smashed hair. This type of ringworm is often diagnosed as alopecia areata.

Trichophyton Megalosporon Ecto-Endothrix, Clinical Features.—No marked age limit. Often communicated from lower animals to man. Causes parasitic sycosis, ringworm of nails, majority of cases of pustular ringworm, and eczema marginatum.

Hairy parts.—Begins as ring of papules, vesicles form in papules and then become pustules, vesiculation and pustulation not necessarily marked; crusts often form, with a red, oozing surface below. Hairs often not

broken, except in old cases, and even then stumps are relatively long. The hairs are often matted down in the crusts, hairs are loose. On extracting hair, a well-marked sheath is seen on the epilated hair. The sheath does not project above the level of skin as in microsporon.

Body Surface.—Begins as small, red macule or papule, or often first seen as a scaly red patch. Peripheral spread, the center often becoming normal, but not always, it may remain less red, but still scaly; it may remain pustular, margin usually pustular. In animal communicated cases the whole patch may attain full size, and be uniformly composed of pustular points.

Microscopic Appearance.—*Hair*—Spores often not much larger than in microsporon, and look like them in the external sheath. They form round hair. Cuticle of hair is usually not stripped off, but it cannot always be clearly recognized. Hence, clinical features or culture test must decide the question of type, more than microscopic appearance.

The cultural appearance of the different varieties depend much upon the medium, etc., and so are not of great clinical value. The main point of practical interest is that on a medium, such as beer, wort, agar at 30° C., microsporon ringworm appears as a visible growth in nine to ten days. The large-spored fungi grow much quicker, a visible growth appears in three or four days.

A study of the therapeutics of ringworm may be approached from, firstly, *the pharmacological side, i. e.*, a consideration of the various drugs used in its treatment, their action upon the tissues, upon the fungus causing the disease, and upon the morbid matter produced by the fungus. From secondly, *the clinical side*, by a consideration of the special regions of the body attacked by the ringworm fungus, and the treatment applicable to each region. From, thirdly, *the public health side*, the modes of limiting the spread of the disease in schools and other communities.

It is unnecessary to give details of the *pharmacology* of the remedies used in ringworm. They may be classified as follows:

FIRST.—*Agencies of Value in Cleansing the Skin from Debris, e. g.*, soap, water, spirit ether, ether and alcohol, fixed oils, kerosene, turpentine, chloroform, potash, soda, etc. Also various mechanical methods, as hair, clipping, shaving, epilating (mechanical and X-rays), curetting, etc.

SECOND.—*Applications used to attack the Ringworm Fungus.*—Various antiseptics, starving out the fungus, disinfectants, destroying the more superficial fungus.

THIRDLY.—*Applications Used to Modify and Alter condition of Soil on which the Fungus grows.*—(a) *Reducing agents, i. e.*, drugs removing

oxygen from surface of epidermis and increasing keratin formation, which in the scalp tend to hasten the development of the adult condition. Most of these reducing drugs also act as antiseptics and disinfectants, *e. g.*, resorcin, chrysarobin, ammonium-sulpho-ichthyolate, sulphur, etc. Also mechanical methods of *endeavoring* to exclude oxygen, *i. e.*, plasters, solutions of gutta percha, collodion, etc.

(b) Attempts to desiccate the skin, *e. g.*, alcoholic sprays, abstinence from water washing, etc.

(c) Drugs of value in removing co-existing diseases, *e. g.*, seborrhœa, the presence of the seborrhœa products increase the virulence or vitality of the ringworm fungus.

(d) Drugs causing inflammatory or other reactions of the skin, with the products of which the ringworm fungus may be cast off, *e. g.*, croton oil, common salt, X-rays, etc. Most of the disinfectant drugs act this way, notably iodine, tar, carbolic acid, turpentine. Also mechanical methods, by friction, pressure, rough, epilation, especially epilation by plasters, epilating sticks, etc.

FOURTH.—*General conditions raising physical state of patient.*

FIFTH.—*The Vehicle by Which Active Drugs Are Conveyed to the Skin of the Patient.* (1) Watery solutions or suspensions (to be used after a preliminary removal of grease from the surface by soap, ether, etc.).

(2) Spirit.

(3) Collodions, traumaticin, plasters, etc.

(4) Fatty substances. These are the most generally used and usually the most valuable on account of their penetrative action, *e. g.*, lard, mineral oils, liquid animal (whale) or vegetable oils. Probably lanolin, with a softening addition of a liquid oil, is the best; its penetration power is considerable. Oxidized mineral oils, *e. g.*, valsol and vasogen, are highly praised on account of their penetrating power, but the author's experience of those vehicles has been disappointing. The most useful form is six per cent iodine vasogen; this, in a few cases, caused a pustular perifolliculitis followed by an easy extraction of the entire hair and a rapid cure, but in many cases no result followed, while in a few instances, where the child had an idiosyncrasy to iodine, its application was followed by great pain, lasting for several hours, with production of bullæ, without marked loosening of the hairs.

Aniline oil has also been praised by some; it certainly takes active drugs through the epidermis, but can only be used on a small area and applied only for a minute or two, or alarming and dangerous symptoms of

aniline poisoning result, with cardiac failure and cyanosis. The author's experience of this medium leads him to warn practitioners to try any other method in preference.

THE STUDY OF RINGWORM FROM THE CLINICAL SIDE.

Regions to be Considered.—

The scalp.

The nails.

The beard.

The axillary and crural regions.

The body general.

The Scalp Region.—Great difficulties are met with in this region and authorities are not in unity on many details, notably:

1. Washing.
2. Cutting hair or shaving.
3. Value of mechanical epilation.
4. Relative value of drugs.
5. Vehicle for application of drugs.
6. Safety or danger of X-ray treatment.

The following notes may help to solve some of these questions:

Great care is necessary in soap and water washing or infection will be spread, especially when large areas of previously untreated ringworm exist on the scalp. The patches must first be cleansed from surface debris, etherial antiseptic soaps, etc., are useful; curetting and rough epilation, after oiling surface, may be necessary. The scalp is then washed, some authorities recommend soft soap; the author uses a one per cent to three per cent biniodide soap. After washing careful drying is necessary, and a dabbing and not a rubbing movement of the towel used. Drying must always be *immediately* followed by application of an antiseptic to the entire scalp. The above method of washing is impossible with long hair; shaving scalp or clipping hair is, therefore, necessary, leaving, at the utmost, a narrow peripheral band of longer hair. The author recommends shaving in the early stage and clipping in the later stages, when it is important to examine hairs to decide whether they are sound or diseased.

The following are suitable antiseptics for use after washing:

1. A spray of strong solution of sulphurous acid.
2. A spray of one-half ounce eucalyptus oil in ten ounces spirit.
3. Oiling with salicylic acid in oil.
4. One drachm precipitated sulphur in one ounce of olive oil. This is the author's favorite. Its only objections are (1) it somewhat hides the

scalp, (2) it produces, especially when mercurial applications are used on the patches, a dirty look at border of scalp. The former difficulty is avoided by a visit to the patient at end of scalp washing, and the latter is a temporary inconvenience.

5. Carbolic acid in glycerine (one in eight). This is a favorite with patients and it is useful, as it does not hide the scalp, but during its extensive and regular use it is advisable to examine the urine and stop its use at the first indication of albuminuria.

Epilation, excepting in cases where hairs are loosened by inflammatory and pustular processes round the follicles, is only a partial process on account of the easy fracture of the hair shaft, leaving in the deeper part of the follicle an injected stump. It, however, removes a large amount of infective matter and leaves for a few minutes a gaping follicle into which antiseptic ointments can be more easily rubbed.

In kerion and such pustular affections, loosening the hair in follicle epilation is of intense value. In kerion, the author's experience shows the value of epilation, giving, if necessary, an anesthetic and, after epilation, boroglyceride is a valuable application. It is quite a mistake to wait until the hairs fall out.

The author's routine in ordinary ring-worm is as follows:

1. Short clipping or shaving scalp.
2. Cleansing the patch. (a) Rub on a little antiseptic ointment and with forceps epilate roughly the patch: (b) Cleanse it from debris by etherial antiseptic soap and rub it with turpentine.
3. Wash head with biniodide soap and apply sulphur and oil over entire scalp.

The above treatment to be applied once a week. In interval, use antiseptic ointments rubbed well in, twice daily, and once a day apply the sulphur oil to entire scalp, and about twice a week apply to patch, after cleansing with ether, one drachm carbolic acid, and one ounce of acetic acid. This application must not be used indiscriminately or sloughing of the skin may be produced.

In later stages, Aldersmith's croton oil treatment is largely used.

The internal administration of small doses of arsenic and iron often helps in obstinate cases. The doses are not large enough to produce edema of the deep layer of epidermis, or to be eliminated with the hair cells, and its exact action is difficult to explain, but the author has frequently seen cases which were at a standstill in non-anemic children commence to improve directly this internal treatment was added to the local treatment.—*The Medical Brief.*

THE ANTISEPTIC.

APRIL, 1907.

Argyll Robertson Symptom.



AMONG the eye symptoms of Spinal disease there is none which is of greater interest or more generally understood than the phenomenon which is associated with the name of Argyll Robertson. At least, that was our impression till we read the account of a sensational murder trial in America very recently. Among the witnesses examined in the course of that trial there was a medical man who described himself, if we are not mistaken as a "nervous practitioner." This Medical witness gave out that he knew what Argyll Robertson symptom was, but on close cross-examination admitted that he was not quite certain as to the exact nature of that symptom. He also gave out that Argyll Robertson were two men. According to this American "nervous practitioner" what is ordinarily described as Argyll Robertson symptom is something described by Dr. Argyll and Dr. Robertson. The "nervous practitioner" evidently is suffering from diplopia, a symptom which is sometimes, though rarely, found in cases of Locomotor ataxia along with Argyll Robertson pupil. But to those who are not suffering from diplopia Argyll Robertson is only one man—and a very good man too. He was till a few years ago the Lecturer on Ophthalmology at the University of Edinburgh and Ophthalmic Surgeon to the Edinburgh Royal Infirmary.

It was in the Edinburgh Royal Infirmary that he made the series of observations which enabled him to describe the peculiar eye symptom usually found in Locomotor ataxia and which is associated with his name. At the time when he was making those observations it used to be a usual phenomenon in the wards of the Infirmary to see a venerable old man going about with a light, an umbrella and a large piece of black cloth. The old man used to bend over a patient with the light close by and with an umbrella held over him and the whole covered over with the black cloth. On one occasion a casual visitor who was not familiar with this phenomenon asked what it was. And Dr. Wyllie (now Professor Wyllie) is reported to have replied that it was Argyll Robertson phenomenon. The Edinburgh Royal Infirmary will now miss the venerable

1907.]

THE ANTISEPTIC.

239

figure of Dr. Argyll Robertson, for he has now retired from active professional work and is enjoying his well earned rest in Jersey. But the phenomenon remains—not the lamp and the umbrella, for they disappeared long ago, but the reflex irido-plegia which is so well known as a symptom of Locomotor ataxia. The phenomenon described by Argyll Robertson consists in a pupil which contracts during accommodation but fails to respond to a light stimulus. The phenomenon is well known but the explanation of its pathology is not very easy. Neither the site nor the nature of the lesion which gives rise to Argyll Robertson pupil is definitely established. But it is now fairly generally accepted that the site of the lesion must be somewhere between the optic tract and the third nuclei. The greatest controversy, however, raged round the nature of the lesion. It has been held by some that the lesion in Argyll Robertson pupil is a nuclear degeneration, while others maintain equally emphatically that the lesion is of the nature of a sclerosis of afferent fibres connecting the anterior corpora quadrigemina with the third nuclei. It is a well known fact that Argyll Robertson pupil is sometimes accompanied by other symptoms of nuclear palsy such as paralysis of accommodation and paralysis of external ocular muscles. This has been pointed out by the supporters of the nuclear degeneration theory as proving the correctness of their explanation. But, on the other hand, it has to be noted that the normal action of the pupil to accommodation is distinctly against the presence of nuclear palsy. And so also is the extreme contraction of the pupil, the so called spinal myosis, which is very often seen associated with Argyll Robertson symptom. These opposing theories still remain mere theories. They rest on no pathological data and are unsupported by experimental evidence.

But from what we know of the nature of locomotor ataxia we would be safer in adopting the sclerosis theory. Tabes is essentially a process of degeneration of the afferent system of neurones, and it is therefore far more likely that the lesion in Argyll Robertson pupil is also a degeneration of afferent neurones rather than a nuclear palsy, which is rather unusual in this disease. It is no doubt true that in some cases there are distinct evidences of nuclear palsy. On what other hypothesis could we explain those peculiar varieties of dilated Argyll Robertson pupils which do not respond either to light or accommodation? Those must be taken as the exceptions which prove the rule. And in spite of those exceptions we cannot help thinking that ordinarily the lesion in Argyll Robertson pupil is a sclerosis. And we may also fairly presume that the sclerosis is of the fibres connecting the corpora quadrigemina with the third nerve nuclei. The subject is one which will amply repay further research and study. We

were induced to discuss the bare outlines of that most interesting phenomenon because we thought it not unlikely that there were practitioners in this country also who were in the same boat with the American "nervous practitioner."

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* PYLORIC STENOSIS IN INFANTS.

BY

JAMES BURNET, M.A., M.D., M.R.C.P. (EDIN.)

Registrar, Royal Hospital for Sick Children; Lecturer on Practical Materia Medica and Pharmacy, Edinburgh.



SO much has been written recently regarding this subject that it would seem as if little remained to be said. It would appear, however, that considerable misapprehension exists as to the symptom complex of this condition, and I find that cases are very often diagnosed as being examples of pyloric stenosis which in reality are not. The most characteristic symptom is vomiting, specially of a forcible nature, coming on within a short interval after the infant has been fed. This vomiting may occur within a few days after birth, but in a great many cases it does appear until the child is five or six weeks old. In my experience males are more frequently affected than females. The baby is practically always reported to have been quite healthy at birth. The second symptom of importance is pseudo-constipation which proves most intractable. When with these two symptoms there is associated steady loss of weight the diagnosis of pyloric stenosis is usually arrived at, especially if with these is associated visible peristalsis. Such a diagnosis, however, is not always correct, and it cannot be too strongly insisted on that not every case presenting such features is to be classed as an example of pyloric stenosis.

The only certain sign of stenosis of the pylorus is the finding of a definite thickening of the pyloric region on palpation of the abdomen.

* Specially contributed to "The Antiseptic."

In the majority of cases, however, this cannot be made out; and consequently it is well in all such cases to make only a provisional diagnosis until such time as we can determine by the results of treatment what the real nature of the condition is.

Various theories have been advanced as to the actual cause of pyloric stenosis occurring in infants. I am inclined to believe that it results from the effects of spasm of the pylorus which we may assume is present in every case. In fact I believe that many cases said to be examples of pyloric stenosis are simply cases of pylorospasm. I think we may conceive that this spasm is set up and maintained by some irritable condition of the gastric secretions or of the gastric contents themselves. In any case I am inclined to agree with those who maintain that pyloric stenosis is not a congenital condition at all, but comes on after the birth of the child. Were it otherwise, we would certainly find in some cases at least stenosis of other parts of the gastro-intestinal canal, for why should the pylorus be specially singled out? And yet in these cases, I think, it is rarely found that stenosis is present elsewhere. Nor can we look upon it as a congenital defect, otherwise we would naturally have others present such as heart lesions, and other conditions belonging to the group of congenital malformations.

As regards the diagnosis of pyloric stenosis by the general practitioner I would specially emphasise the importance of finding out at the very start how the child has been fed. I have known infants who were vomiting and constipated brought for examination after having been given up as hopeless because they were thought to be suffering from pyloric stenosis and whose symptoms were entirely due to improper and irregular feeding. Needless to say such errors in diagnosis would never arise if the proper investigations were made. Such symptoms in a breast-fed baby who is nursed regularly and is not having other food as well are at least suggestive. In a baby artificially fed, however, they carry much less weight, and in a larger percentage of cases are of no particular importance. Until such time as we have tried the effects of feeding the infant properly, that is to say, on a suitable mixture (or on the breast if that is possible) and at regular intervals, then we must hold the ultimate diagnosis in abeyance. A case which I recently was called upon to treat will illustrate the importance of these remarks. The baby when first seen was five weeks old. It was breast-fed. The diagnosis made was "congenital pyloric stenosis." When I saw the child I obtained the history that he had been vomiting for three weeks. The bowels had only moved twice during that time and only with the help of a regular daily dose of castor oil. The abdomen was very tense, the child screamed when handled, and

definite, peristaltic waves were visible. There was considerable emaciation. When first questioned the mother said she nursed the baby regularly, but on pressing the matter she confessed that it often slept for four or five hours at a time. As a consequence it took the breast very greedily when it awoke. I advised regularity in nursing and prescribed no medicine. In a week, the vomiting had entirely ceased. The constipation, however, continued; and so I ordered the infant to have a small teaspoonful of cream after each nursing. The result was quite satisfactory. I ought to have mentioned that the peristaltic movements were quite invisible when the patient was seen for the second time. No doubt they were occasioned simply by a spasm of the pylorus. This, of course, is a very simple case, but the fact that it had been wrongly diagnosed impressed me with the importance of always investigating the mode of feeding before arriving at a definite conclusion.

As regards treatment, I think that as time goes on the surgical treatment of pyloric stenosis will be very rarely resorted to. So far pyloroplasty and pylorotomy have given the best results, while gastric enterostomy is an operation which ought never to be employed. The results of surgical interference, however, are by no means brilliant; and when we bear in mind the possibility of many of these cases being simply examples of pylorospasm we wonder that medical treatment has not been more persistently carried out. One of the best measures is undoubtedly lavage of the stomach. By this means all irritating material is got rid of, and in carrying out this procedure I think it well to use a solution of bicarbonate of soda which acts as a solvent to the excessive amount of mucus which is probably present in every case of pylorospasm if not of pyloric stenosis as well. Then I think I have seen some material benefit derived from the administration of powders containing Hydrarg Sub-Chlor Gr. $\frac{1}{8}$ and Sod. bicarb Grs iii. The sub-chloride acts as a sedative and the soda salt aids in dissolving the excess of mucus present. I am also of opinion that massage of the abdomen is in some cases a useful adjunct to treatment, especially when combined with warm baths as these two measures help to relax the spasm which is present in every case of this condition.

* THREE CASES OF STRANGULATED HERNIA, WITH RE-SECTION OF THE INTESTINE.

BY

EDMUND C. BEVERS, M.A., M.B., B. CH. (OXON.), M.R.C.S. (ENG.)
Assistant Surgeon, Radcliffe Infirmary, Oxford.

At the present day the signs and symptoms of strangulated hernia are so well recognised that the majority of cases reach the Surgeon before

* Specially contributed to "The Antiseptic."

the intestine has suffered any serious damage. Under these circumstances the operation is a simple one, and is usually followed by a most successful result.

But from time to time, one has to deal with cases that are a source of considerable anxiety and which tax the judgment and experience of the operator to the utmost. I refer to that class of case where the state of the intestine is such as to prohibit its being returned into the abdominal cavity; and where the question will arise as to whether an artificial anus shall be formed, or the gut be immediately resected.

From the examination and history of these cases, it is often quite impossible to foretell the condition of the intestine; it may be more or less healthy; on the other hand it may be quite gangrenous; therefore a surgeon must approach each case of strangulated hernia prepared for any contingency.

I have lately had under my care three cases of strangulated hernia, where it became necessary to remove portions of the small intestine; and these cases seem to me to exemplify some of the more important points in the treatment.

Case I. This was a woman 45 years of age and very fat: she had suffered from an umbilical hernia for several years, and she began to experience the usual symptoms of strangulation, pain and vomiting, two days before I saw her.

The hernia was a large one shaped like a mushroom, tender, irreducible, and obviously containing a large quantity of omentum. A vertical incision was made over the top of the hernia, and the sac opened; this was found to contain large quantities of adherent omentum, in the centre of which was a loop of quite black small intestine. The stricture at the neck of the sac, which was a very tight one, was incised in several places, and the adherent omentum separated and removed after ligature. It was then possible to withdraw the knuckle of small intestine. In addition to the critical condition of the intestine, the mesentery was found to be much inflamed and completely ulcerated through in one place, so that for a distance of three inches the intestine was quite cut off from its blood supply. Seeing that the condition of the patient was very good, I considered that I should be justified in at once removing the damaged intestine, and this I did, using a Murphy's button, in addition running a layer of Lembert sutures rapidly round outside the button: two pints of normal saline were poured into the peritoneal cavity and the edges of the abdominal wound united.

For eight days the progress of the case was uneventful; then a small abscess formed in the line of the incision, and there was an escape of faecal matter, a small sinus was formed which closed in a few days; the button was passed on the twelfth day, and patient left the Hospital cured.

The interesting point in this case was the ulcerated rent in the mesentery caused by the tightness of the stricture.

It is unknown to what extent the mesentery may be detached without gangrene of the bowel; but it is generally supposed that when more than two inches is separated, death of the gut is certain. In this case the gangrene was due to the combined effect of the separation of the mesentery, and the constriction at the neck of the sac. It should be pointed out that immediate re-section was quite justifiable here, seeing the excellent condition of the patient.

The slight leakage that took place was probably due to an insufficiently tight joint at the mesenteric border: this is the weak spot in all forms of intestinal re-section.

Case II. This was a woman of 60, who had suffered from a femoral hernia for years, the hernia becoming strangulated four days before she was seen by a medical man.

At the operation the intestine was found gangrenous and perforated; a few inches of it were excised, and an end to end anastomosis done with two layers of Lembert sutures: the intestine was then returned into the abdominal cavity, and the edges of the incision united.

Up to this point the patient was under the care of another Surgeon, and I was asked to see her, during his absence, forty-eight hours later, because she had been vomiting since the operation, had passed nothing by the bowel, and was becoming distended. I decided that she was suffering from peritonitis and suggested a further operation. This I at once did. The abdomen was opened in the left semilunar line, distended intestines presenting, and some sero-purulent material escaping from the peritoneal cavity, and on passing my hand into the left iliac fossa, I found the site of the original resection adherent there; this was detached and pulled out of the wound. The intestine above this point was much distended, that below collapsed and empty; in addition the suture line showed signs of sloughing.

As the condition of the patient was a precarious one, I stitched the piece of intestine in the abdominal wound and tied in a Paul's tube to which a long piece of drainage tubing was attached: several incisions were then made in the abdominal wall and drainage tubes inserted into

the peritoneal cavity. Patient gradually rallied, large quantities of foul faecal material draining away through the Paul's tube, the latter sloughing out on the fourth day. Patient then had a faecal fistula, which, from the character of the material passed, and from the rapidity with which the abdominal wall became excoriated, was very high up in the intestine.

At the end of a week, when her condition had much improved, it was decided to close the fistula; this was done by rapidly separating the gut from the margins of the abdominal wound, pulling it out and resecting the portion including the fistula, uniting by means of a Murphy's button, the whole operation taking fifteen minutes. As the patient had already undergone two severe operations and was old beyond her years, I considered it unwise to subject her to a third prolonged one.

Patient made a good recovery, but button was not passed for eight weeks.

This case exemplifies exceedingly well the dangers of immediate resection of the bowel when it is distended with faecal material, and the patient's general condition is not good. It would, I think, have been better for this patient, had a temporary artificial anus been made in the first place, so draining the intestine, and subsequently resecting it.

This case also illustrates the possibility of obstruction following an intestinal anastomosis. This patient was practically suffering from obstruction at the site of the anastomosis, a result caused by excessive invagination of the gut wall when inserting the sutures, followed by a certain amount of kinking: this may be avoided by using a Murphy's button or a Mayo-Robson's bobbin, which at least maintain an open channel through which the contents of the bowel may flow.

Case III. This was a woman of 50, who had pain and vomiting for twenty-four hours, but no previous history of hernia. On examination there was a small femoral hernia on the right side, the sac of which obviously contained fluid. At the operation blood-stained, foul-smelling fluid escaped on opening the sac, and a small lump of adherent omentum with a knuckle of dark-coloured small intestine were displayed. The stricture was divided, and the omentum removed: the intestine was then drawn down as far as it would come, which just admitted of the part in contact with the stricture itself being examined: this was not ulcerated. The intestine, though dark, had not lost its gloss, and appeared to be recovering. As there was no abdominal distension, and the patient's condition was good, I thought that I was justified in fixing the coil in the wound and waiting events, hoping that recovery might take place.

At the end of twenty-four hours the local condition was worse; the intestine was going on to complete gangrene, but as the patient's condition was very good, indeed, I decided to re-sect the intestine in preference to making an artificial anus. An incision was made just above Poupart's ligament and the abdominal cavity opened. The intestine was then pulled up the crural canal and out at the first incision. I then found that the mesenteric vessels in the neighbourhood of the damaged coil had undergone thrombosis, and I had eventually to remove a foot of the gut, the ends being united by a Murphy's button, a layer of Lembert sutures being run round outside the button. The abdominal incision was united. Patient progressed favourably as far as the intestinal condition was concerned, passing the button at the end of four weeks: unfortunately she developed a very severe cystitis from which she died at a later date.

The case belonged to a class where the condition of the intestine is not sufficiently definite to determine the exact procedure that is to be followed: and I think that in all such cases one is justified in fixing the intestine in the abdominal wall and waiting events; for if the gut recovers it can be returned into the abdominal cavity; if not, it can be removed or opened, and so an artificial anus formed. In this case a mistake was made: it would have been wiser to have opened the abdomen above Poupart's ligament at the first operation, and, having pulled up the gut, fixed it there if necessary, and I should advise this course in femoral hernia at any rate; for in this form of hernia, it is often impossible, owing to shortness of the mesentery, to pull the gut sufficiently far down to properly examine it. At the same time the femoral canal, even after division of the stricture is not big enough to ensure the free passage of faecal matter along the lumen of the gut.

Again, the only certain method of judging between sound and unsound intestine is to actually feel pulsation in the vessels supplying it, as Kocher has pointed out; this is difficult to do while the intestine lies in the femoral canal.

The important point for consideration, and a very debatable one, is when should the surgeon at once re-sect the intestine, and when should he content himself with an artificial anus? The mortality of strangulated hernia as a whole is not very high, but directly we come to consider those cases where primary re-section of the gut has been undertaken we find that it is very heavy indeed. In some statistics recently published in the *Guy's Hospital Gazette*, out of twelve such cases eight died. There are, I think, many reasons why this proceeding is accompanied by such a heavy death rate. In the first place these patients are not often in a condition to stand a severe operation: the intestines are

paralysed and filled with decomposing faecal matter, which is poisoning the patient ; the operation itself further paralyses the intestine. The emptying of the intestine during the operation not only prolongs it to an undesirable extent, but practically is a very difficult thing to do thoroughly ; at the most one only succeeds in relieving one or two of the nearer coils. An artificial anus can be rapidly formed, and by draining the intestine soon relieves the patient, while there is no great difficulty in closing it at a later date.

I undertook primary re-section in two of my cases, but I must point out that the general condition of both patients was very good, and the intestines were practically non-distended, and it is in this class of cases that the operation is likely to be followed by success.

But if these conditions are not present the surgeon will save a larger number of his cases by being content with a provisional artificial anus.

I have found Murphy's button to give very good results in these cases, as it is easy to apply and can be inserted with great rapidity. Many surgeons have almost abandoned the use of this button, but I think that it still holds a front place in these emergency abdominal operations. It has disadvantages: one being that one may have to wait a very considerable period for its appearance. In one of my cases it was passed at the end of 12 days ; in one in the fourth week, and in the third at the end of 8 weeks ; but all its disadvantages are out-balanced by its obvious advantages. Mayo-Robson's Bobbin is of use in that it keeps open the lumen of the intestine and so aids the passage of its contents. Circular enterorrhaphy takes too long in its performance for the majority of these cases, and though Mayo-Robson's Bobbin makes the latter operation a more simple one, it does not in any way shorten it, so that where time is of the almost importance I believe that Murphy's Button will give the best result.

*** ADENITIS (*Synonym*) INFLAMMATION OF THE LYMPHATICS AND THEIR GLANDS.**

BY

SURGEON-MAJOR R. E. WRAFTER, B.M.S. (*Retired*).

DHERA DUN.

There is a system of minute vessels throughout the body termed absorbents, and on their course are little bodies called glands. In health these glands are scarcely perceptible, but when enlarged they attract

• Specially contributed to "The Antiseptic."

notice. The glands of the absorbent system, with their ducts, are liable to inflammation, which may be either acute or chronic, and this action is probably due to the absorption of some septic material, or to over-exertion, or to some other source of irritation. Lymphadenitis is not unfrequently associated with a wound, punctured or open, inflamed, or cicatrizing; with some point of irritation or suppuration, even an eruption on the scalp; with some centre from which morbid elements may be taken up. In what is called a simple wound the inflammation of the absorbents may be acute, but in poisoned wounds it is more severe and diffused. The inflammation always follows the course of the absorbents (lacteals and lymphatics) leading from the centre of absorption towards the glands, that is, towards the body; it never spreads backwards; when it has reached the glands the diseased action ceases to spread: here, it expends its force upon the group of glands in which the absorbents naturally end, and does not extend through another series of absorbents to a second group. The morbid material is arrested in the glands, at least such is the usual course of the affection, when, however, Pycemia or purulent absorption follows or complicates the case. It may be open to question whether the morbid fluid circulating in the lymphatics has not passed into the blood through its usual channels, namely, through the inflamed glands onwards, but it is at least as probable that the same septic material that infected the lymphatics and set up inflammation in the tubes and glands were taken directly into the blood through the venous circulation, would thus give rise to blood-poisoning. Chronic enlargement of the lymphatic glands in the region of the neck is common in children of a strumous diathesis, probably dependent upon hereditary influence; this appears to arise from the cervical glands becoming the seat of a tuberculous deposit, which readily takes on a low form of inflammatory action. But it is the absorption of the virus of syphilis or gonorrhœa, acting upon the glands occupying the upper part of the groin in adults, which supplies the most frequent examples of adenitis, or sympathetic bubo. The symptoms of absorbent inflammation usually manifests its presence in a definite way: pain in some of the glands and tenderness are generally early symptoms, and with these, or soon following, will be observed a band of redness, varying in diameter, leading from the lesion or infecting centre towards the gland; this red line may be a continuous or an interrupted one; it may be a thin streak of redness or a broad stripe, and in some instances it so radiates into the surrounding tissues as to simulate erythema or erysipelas. The whole line of redness will be very painful, and with these local symptoms there will be some febrile disturbance, and probably the attack will have

been ushered in with a vigor. It is to be noted that the red lines follow the course of the absorbents, and not of the veins. Under favourable circumstances and treatment these symptoms may subside, and the red line, with the swelling of the glands and cellular tissue around the inflamed parts, and the constitutional symptoms, will then disappear. In less favourable examples, suppuration will take place; it may be as a local or diffused suppuration of the affected glands and surrounding cellular tissue; it may be as a local abscess in the course of the lymphatics, or as a series of local abscesses. In extreme cases the suppuration may partake more of a diffused character, such as that usually described as taking place in phlegmonous erysipelas. With these local changes the constitutional symptoms will assume different features; the febrile disturbance will probably be great, but it may be marked by depression; rigors may repeat themselves at regular intervals, these rigors generally indicating some suppurative process. When typhoid or adynamic symptoms appear with rigors and sweating, the case has clearly become one of blood poisoning or septicæmia. There are thus three different classes of cases notable. The simple or subacute, terminating in resolution, or the enlarged gland or glands will remain in an indolent state without perceptible change, or sometimes they will gradually disappear, consistent with the state of the constitution; the more severe, ending in local glandular or lymphatic suppuration; and the complicated, marked by diffuse inflammation and suppuration, with general blood-poisoning. In the simple form the poisonous element is probably of a diluted or but slightly irritating nature; it is generally some altered secretion of a simple wound or abrasion, due to external irritation. In the more complicated or severe forms the poisonous element is of a more active kind, and has been either introduced from without as by a distinct corporeal poison, a dissection wound or bite of an animal, or generated from within, as seen in puerperal cases. Inflammation of the absorbents, erysipelas phlegmonous or otherwise, and septicæmia, are all closely connected. The effects of inflammation of the absorbents are not, however, constant or alike in all cases. In some instances the glandular enlargement alone is to be recognised, with more or less extensive suppuration of the glands and their surrounding connective tissue, without any external evidence of inflammation of the lymphatics leading to the glands. In other cases the red line of inflamed absorbents will be visible without glandular complication, or more than a slight induration of the gland. At times there will be suppuration only along the track of the lymphatics, but none in the glands, this suppuration taking the form of local abscesses. Occasionally the lymphatics appear as a hard cord beneath the skin. The absorbent

inflammation is most common in the extremities; it may, however, occur anywhere. There seems little room to doubt that a large number of the cases of glandular abscesses are of this nature; pelvic abscesses in women are known to be of this kind, for pus has been found in the absorbents of the part. Glandular suppuration in the neck is, from its position, a hazardous affection, the connective tissue of the parts being so loose, and the fascia covering them so firm, that burrowing suppuration often takes place. These deep-seated suppurations should be opened early, as soon as any local evidence of pus exists; and in this way, namely, by cutting through the fascia with a sharp pointed curved lancet or bistoury and thrusting a director or forceps into the deep connective tissue. Dr. Thomas Bryant has opened an abscess at the base of the tongue in this way from beneath the jaw probably under antiseptic precautions, with an excellent result. The swelling affected deglutition and respiration, threatening life.

Treatment:—Whenever any indications of the absorbent inflammation show themselves, the wound or ulcer should be thoroughly cleansed, the incrustation removed, and any collection of pus let out. The affected limb should be raised, the foot higher than the hip, the hand or elbow higher than the shoulder; and warm fomentations applied along the whole course of the lymphatics up to the group of glands in which they terminate. A poultice may be applied to the wound or ulcer if necessary; some surgeons, particularly the French, advise that the inflamed line should be painted over with a solution of nitrate of silver, twenty grains to the drachm of water, and dry warmth applied, such as antiseptic cotton wool; but we prefer the practice above indicated; it seems to give more comfort. Local depletion is rarely, if ever, required. As soon as suppuration appears the abscess must be opened, whether this follows directly upon the inflammation or subsequently; for, at times, suppuration is very insidious or obscure. At the very earliest period of the inflammation, when the tongue is foul, administer three or four grains of calomel followed by a good saline purge: it certainly seems to have some influence in checking its progress. Chloride of mercury is a simple remedy, and a valuable one. Sedatives must be given to allay pain, such as small doses of morphine, three times a day, with a double dose at night, to induce sleep; and tonics when suppuration has taken place, iron being considered the best. In chronic cases, where induration in the track of the ducts remains, mercurial or iodine ointments and friction are sometimes of value. Extirpation is a remedy which should be undertaken with very great caution. It is apt to lead to a manifestation of the disease elsewhere, perhaps in some more vital part, such as the lungs

or the mesenteric glands. The salivary glands are very prone to inflame after fevers or the exanthemata, the parotid particularly so; and these affections often give rise to much local distress. In patients who are not extremely feeble these enlargements, as a rule, subside by themselves under careful management. In exceptional cases they suppurate. Local warmth, applied by means of cotton wool, tonics and nutritious diet, are the best means of practice; but when suppuration threatens, warm fomentations are more grateful to the patient. Abscesses should be opened early. Before opening the abscesses, it is well to try what drawing off the pus by means of the "aspirator" may do, repeating the operation as the pus re-collects; in some instances a healing may be effected by these means, and thus the scar or cicatrix is prevented. Should it fail, an incision must be made. The local application of Iodine liniment or of Tincture Iodi under these circumstances, although a common resolvent remedy, does not appear to be of any value. Chronic glandular hypertrophy is a very common affection; when found in the so-called strumous subject, the disease is regarded as a strumous one of the glands, but it is very difficult to lay down any definite cause for its appearance. It is found, it is true, in the strumous and feeble child as a chronic and slightly painful enlargement of a gland or glands, more particularly those below the lower jaw and about the neck; it comes on sometimes after exposure to cold, some slight illness, local irritation, or without any precise cause, and often subsides spontaneously on the removal of the cause or on the improvement of the general health. There exists, probably, always some local cause of irritation. At times, these glands suppurate and leave ugly ulcers, the cellular tissue around the gland becoming destroyed, and the skin consequently undermined. The pus from these glandular enlargements is, at times, ill-formed and curdy; when it attends the breaking down of some old disease it may contain chalky deposit, this being some degenerated or dried-up tuberculous or other matter. With regard to internal medicines, Sulphide of Calcium, given in appropriate doses, is extolled as a useful remedy for strumous affections of the glands in the neck. Armpits, and groin, are parts in which they most frequently become perceptible.

Hodgkin's disease of the glands.—There is, however, another chronic enlargement of the glands that appears to differ in all ways from the local enlargements to which attention has already been drawn. It was first described by Dr. Hodgkin, and may therefore be called Hodgkin's disease of the glands, or glandular tumours, for the sake of distinction. He observed it first in the mesenteric glands, but any or all may be affected. In it the glands become very much enlarged, even to the size of an egg, and apparently more numerous; they present a smooth external appearance,

and have a soft semi-fluctuating elastic feel. On section the surface of the gland presents a smooth, bloodless, semi-transparent, loose, succulent structure; microscopically it is made up of glandular tissue and abundance of fibro-nucleated tissue; it is of a tough leather-like consistence, and exudes a clear serous fluid; the tumours are always free, each being separable from the others. To the Physician the disease, at times, appears as a local moveable glandular tumour of a slow painless growth, which medicine has no apparent power of influencing: it has the local clinical appearances of a benign fibro-cellular tumour, and has thus often been exercised as such. In other instances the tumours are multiple, that is, three, four, or more, existing in one locality, chiefly in the region of the neck. In exceptional instances the tumours are more numerous. In still rarer examples the whole glandular system seems to be affected, every group of glands not only being enlarged in size, but also increased in number. This disease is often associated with an enlarged spleen, and appears pathologically to be allied to that blood disease known as Leucocythæmia, or Lymphadenoma, notwithstanding that in many cases the white corpuscles are not in excess.

Treatment.—For the ordinary or strumous enlargement of the glands in children there is no drug equal to Cod-liver oil (*Oleum Morrhueæ*), the syrup of the Phosphate or the Iodide of Iron or the Tincture of Quinine being useful additional remedies. We have not much faith in the local application of Iodine in the form of the Tincture; after the second application the skin ceases to be an absorbing surface, and the Iodine becomes, therefore, an irritant, when applied externally, as an ointment or as a paint, to enlarged glands, etc. Iodine is very useful as an alterative and resolvent. The Iodide of Ammonium as an ointment is a useful topical application when rubbed in, the Iodide in this way becoming absorbed. Good food and fresh air are also essential adjuncts in the treatment of these cases. For some years we have been accustomed to prescribe the Iodide of Potassium in moderate doses which is the best and most extensively used preparation that may be employed. In all the glandular affections, especially in hypertrophy of the thyroid gland, the use of this drug seems to be a remedy of great value. Regarding all glandular hypertrophies, with the exception of Hodgkin's disease, the local cause of irritation should always be looked for, in order that it may be removed; for practically, it is well to notice all glandular enlargements as probably due to some acute or chronic source of irritation, in the same way as adenitis is known to be a result of inflammation of the lymphatics.

Our Contemporaries.

MEDICINE.

Hæmaturia in infants and young children.

BY

J. PORTER PARKINSON, M. D.,

Physician to the North-Eastern Hospital for children, etc.

HÆMATURIA differs from hæmoglobinuria by the presence of red corpuscles in the urine as well as blood-pigment. The amount in the urine may vary greatly, from only a few red corpuscles which require the microscope for their detection to urine which appears to consist of almost pure blood, so the appearance of the urine is not always a reliable guide. In urines, especially those which are alkaline, the corpuscles tend to break up on standing, hence it is important to examine a fresh specimen if any doubt exists as to the presence of red corpuscles.

The usual clinical tests for blood depend on the pigment it contains. The ordinary guaiacum test, if done with fresh materials, is a very delicate one, but the presence of iodides, pus, saliva, or milk in the urine will give a very similar reaction. Heller's caustic potash test is also given by the urine of patients taking senna, rhubarb, santonin, or chrysarobin, which drugs are frequently administered to children; hence the microscope is without doubt the safest method to employ. After eating certain sweets the urine may have a bright pink colour, but as it also has a marked fluorescence it cannot be mistaken for blood.

Carboluria may resemble urine smoky from blood, but does not give the guaiacum test. Having decided that blood is really present in the urine, it has to be discovered from what part of the urinary tract it comes. The general symptoms often give one a clue to this; the more severe hæmorrhages come usually from the kidney, while the presence of blood-casts from the renal tubules are, of course, distinctive.

The age of the patient may often give one a clue to the cause of the hæmaturia; for example, in an infant under a year old the cause is generally one of the following three—infantile scurvy, renal sarcoma, or uric acid crystals. These latter may occur in the shape of deposits in the renal tubules and in the pelvis of the kidney, and the hæmaturia is occasionally accompanied by pain and priapism apparently of the nature of renal colic.

Sometimes hæmaturia may be the only obvious sign of infantile scurvy, though on closer examination other signs, such as tenderness of limbs, etc., may be discovered. The following instance from my case-book illustrates this:

Edward B—, aged 11½ months, was sent to me by his doctor, who, on account of the appearance of blood in the urine, had diagnosed nephritis. With the child he sent a detailed account of the examination of the urine as follows: "There is a large deposit of blood-corpuscles; not more albumin, however, than can be accounted for by the blood present. There are a few hyaline and blood-casts. No crystals."

The child had been ailing for two months, being fretful, and screaming on being handled or dressed. The water had been noticed to be "thick" for the same period. There had been no gastro-intestinal symptoms. The infant showed marked evidence of rickets. There were no teeth erupted. The head was squarish, with projecting bones and an unduly large fontanelle. The ends of the ribs and long bones were markedly enlarged. The limbs were generally tender, but there were no definite swellings on them. The feet seemed puffy, but did not pit on pressure. The heart and lungs were normal; the abdomen was large and tympanitic, with a palpable spleen and a depressed liver. The general nutrition seemed good, but the child was markedly anæmic, the muscles flabby, and the articulations unduly mobile. The child had been brought up since birth on condensed milk and a well-known patent food. A diagnosis of "infantile scurvy" was made, and fresh cow's milk ordered with raw meat juice and fruit juice, with the result that the blood disappeared from the urine within a week and the further improvement was rapid and complete.

Another cause of hæmaturia in early life may be congenital renal tumour. Of these cases about one half produce symptoms before the patient has reached two years of age.

The amount of blood passed with the urine may be large, but is usually small, and sometimes can only be detected on microscopic examination. The symptom which almost always attracts notice is the large and increasing size of the abdomen, which soon becomes marked with distended veins as the circulatory obstruction within increases. Constitutional symptoms are absent for a remarkably long period, but eventually wasting comes on and pressure effects are noted, such as dyspnoea, vomiting, constipation, and such like. As a rule, the diagnosis of these cases presents no difficulty, but some abdominal tumours may resemble closely a renal tumour, and, as hæmaturia may be absent in the latter, the distinction may be difficult, if not impossible. In a very young infant it is possible sometimes to palpate the tumour with a finger *per rectum*, and this helps greatly in the differentiation. For example: an infant aged 3 weeks, was admitted into the wards of the North-Eastern Hospital for Children with a swelling of the abdomen which had existed since birth and was rapidly

increasing. The abdomen was much enlarged, especially in the right hypochondriac region, in which could be felt a smooth, roundish, solid lump, moderately moveable, and extending downwards below the level of the umbilicus and across beyond the median line of the abdomen. It was dull on percussion. It was therefore a tumour probably connected with the liver or kidney, but on abdominal examination it was impossible to say which. On rectal examination, however, I was able to feel the kidney lying quite free from the tumour, which was in front of it and not connected with it, as the finger could be passed freely between the two. The diagnosis of a liver tumour was made, and a sarcoma of that organ was found on abdominal section.

The following illustrate the causes of hæmaturia occurring in later childhood.

Hæmaturia is one of the most frequent of the visceral bleedings of Purpura hæmorrhagica. The amount of blood varies with the severity of the disease. The cause is not often in doubt, as in such cases the bleedings under the skin and from the mucous membranes are such as are only to be seen in cases of scurvy, or in the hæmorrhagic forms of the various acute specific fevers, or in the rare condition known as Henoch's purpura. Scurvy in children is exceedingly rare in this country after the fifteenth month, so after that age it may be almost disregarded as a cause of hæmaturia, but in the rare cases in which it occurs the spongy gums and the history of the diet will help in the diagnosis and the result of dietetic treatment will confirm it.

In acute specific fevers hæmorrhagic types are sometimes seen in measles, diphtheria, influenza, etc. In hæmophilia bleeding from the kidneys may follow a slight traumatism, the sudden appearance of the blood without other symptoms, or accompanied by subcutaneous bruising or hæmorrhage into the joints, and the previous history of the patient or other members of the family, will readily establish the diagnosis.

Hæmaturia to a greater or lesser amount is a common symptom of acute nephritis, especially of that form which arises as a sequel of scarlet fever, or occasionally of influenza. Here the general symptoms and the œdema usually make the diagnosis simple enough, while in the urine, besides the blood, there is a considerable deposit of casts, and albumin is found in larger quantity than can be accounted for by the blood present.

Some drugs may produce hæmaturia either from being impure or from being given in too large doses.

Chlorate of potash, which is so frequently given for stomatitis and pharyngitis, sometimes causes it; for this reason I have always made it a

routine practice to tell the mother to cease its administration immediately the condition of the mucous membrane has improved; the result being that I have never seen this type of hæmaturia.

Sometimes patients with rheumatism who are being treated with salicylate of soda begin to pass blood in the urine; this is generally stated to be due to some impurity of the drug. I have seen two examples of this, and on the cessation of the drug the blood disappeared in a few days, and did not recur when salicylate prepared from oil of wintergreen was substituted for the previous preparation.

Hæmaturia has sometimes followed the eating of rhubarb or strawberries. In these cases the blood has been accompanied by large numbers of octohedral and dumb-bell crystals of calcium oxalate. Fortunately this form of hæmaturia is not serious, as it stops after a day or two of abstention from the cause; still, it is not very uncommon, and indicates that these articles of diet are not as salutary as is sometimes thought, though, apparently, no serious disease of the kidney follows. Turpentine and cantharides may be causes of hæmaturia, but these drugs are rarely administered to children.

An obscure variety of hæmaturia was described by Dr. L. Guthrie under the name of "idiopathic," or congenital, hereditary, or family hæmaturia, in which twelve members of a family had hæmaturia persisting for many years, occasionally ceasing, but recurring every now and then. The children were otherwise healthy, and the pathology of the condition is unknown.

Infarcts in the kidney during malignant endocarditis may be a cause of hæmaturia, but in this disease the general condition of the patient explains the cause.

Renal calculi in the kidney, pelvis, or bladder may cause hæmaturia; and when in the kidney or pelvis the accompanying symptoms of pain or colic, and occasionally the Röntgen rays, may facilitate the diagnosis; while in the bladder a calculus may often be felt by rectal palpation. Other surgical causes are papillomata and other vascular growths in the lower urinary passages.

Obscure forms of hæmaturia sometimes occur which cannot be referred to any of the causes already given, and some of these cases are by some writers thought to have a connection with rheumatism, as they are sometimes preceded by acute tonsillitis. The hæmaturia is accompanied by lumbar pain, but there is no fever and no œdema. The symptoms all disappear after a few days, when the urine becomes normal. Apparently the symptoms are due to acute congestion of the kidney. In other cases

hæmaturia has occurred as an isolated symptom, and some months later tubercle bacilli have been found in the urine, so it may be an early sign of tuberculosis of these organs, and it received the name of renal hæmoptysis.

More purely surgical causes of hæmaturia are stone and vascular growths in the urinary passages.

The treatment of hæmaturia is usually that of its causation, and so varies considerably. In that due to scurvy in infants it is remarkable how a diet of fresh milk, potato *puree*, fruit juice, etc., will quickly remove the blood.

The hæmaturia of infants due to uric acid concretions usually disappears spontaneously, owing, perhaps, to the constant flushing of the kidneys owing to the fluid diet.

In Purpura hæmorrhagica the hæmaturia is only one of many bleedings, and is not treated separately, but in this connection I may perhaps allude to the remarkable results published by Dr. Soltau Fenwick and myself in the 'Transactions of the Royal Medical and Chirurgical Society, 1906.' Our cases were chiefly in young adults, and owing to lack of material we have only been able to treat one child, but the improvement was equally rapid and permanent, so that it is very likely that other cases of this disease will be equally benefited by the rectal injection of polyvalent antistreptococcus serum. Dr. T. H. Bryant related before the Medical Society of London, in 1905, a case of septic hæmaturia which cleared up after rectal injections of antistreptococcus serum had been administered.

In hæmophilic hæmaturia I am not convinced of the efficacy of any special drug, my cases having cleared up apparently from rest in bed alone. Calcium chloride is advocated by some, but in the cases under my observation it does not seem to have had any result. Some cases have cleared up rapidly after the administration of ergot. Adrenalin seems to be of value in others.

In the hæmaturia which may follow scarlet fever or influenza I can testify to the value of cupping, which was shown in the following case:

A little girl, aged 9 years, about three weeks after a short pyrexial illness—almost certainly scarlet fever—began to pass blood in the urine. She was treated by her father, who was a medical man, but in spite of this the hæmaturia increased, and a week later he called me to see the child. She was languid and anæmic, with a normal temperature. There was no œdema and no vomiting or other renal symptoms. The urine was bright red from blood, which, on standing, deposited nearly half its bulk of red

blood-corpuscles. And after standing the boiled urine deposited half its bulk of albumin. There were a few blood and epithelial casts present. As there was apparently acute congestion of the kidney present and the usual remedies had not succeeded, I dry-cupped the child over each kidney, with the result that next day the amount of blood had very much diminished, and four days later the microscope failed to detect any red blood-corpuscles. The albumin cleared up completely within a fortnight. In the hæmaturia of more chronic cases I have not obtained equally good results, but in very early cases I think dry-cupping is not done as frequently as is desirable. The blood-vessels of the skin over the region of the kidneys anastomose with the renal vessels, so a direct derivative effect on those organs is produced, as well as, perhaps, an indirect effect through the nervous system.

In all cases of hæmaturia milk diet and rest in bed are imperative.—
The British Journal of Children's diseases.

The Treatment of Chronic Heart Diseases.

BY

PROFESSOR THEODORE SCHOTT, NAUHEIM, GERMANY.

Allow me first to thank you for your kindness in asking me to address you. I will now endeavour to lay before you some few particulars of my experience in connection with chronic diseases of the heart.

Hardly twenty-five years have elapsed since it was believed that there were only two remedies for chronic diseases of the heart, namely, rest and digitalis. When these two methods failed, all was over, so far as medical treatment was concerned. If the heart was strong enough to stand the drug, a cure might be effected, but chronic diseases of the heart were neglected, more or less.

Not more than twenty-five years ago three methods appeared, nearly simultaneously, but, I would point out, entirely independently, of each other. These were the Oertel cure, the Swedish method, and the balneological-gymnastical method of my late brother and myself.

I may speak first of the Oertel cure, which has been a powerful incentive to renewed research. Still, in the main, Oertel's theory concerning the limitation of the supply of liquids proved to be erroneous. Mountain climbing is only useful in a limited number of cases of heart affections, and should really be resorted to towards the end and not at the beginning of the treatment.

The Swedish method is principally used in the form of Zander's mechanical contrivances. These do not, however, render the patient independent either of his momentary physical condition or of continued medical supervision. They are useful, nevertheless, wherever the cost of the apparatus and that of running them do not come into consideration. Of course it should never be overlooked that with Zander's machinery the patient is dependent upon time and locality, and above all, that it is a very difficult matter, to attain a precise degree of individualization in the measurement of the resistance. The machine may be set so as to suit the patient to-day, but the adjustment of the resistance is all wrong for to-morrow. In this way the element of time and the condition of the patients render it necessary that they be constantly under the observation of the physician. When the machine is set to a given resistance, to overcome this may be too much for these patients if the heart's action becomes weaker.

Mention may here be made of many drugs that have a marked effect on the heart's action, such as nitro-glycerine, strychnia, digitalis, etc. These remedies are not to be entirely disregarded. Morphine has a decided effect in reducing the frequency of the heart's action, and is useful in some cases of tachycardia, but the effects must be closely watched.

The method of physical exercise, as a treatment for chronic heart diseases, is rather old, beginning with a method which was thought most highly of for a short time. A Dublin physician, Stokes, was of the opinion that persons suffering from heart disease, and more especially from fatty heart, should be prescribed mountain climbing, to cause a return of a sufficient muscular action of the heart. The idea was soon forgotten until it was taken up by my late brother, August Schott. The method had three points: to strengthen the heart by walking, to remove the fluid from the blood, and to modify arterial pressure.

My brother and I have discovered that the removal of the fluid from the blood does not add to the strength of the circulation. In dealing with fatty hearts especial care must be taken. It is not so much to decrease the amount of fat but to increase the muscle. A loss of from 40 to 50 pounds in from four to six weeks might also be wise, but a small loss of weight coming from lack of nourishment might be accompanied by danger.

Electricity, massage, and other mechanical devices have been employed in the treatment of chronic heart affections. A moderate amount of massage may be very helpful to the circulation, stimulating the blood flow and regulating arterial tension.

My late brother and I carefully combined with the gymnastic method that of baths. From these most beneficial results have been obtained with many absolute cures. I wish to point out to you how we proceeded and to consider some of the principal points, namely, how to promote the action of the fatty heart.

It is very important to obtain an action of the heart strong enough to force out all the fluid, as until it is forced on, the heart makes rapid, ineffectual efforts to force it out. This would account for the increased pulse rate. The effort to eject the fluid often produces hypertrophy, or hypertrophy with arterial tension.

In cases of increased tension in the arterial system, where the sphygmomanometer shows frequent pulsations, systolic and diastolic prolongations, and long, weakened respiration, I will show that the bath and gymnastic treatment is of the utmost value, and is specially useful if there be chronic myocarditis and it is necessary to relieve the vascular tension.

The effects from the baths are the most lasting, while those from the gymnastics are the most rapid. The medical man in making a diagnosis should always endeavour to examine the size of the heart and take particulars. It may be difficult to get the patient to be in exactly the same position at a subsequent measurement and in that way errors may occur. By auscultation weak sounds often become more apparent, the more pronounced may be changed into divided sounds, and some which were not audible become so. If palpation shows that the apex rises upwards and inwards, it is a sign that the size of the heart has been reduced.

As you observe the tonifying result of the gymnastics, digitalis may be prescribed and the dangers of any injurious effects may be easily avoided. As the organ becomes stronger the blood becomes better oxygenated and a better muscle builder.

With regard to the baths, let me begin by stating some things which must be noted. The patient should be most carefully watched. The baths should be administered first at a temperature of 93 degrees F. They should not exceed 95 degrees, or the tonifying effect will not take place. The patient will first feel a sensation of warmth as long as he remains in the bath. Some feel chilly in a little while, on leaving the bath. This should be avoided. It shows the bath was too long continued. The water in the baths is condensed from the spring. At Nauheim it is kept in reservoirs and thus the carbonic gas is kept. It averages about 1,000 c. c. of free carbonic gas. This is what constitutes the change from the saline to the effervescent bath. The water for these should be at a

natural temperature from 86 to 96 degrees, with 2,000 c. c. of carbonic gas. In some cases three or four baths may be given, but the baths should not be prolonged for more than 20 minutes. The patient should then be rubbed to a glow, put in bed, and allowed to rest there for an hour. A strict supervision should be kept over the patient and careful notes should be taken.

The water for this bath should be at 86 to 90 degrees, just as used in ordinary life. The water as it contains carbonic gas by the heat of the body becomes effervescent and the carbonic gas penetrates rapidly through the skin.

My brother and I have published what may be employed to make the artificial Nauheim baths. A good bath may be made by putting 7 pounds sodium chloride, 10 ounces calcium chloride, half a pound sodium bicarbonate and 12 ounces hydrochloric acid 25 per cent., in 40 gallons of water at 95° F. This produces free carbonic gas in quantity. Stronger baths may be employed as the patients gain in strength. At first the baths should be simple saline solutions, such as sodium chloride, 5 pounds, and calcium chloride 8 ounces to the same quantity of water.

With regard to the gymnastic exercises, I wish to say that no definite rules can be laid down, they must be made to suit each case. It is not to be considered, however, that each patient must be treated differently, but each must be carefully supervised. A certain amount of knowledge is presupposed; if it be not present at first it can be easily and gradually acquired. It would be well to train a member of the family in the exercises, so that the patient can at all times have the advantage of the assistance. The first class of exercises admits of assistance by the attendant, while the later ones bring in self-resistance. These exercises are carried on for some days. No new exercises are to be undertaken until the pulse is lower. The treatment has yielded most favorable results in the hands of medical men in America.

There are many things to be observed, the heart should be most carefully observed in all cases where digitalis has been used. We sometimes use it in connection with the bath and exercises.

The first exercises, as said before, are done with the assistance of an attendant. Then come those bringing into play resistance on the part of the patient. These are of great advantage to the patient and are to be concluded by mountain climbing which not only employs the muscles but has a powerful effect upon the heart. An excess of muscular action may lead to rupture, embolism and apoplexy. In these resistance

movements one set of muscles is made to oppose another set, and are performed by the patient with or without the aid of an assistant.

In cases of well developed myocarditis and arterio-sclerosis, its effect are to be considered carefully; and, with or without carbonic acid baths, good results can be obtained, but the method is sometimes dangerous.

It is inadmissible that exercises will offer as good results as bathing and gymnastics combined. Under the latter treatment, an unusually high blood pressure moderates; and where there is a low blood pressure it is increased.

Ice packs, etc., are also a good means for quieting the pulse; and in cases of high tension good results can be obtained by the use of an india rubber bag filled with hot water. This may be applied and shifted over the entire area of the heart and chest. The result of such action is to quieten the action of the heart. The heart can be reduced in size, but this subject should require a separate paper in order to do it ample justice. I only wish to add that the combined treatment is a strong agent which may easily be dangerous.

No large amount of effervescent liquid or large amount of food should be taken, as that would tend to embarrass the heart's action. The use of tobacco in such cases may prove injurious and should be either moderated or stopped entirely.—*The Canada Lancet*.

Shall We Reduce Temperature of Fevers and How?

BY

R. E. F. RHAMES, M. D., BOSTON, MASS.

A new school of clinicians is advocating that the fever accompanying acute infectious diseases should not be treated on the ground that increased temperature is, as it were, a protective condition against the pathogenic factor. We know that certain organisms require a low temperature for their development and existence, and that some of their toxins are injurious to the organism, while others are not wholly so, except under certain conditions varying from the normal. The toxins, by their existence in the circulation, act upon the higher brain centers, thus interfering with the normal physiological function of the so-called heat centre, resulting in an increase of the body temperature. This increase of temperature, moreover, becomes unfavorable for the existence and growth of the class of bacteria which thrive best at the body temperature, and the natural protective agents of the blood, *i.e.*, the phagocytes, increase in numbers, and thus nature warns them of their respective functions. As an example, reducing a temperature at 102° F. to the normal 98.6° F. with ice, have we reduced

the temperature to the most favorable growth of bacteria by our local method of treatment, which again rises only to warn us of their favorable condition for growth, or should we allow them to become exhausted by the unnatural temperature?

Without denying the possibility or the probability of such a process of self-protection, we are nevertheless unable to draw precise conclusions therefrom as to decide that the fever must be left untreated. For instance, is not the cough in such cases as bronchial catarrh with abundant secretion, in œdema of the lungs, and so on, a self-protecting agency to the organism without which the patient would suffocate, and beneficial in such cases as must not be weakened, but, on the contrary, strengthened, and yet are we not compelled to relieve the too severe cough of bronchial catarrh if it tends to prevent sleep, and to act injuriously or even dangerously on the cerebral circulation and cardiac activity, especially in old age?

The same may be said of diarrhoea and of other symptoms, which are beneficial to a certain degree and yet become injurious as soon as this degree is overstepped. The same reasoning and judgment applies to fevers in connection with infectious diseases, and consequently the physician must consider it in the same light he considers other symptoms of a similar nature, namely, not to treat it if he considers its presence beneficial and as long as it does not overstep certain bounds, and to treat it in cases in which it is necessary. In malarial fever, treating this symptom (fever) without knowing its etiology would be erroneous, and the same may be said of acute rheumatism. In the acute infectious diseases for which we possess no specific treatment, as in typhoid, pneumonia (croupous) and influenza, it is not unreasonable for us to neglect the treatment of the fever if it is moderate and if we are sure it has no deleterious influence on the patient. Should the fever be marked by a temperature of, say, 104° F., we certainly should consider that the symptoms accompanying such a rise of temperature and the fever itself calls for treatment. In other words, in such infectious diseases as typhoid fever with depression of the cerebral activity, indicating an influx of blood to the brain, accompanied by moderate fever, which often passes away spontaneously after the usual nose-bleed, it is quite clear to see the value of an ice-bag to the head, which is often sufficient to bring relief. On the other hand, if the face is pale, with mental depression, musk may be sufficient. If œdema of the brain is threatened, we can resort to such counter-irritants as the Spanish fly to the neck. Croton oil is sometimes of value to persons habituated to the use of alcoholic drinks. The treatment then will depend upon the cause of the fever. I find no reason why we should not resort to such antipyretic treatment as the cold bath, acetanilid and

other antipyretics where the heart and length of the disease does not contra-indicate their use. I also consider calomel in small doses a remedy of great therapeutic value to overcome constipation in the small intestine, which is generally present. I consider the milk treatment of less value than I do animal broths, with unlimited quantities of cracked ice. The bath I consider should be determined by the peculiarity of the given case, and the first one should always be taken in the presence of the physician and not left to the judgment of the nurse. It is not necessary to speak here of the contra-indications for the cold bath; namely, diarrhoea, intestinal hæmorrhage, poor cardiac activity, embarrassed respiration with hypostasis and in certain cases of great excitement of the nervous system; bromide of stronium is of great service when the condition is accompanied by insomnia and delirium. In tuberculous fever I prefer to use the capsules of glycerophosphate of quinine and benzoates of eucalyptol and creosote (Kugloids) of 20 centigrams each, every hour.

If the fever is the result of septicemia or pyæmia, it must be treated on general principles. The lowering of the temperature down to its normal condition during the whole course of some of the infectious fevers, as typhoid by ice or cold baths and antipyretics, has been attempted, but it does not benefit the patient, as the duration of the disease is not shortened and it seems to increase the production of heat, with increased exhaustion of the organism. In order for antipyretics to produce the same result, they must be given in large doses, for during fever they do not have the same physiological effect upon the organism as in health, and thus it is reasonable to see why they may affect the heart injuriously, not to speak of the possible harm from the cessation of the fever, which may act as a self-protecting agency.

Recent observers assert that by persistent treatment of cold water recurrences are more frequent, but this I lay to the etiological factor.—*International Therapeutics.*

Measles Complications.

The most frequent sequelæ are broncho-pneumonia, ileocolitis, otitis and membranous laryngitis, all of which are rather rare after four years of age.

Lungs.—The greatest danger in measles arises from pulmonary complications, and the frequency is greatest under two years of age. Pneumonia is more frequent in spring and winter, and mortality greater at that season. Lung complications may begin at any time, but usually begin at the time of full eruption. To add to the danger many of the pneumonia cases also have added pleurisy as a complication, increasing the gravity of the

case. We may suspect pneumonia when the temperature remains high after the full appearance of the rash. Bronchitis of the large tubes, always accompanied by tracheitis, is seen in every case of measles, possibly excepting a few of the very mildest.

Larynx.—A mild catarrhal laryngitis accompanies almost every case of measles. Severe catarrhal laryngitis is present in about ten per cent. of the cases. One of the very grave complications of measles is diphtheria, which generally begins in the larynx.

Throat.—A catarrhal angina is part of the disease, and is as characteristic of measles as is the eruption on the skin. There is acute congestion and swelling of the tonsils, uvula, palate and pharynx. Some have membranous patches form on the tonsils and adjacent mucous membranes.

Digestive System.—Gastric trouble may be a factor, but more serious is bowel trouble, especially during the summer months, which may be even more serious than pulmonary. The bowel troubles are seen more frequently in the second or third weeks. Ulcerative stomatitis and gangrenous stomatitis may occur; also gangrenous inflammation may be seen after measles, especially of the ear, vulva and prepuce.

Nervous System.—Meningitis may occur, as well as insanity of a temporary character may follow measles.

Ear.—Otitis is a frequent complication in some epidemics. Usually both ears are affected, and the inflammation terminates in suppuration, but impairment of hearing is less liable to occur than in scarlet fever.

Eyes.—Simple catarrhal conjunctivitis accompanies nearly every case of measles. In severe cases there is muco-purulent catarrh. In neglected cases it may spread to the cornea. In a large percentage of cases chronic conjunctivitis persists after measles. Lymphatic swelling of glands of the neck are frequent and rarely suppurate, but may terminate in tuberculosis.

Kidneys.—Complications of kidneys are found in striking contrast to scarlet fever. Transient febrile albuminuria is not uncommon.

Heart.—Both endocarditis and pericarditis have occurred in the course of measles. Erysipelas, furunculus, impetigo and pemphigus have been noted. Hemorrhages have been noted from mucous membranes in hemorrhagic type of the eruption—DR. A. L. SWARTZWELDER, *Eclectic Med. Jour.*

Sleeplessness, Treatment of.

In the prevention and cure of sleeplessness, the writer states that the object of treatment should be the removal of the obstacle to sleep; not

simply to compel sleep, while leaving the disturbing influence in operation, and perhaps working harm in other ways. Thus, when sleeplessness is due to pain, morphine is given to relieve the pain, sleep following as a consequence. So in itching of the skin, a sedative lotion is applied, and the obstacle to sleep removed. When high arterial tension causes sleeplessness, a mercurial aperient is indicated, also careful regulation of the diet, and occasional use of chloral. In pyrexia, especially with low pulse-tension, the tonic effect of cold-sponging will often induce sleep. With low-tension sleeplessness one will often fall asleep in a chair, but will be wide awake as soon as he lies down. The remedy is not a narcotic, but a cardiovascular tonic. The most common cause of sleeplessness is gastro-intestinal derangement. Treatment means simplification of diet, prevention of dilatation and fermentation, and the use of salol, naphthol, creosote, carbolic acid, sulpho-carbolates, or calomel. A caution is sounded against the use of sedatives and narcotics in the young.—W. BROADBENT. —*The Practitioner.*

Examination of Urine.

THE following offers a ready method for the hasty examination of urine:

Put a drop of urine on a strip of white filtering paper, heat it slowly and carefully, and if sugar be present, the spot dries with a yellowish brown to a deep brown, depending on the amount. If albumen be present, the colour is yellow, merging perhaps into yellowish red. Chloroform is a test for bile. A few drops added to urine in a test tube will cause it to become turbid and acquire a yellowish tint, darker or lighter, according to the quantity of bile present. Perchloride of iron develops a blue tinge if the patient is a morphine eater.—*The Dietetic and Hygienic Gazette.*

OBSTETRICS AND GYNÆCOLOGY.

Internal Diseases as Indications for the Interruption of Pregnancy.

WARFIELD and others. *Interstate Medical Journal*, 1906. Vol. xiii., No. 11, p. 863, etc.—These papers are the result of a discussion at the St. Louis Medical Society; they contain little more than expressions of opinion by their respective authors, but it may be worth while to note the general conclusions arrived at. The two most important communications are those by Warfield on tuberculosis, and by Vogt on heart disease, as indications for the interruption of pregnancy.

As regards tuberculosis, Warfield lays down the following principles: —(1) Tuberculosis of the larynx is a very grave complication of pregnancy,

and is a justifiable indication for its interruption. To be of value it must be done in the first two months of the pregnancy. (2) In advanced cases of tuberculosis of the lungs in pregnant woman abortion is not justifiable. The exhaustion following it differs very little from that of the normal puerperium. The child in such a case should be our first care. (3) In early tuberculosis of the lungs, if the process is advancing and the woman is losing weight, and if she can be put under the most favourable surroundings, there might be a justifiable indication for its interruption. (4) In early tuberculosis with the process apparently stationary, the patient should simply be kept under observation. There seems to be only one rule; if abortion is performed it must, in all cases, be done as early in the pregnancy as possible.

Vogt takes the usual line in regard to cardiac disease, and states that the indication for induction in such cases is disturbed compensation which does not improve under treatment. Such disturbances generally occur during the later months, but it may happen that the question may arise in the case of a woman who has had severe complications in a previous pregnancy, and who has, in spite of warning, again conceived; but it must be remembered that it does not necessarily follow that the same trouble will again take place, and therefore it is best in such circumstances to keep the patient under observation. Of course, with the knowledge of the previous history the development of symptoms would lead to an earlier interference.

Hyperemesis is considered by Moore, who concludes that there is but one form—the toxæmic hyperemesis—in which the interruption of pregnancy is indicated and that a careful chemical examination of the urine furnishes an early and certain means of recognizing the condition.

The paper on renal disease as an indication for the interruption of pregnancy contains nothing noteworthy.—*The Journal of Obstetrics and Gynecology*.

Hyoscine in Obstetric Practice.

WOODBIDGE HALL BIRCHMORE (*Med. Rec.*, January 17th, 1907) believes that hyoscine is for the accoucheur the ideal anæsthetic. He knows of no experience with an excessive dose. The importance of the hyoscine sleep in obstetric practice is amply demonstrated. It gives all the aid in quieting the patient that any narcotic can give, while, in addition, it affords a practical anæsthesia of prolonged duration without risk to either mother or child. This anæsthetic sleep is without danger. Hyoscine is a drug sedative to the cerebro-spinal axis, but not to the ganglia connected with the reflexes of common life.—*The British Medical Journal*.

THERAPEUTICS.

Physiological Action and Uses of Adrenal Extractives.*

(Adrenal Extract, Adrenalin, Epinephrin, etc.)

BY

C. E. DE M. SAJOUS, M.D.

PHILADELPHIA.

The fundamental importance of oxygen in all the functions of the organism and in the life process itself hardly needs to be emphasized; and yet the manner in which this gas enters our blood and its rôle in the tissues may be said to be unknown.

The prevailing view is that the entrance of oxygen into the blood and the elimination of carbon dioxide occur in accordance with the physical laws of diffusion of gases; but a well-known English physiologist, Dr. Pembrey, in an impartial review of the subject published this year, states that "it is impossible to give a satisfactory account of the causes of gaseous exchange between the blood and the alveolar air." Landois, in the last edition of his text-book, ascribes the absorption of oxygen to a chemical process, and adduces various facts which show that it does not depend on a diffusion of the two gases involved. What is the nature of this chemical process?

The only other conception of the respiratory process that has received serious attention is one to which Pembrey refers in the following words: "The body of evidence has been steadily increasing in favor of the secretory theory, especially as regards the absorption of oxygen." This theory is that of Bohr, who in 1891, showed that contrary to the prevailing view, the oxygen tension was not greatest in the pulmonary alveoli but in the arterial blood, and that pulmonary respiration could only be accounted for by the presence of "a kind of *internal secretion*," derived perhaps from the alveolar membrane, and capable of actively taking up the oxygen of alveolar air. Bohr's results were confirmed by other investigators, all of whom recognized the need of the secretion referred to. The main feature of Bohr's theory, however, has failed to come to light, viz., the source and identity of the internal secretion which absorbs the oxygen of the air. It was this function which, in my work on the "Internal Secretions," published in January, 1903, I ascribed to the secretion of the adrenals—a conclusion which additional researches have fully sustained.

A brief outline of a few of the facts upon which this conclusion is based is all that I can submit to you within the brief time at my disposal.

* A paper read, by invitation, before the Medical Association of the Greater City of New York, on October 15, 1906.

The presence of "a substance having greater avidity for oxygen than the blood itself," as Bohr and Henriques state, is also sustained by the fact that Garnier, twenty years ago, found that a solution of ultramarine blue was decolorized when sprayed into the lungs—a phenomenon explained only by the presence of a powerful reducing agent therein. Pembrey also wrote recently: "A still further piece of evidence in favor of the secretory theory is the great capacity of the pulmonary tissue to reduce alizarin-blue when, as in Ehrlich's experiments, it is injected into the living body, and air is still passing in and out of the lungs."

That it is the adrenal secretion which is the reducing agent imposes itself, in view of the fact that it is itself a very active reducing agent, and that it is exposed to the air in the lungs. Its marked affinity for oxygen was emphasized by Vulpian, Cybulski Abel, Takamine, and others, and its presence in the lungs is rendered inevitable by the fact that it is secreted in the inferior vena cava, that is to say, in the identical blood which reaches the lungs by way of the heart, and which becomes oxygenized while passing through the alveolar capillaries.

After absorbing oxygen, the adrenal secretion, following the blood current, must naturally enter the arterial blood-stream. Considerable evidence is available to show that it comes therein a constituent of the blood-plasma, and of the hæmoglobin.

That it is the hæmoglobin which takes up the atmospheric oxygen is of course, familiar to every one. There is a constituent of this substance, however, to which Gamgee refers as the "yet unknown constituent of the corpuscle." After pointing out that hæmoglobin is composed mainly of two substances, a body containing all the iron—hæmatin, and an albuminous body, this eminent chemist remarks, "as to the true nature of the albuminous residue we have very little knowledge." As the proportion of this substance in the hæmoglobin molecule is 94 per cent. (Gamgee), it is apparent that all but 6 per cent. of the contents of the red corpuscle is admittedly an albuminous body of unknown function and identity. Now, this body corresponds with the oxygen-laden adrenal secretion, as will be shown presently.

There is another substance in the blood, the source, nature, and function of which has remained unknown. Its presence in the blood of invertebrates and vertebrates has been demonstrated by a large number of investigators, including Bertrand and Bourquelot, Pieri and Portier, Abelous and Biarnes, Bunge and Schmiedeberg, Salkowski, and Joolles, and is generally known under the name of "oxidase." This substance is not only a powerful oxidizing agent, but the possibility of its being connected with the respiratory process has been suggested by Duclaux. Indeed, Piéri and

Portier, Bourquelot, Abelous and Biarnes, and others found that the respiratory organs, the gills of crustaceans and mollusks, for example, gave the guaiac-blue test for oxidase more intensely than blood derived from other parts of the body.

The oxyhæmoglobin being the blood's oxidizing body, why should a second substance having the same property be present in the blood-stream? This naturally suggests that oxyhæmoglobin, oxidase, and the oxygenized adrenal secretion are one and the same body. That such is the case is shown by the fact that their chemical properties—a few of which I must inflict upon you—correspond.

In the first place, various experimental facts indicate that the albuminous oxyhæmoglobin and oxidase are the same substance. As demonstrated by Schmiedeberg, Jaquet, Salkowski, and other physiological chemists, the plasma itself is an active oxidizing agent—a fact which indicates the presence therein of an oxidizing substance of some kind. That this substance is oxyhæmoglobin is shown by the well-known guaiac-blue test, one of the most delicate tests at our disposal to discover the presence of blood in linen, clothing, etc. Hammarsten states that oxyhæmoglobin "has a direct oxidizing action upon tincture of guaiacum." Now, the guaiac-blue test is also the most prominent one for the detection of oxidase in all organisms, vegetable or animal, as shown by all the investigators I have quoted. It is undoubtedly the albuminous portion of hæmoglobin which is present in the plasma, and which reacts to this test, for its iron-laden moiety, hæmatin, is colored a muddy-red, and not blue by guaiac, as shown by Piéri and Portier, while as pointed out by Hoppe-Seyler, pure hæmatin is not affected by reducing agents, which means that it cannot oxidize. Moreover, while Landois alludes to hæmoglobin as a "colloidal substance," Jolles refers to human oxidase as a "colloid."

Our blood is thus shown to contain two oxidizing bodies which react in the same manner to guaiac, and which are similar in physical properties. Indeed, both these bodies are now being connected with tissue respiration. We have seen that Bourquelot suggested a connection between oxidase and respiration. Howell, in his recently published treatise, also says, after reviewing briefly the oxidase question that "such facts as these lend great probability to the belief that eventually it will be shown that the oxidations in the body are effected by the influence of oxidases or peroxidases." If this proves true, the oxidases will be given the same function that is now ascribed to oxyhæmoglobin—the identical substance with which it corresponds so closely. The inference is obvious.

Nearly four years ago I advanced the view that the plasmatic oxidizing substance of Schmiedeberg, Salkowski, Jaquet, and others, now,

known as oxidase, fulfilled the function of oxyhæmoglobin, and that this compound was naught else than the oxygenized adrenal secretion. Now, this secretion corresponds in its chemical properties with both the oxidase and the albuminous hæmoglobin. In the first place, the oxidase was found by all the chemists I have quoted to react to the guaiac test, precisely as oxyhæmoglobin does. Moreover, it was found by Piéri and Portier, Abelous and Biarnes, and other investigators to resist all temperatures up to 100° C., the boiling point. This is a characteristic of adrenal extracts and adrenalin as observed by Cybulski, Moore, and others. In the second place, Gamgee states that the loose portion of hæmoglobin is insoluble in absolute alcohol, chloroform, benzol, ether, and carbon disulphide. Vulpian, Gautier, and Moore, collectively, refer to the fact that adrenal extract is insoluble in the same substances. In the third place, Mählmann held that the bronzing in Addison's disease was due to oxidation of the adrenal principle in the cutaneous capillaries, a view sustained by considerable evidence. This not only emphasizes the presence of an oxidase in the blood—since all oxidases show this peculiarity of turning brown—but also that the adrenal principle itself is distributed throughout the entire organism. Finally, Battelli has shown recently that adrenalin was a widespread constituent of the blood-plasma.

This evidence, to which considerable could be added, indicates clearly that the albuminous constituent of hæmoglobin—the identity and function of which have remained unknown—is the oxygenized adrenal secretion.

It is now believed that oxygen alone is dealt out by the red corpuscles, whereas in the light of my views the albuminous hæmoglobin is secreted by these cells gradually as it is needed by the tissues. That the red corpuscles are only storage cells for an oxidizing substance, and that it is the latter which carries on the oxidizing process in the tissues is shown by the fact that, although the blood of nearly all invertebrates does not contain red corpuscles, it can, nevertheless, absorb oxygen and adequately carry on tissue respiration. In fact, the history of the red corpuscle throughout the whole phylogenetic scale shows that this cell is a tardy addition to the plasma or white blood, and that it has for its purpose to increase its oxidizing power when the cell-colonies constituting an organism become very numerous and highly differentiated, as they are in vertebrates.

Again, according to the prevailing doctrine that oxygen alone is dealt out by the red corpuscles, there should be no outpouring of hæmoglobin into the blood-stream. Conversely, according to my own interpretation, the albuminous portion of the hæmoglobin is secreted by these cells mainly

in the capillaries, and an excess of hæmoglobin should be found in the veins. Now, Hammarsten states that hæmoglobin "occurs only in very small quantities in arterial blood; in larger quantities in venous blood." Jolles, moreover, though unaware of the fact that red corpuscles might act as storage cells, recently called attention to the fact that the activity of oxidases was "in definite relations to the number of red corpuscles present."

On the whole, the adrenal secretion, as I interpret its functions, takes up the oxygen of the air in pulmonary alveoli, and becomes the constituent of hæmoglobin, which carries on the oxidation process in all tissues.

This conception, moreover, furnishes a lucid explanation of the rôle of the adrenal secretion in pathogenesis, and of the manner in which adrenal extractives produce their therapeutic effects.

Perhaps the most interesting relationship of the adrenal secretion with the genesis of disease, is the experimental production of glycosuria by Blum, Croftan, Herter, and Richards, and others, by injections of adrenal extract during a prolonged period.

In the first volume of "Internal Secretions" I ascribed glycosuria to overactivity of the adrenals, the production of the agent which converts glycogen into sugar. Increased metabolic activity in the pancreas readily accounts for such a process, since an overproduction of amylopsin, the ferment which acts in this manner on glycogen, must normally follow, with the formation of an excess of sugar as end-result. Herter and Wakeman showed, however, that glycosuria could likewise be produced by painting the pancreas with 1 cubic centimeter of a 1 in 1000 solution of adrenalin—a result also obtained by compressing the adrenals as observed by Herter and Richards. How is this form of glycosuria produced? This introduces an important feature of my views as to the physiological action of adrenal extractives, in the sense that it gives us an insight into the manner in which adrenalin and other adrenal extractives produce their effects when applied locally, namely: that the *active principle* of the adrenal secretion is the *general catalyzer of our tissue elements*, fulfilling a rôle which Traube many years ago deemed necessary to account satisfactorily for cellular oxidation.

I cannot do more than allude to this process, referring you to the second volume of "Internal Secretions" for details; but the influence of a catalyser in the tissue-cells is suggested in Mathews's statement that "atmospheric oxygen has little oxidizing power; whereas protoplasm brings about oxidations of the most radical nature, and is comparable in its oxidizing powers to the most intense chemical oxidizing agents."

Interpreted from my standpoint, protoplasm is capable of acting in this manner only because it contains the adrenal active principle. Embodied as it is in the oxidizing substance distributed to all cells, this principle, acting as a catalyser, is able not only to transfer the abundance of oxygen with which it is linked, to the tissue elements, but also to crowd this gas on, as it were, without being itself destroyed. In other words, the adrenal active principle having loaded itself with oxygen in the lungs, becomes, in the tissues, owing to its catalytic property, an intense oxidizing agent.

When Herter and Wakeman painted a solution of adrenalin over the pancreas, they incited very active metabolism in all the cellular elements reached by the drug, because it behaved therein precisely as if it had reached them by way of the circulation. As a result of this overactivity, an unusual proportion of amylopsin—among other pancreatic ferments—was secreted by the pancreas, and glycosuria followed precisely as if adrenalin had been injected into the blood-stream, or as if the adrenals had been compressed.

This does not mean that this is the only way adrenal secretion may produce glycosuria, nor that glycosuria invariably requires a pancreatic ferment to be produced, nor even that glycosuria is always caused by adrenalin extract—since an excessive dose can inhibit pancreatic functions by causing excessive constriction of its arteries. It affords a good example, however, of the general line of experimental facts which led me to conclude that *a local application of adrenalin produces blanching and contraction of a given tissue by inciting excessive metabolism in that tissue, including its blood-vessels*. The latter being practically occluded, owing to excessive constriction, they are the main source of the blanching, since blood ceases to be admitted to the tissues.

This explains, it seems to me, how ophthalmologists, laryngologists, gynæcologists, etc., secure a bloodless field for local operations, and why adrenal extractives prevent or arrest hæmorrhage during or after operative procedures even in such organs as the liver from vessels small enough to be occluded by constriction of their walls. Muller found that the renal and hepatic tissues to which the solution had been applied suffered in no way, and that the reparative process was not retarded—a fact which suggests that it had merely enhanced the activity of a normal function. Braun states that a solution of 1 in 1,000,000 injected into the tissues is as active as freezing for the depletion of tissues of their blood. Moore and Purinton having found $2\frac{1}{2}$ millionths of epinephrin to the kilo of dog, capable of producing appreciable effects, it becomes evident that we must be dealing

with an agent such as a catalyzer is known to be : one capable of inciting, in proportion to its own volume, enormous activity through the intermediary of some other agent—oxygen in this case.

This accounts also for the gaping vessels, the secondary hæmorrhages, the œdematous infiltrations, etc., we sometimes witness after operative procedures in which adrenal extractives are used. The vascular elements, being the seat of excessive metabolic activity, are left exhausted, and are thus unable for a time to resume their tonicity. Hence, the advisability of using as weak a solution as will satisfy the needs of the operation to be performed, and when used for the depletion of engorged tissues, such as hæmorrhoids, gingivitis, turbinate infiltration in hay-fever, etc.

Another action of adrenal extractives which my views elucidate, is the production of arteriosclerosis, by their prolonged use, as recently shown by Josue, Erb, von Rzentkowski, and others. Oliver and Schafer showed twelve years ago that adrenal extract caused contraction of the blood-vessels by acting directly on their walls. In the light of the foregoing data, this is due to the fact that it enhances excessively intercellular metabolism in the vascular elements, the vessels being thus caused to contract violently. The smaller the caliber of a vessel therefore, the greater the chance of its lumen being obliterated. Now, the vasa vasorum have long been known to take a prominent part in the pathogenesis of arteriosclerosis. Cowan states, in fact, that the "vasal changes may, in some cases, be the only visible lesion," and refers to cases in which he says "the interference with the vascular supply from the vasal vessels produced medial and intimal necrosis." Councilman's study of 41 autopsies shewed that in the nodular form the primary alteration consisted "in a degeneration or a local infiltration in the media and adventitia, chiefly about the vaso vasorum." The manner in which injections of adrenal extract can give rise to the arterial lesions is now plain. By closing the vaso vasorum, they arrest the nutrition of the vascular walls, and the typical lesions of arteriosclerosis follow.

The arterial degeneration thus produced differs histologically from true arteriosclerosis in that it is brought on acutely, as it were, as compared with human arteriosclerosis, which is very gradually developed. Again, the artificial lesion being due to arrested nutrition of the muscle cells of the media, the degeneration is practically limited to this layer.

Shock is another condition in which adrenal extractives show prominently their influence on metabolism. The function I ascribe to the adrenal secretion, namely, to take up the oxygen of the air and penetrate the tissues,

where its active principle augments greatly the activity of this gas, involves the conclusion that it is a prominent factor in the sustenance of the body heat. In fact, Reichert observed that adrenal extract caused an elevation of 1° F. in rabbits, accompanied by increased metabolic activity. Lépine states that the increase of blood pressure caused by adrenal extract is always followed by a rise of temperature. Morel noted that it caused in guinea-pigs a rise of from 0.9° to 1.8° F. Now, Kinnaman, in a comprehensive study of the temperature relationship to shock, concluded that as shock increased in severity, the most uniform and progressive factor was the fall in temperature. He states that "in one series [of cases] the fall in temperature was the sole cause of shock." The brilliant result of Crile with adrenalin in salt-solution given very slowly and gradually for a considerable time thus find a normal explanation in my interpretation of the rôle of the adrenal secretion. He supplied the organism precisely with the substance which sustains the vital process in the tissue cells. Indeed, he resuscitated animals in this manner—with simultaneous artificial respiration—fifteen minutes after all signs of life had ceased, and was able to keep a decapitated dog alive over ten hours by this same procedure. That it was because the adrenal secretion is able to sustain tissue metabolism, *i.e.*, the vital process itself, that such results were obtained seems self-evident.

Applying this general principle to the internal use of adrenal extractives, a salient feature asserts itself, namely, that whenever they have been found useful in a general disorder, it has invariably been in some condition attended with or due to lowered metabolic activity or adynamia.

Solomon Solis-Cohen introduced the use of suprarenin in asthma, but for cases attended with lowered vasomotor tone. Others have confirmed his observations. The relationship of asthma with the gouty diathesis is well known; we know also that this condition is imperfect nuclein catabolism. Migraine is also related to gout; Thoma and others have reported cases in which relief followed the use of some adrenal extractive. Hay-fever, another disorder ascribed to a gouty diathesis, has been found by Cohen to be influenced favourably by suprarenalin, allowed to dissolve on the tongue. The effects were sufficiently marked in some cases to "induce and preserve comparative comfort." Adrenal extract has been found of value in neurasthenia by many observers, including Huchard. In cardiac disorders it has been highly recommended by several clinicians, including Mankowsky, Floersheim, and Deek. Mankowsky specifies that the most useful application of adrenal extract is in cardiac weakness and threatening collapse. Floersheim found it effective where our usual remedies had failed. Deeks obtained not only marked improvement in cardiac weakness, but disappearance of attending œdema. Boy-Teissier obtained

excellent results in cases of weak heart with general cyanosis and great cardiac dilatation.

Finally, in Addison's disease, the vitality is so reduced that, as stated by Rolleston, the cases sometimes emit a cadaveric odor. Here, the adrenals being the seat of destructive lesions, we should have in adrenal extract an infallible specific. Some clinicians have obtained marked benefit from its use; others have observed no effect. Some, including Senator, have noted no modification of the nitrogen output; some found that it was increased; others that it was decreased. In our literature, these results are recorded as discordant; but this is not warranted in the light of my views. They merely indicate that metabolism is more imperfect in some cases than in others, owing to greater destruction of the adrenals or of their nerves, and that where no perceptible effect is obtained from adrenal extractives it is because the supply is not adequate, both as to quantity and continuity, to restore the vital equilibrium—to compensate, in other words, for the loss of those organs which, I believe, sustain the vital process by supplying the tissues with oxygen.—*The Monthly Cyclopædia of Practical Medicine.*

Notes on Remedies Old and New.

BY

J. DOWLING ALLMAN, M.P.S.

HYDROGEN PEROXIDE (HYDROXYL).

This substance, a colourless liquid containing 10, 20 or 30 volumes of available oxygen, is obtained by treating peroxide of barium with hydrochloric acid. The 10 volumes is the official strength, and is now much employed by surgeons as a local application and as an antiseptic and astringent to ill-conditioned wounds, chancres and sores. Being a very powerful antiseptic and antiferment it has become a popular remedy for the treatment of septic throats (scarlatinal and diphtheritic), and is used in the form of a spray (1 in 2) in water, or as a gargle (1 in 10). It is likewise used and commended as a mouth wash in ulcerative conditions of the mouth, such as stomatitis, and leukoplakia, produced from irritation and excessive smoking; and as a deodorizer for the purpose of destroying foetid breath arising from a diseased state of the gums produced from carious teeth a two per cent. solution is an excellent application. Peroxide of hydrogen is also recommended by some eminent surgeons for checking purulent discharges caused by chronic suppurative inflammation of the middle ear, and for this purpose a two per cent. solution is the strength

generally used. Being such a very sensitive part it is important that the hydrogen peroxide be absolutely free from hydrochloric acid, which is almost invariably present in commercial hydrogen peroxide, and if dropped into the ear will cause intense irritation. "If the sample should contain traces of hydrochloric acid it may easily be determined with Congo red as an indicator. Ten c.c. treated with three or four drops of a one per cent. solution of that indicator should be coloured red by the addition of ten drops of Ca_2OH solution, equivalent in alkalinity to 0.25 c.c. of N_{10} KOH." (*Year-Book of Pharmacy*, 1906.)

In the 10 volumes strength of the peroxide of hydrogen be injected into the jaw in cases of necrosis, satisfactory results have been obtained, and lint saturated with the same strength solution and applied to gangrenous wounds destroys bacteria, and promotes granulation; in fact, as an all-round surgical dressing the remedy is now a favourite application with surgeons.

Peroxide of hydrogen having such decided antizymotic and antifermentative properties, has recently been taken up by various physicians and general practitioners in medicine as a therapeutic agent in the treatment of intestinal and gastric disturbances, and it is especially useful in those forms of gastric attacks with acid eructations, as it has the power of neutralising acid fermentation and destroying intestinal toxins. For this purpose it is generally administered in one drachm doses well diluted with water before meals. It is also used and has achieved a certain amount of success in cases of albuminuria, following an attack of scarlatina, pregnancy and pneumonia, and its use is also suggested by many clinicians in cases of diabetes, typhoid, scarlet fever, and other zymotic diseases.—*The Medical Times and Hospital Gazette*.

Carbolic Acid and camphor in the treatment of Suppuration.

Chlumsky's method of treating suppuration with a mixture of 30 parts carbolic acid, 60 parts camphor, and alcohol to 100 parts, has been adopted by the writer, who confirms all of Chlumsky's assertions in regard to the simplicity, harmlessness, and effectiveness of this method of treating all kinds of inflammations. It does not require trained assistance, and his experience in 96 cases of felons, phlegmons, leg ulcers, furunculosis, erysipelas, tuberculous fistulas, and infected wounds of all kinds was extremely favorable. The mixture is applied on a loose tampon, without an impermeable covering, and the length of treatment was found to be

very much shorter than by other methods. There were no disagreeable by-effects.

Among the examples cited was the case of a soldier with a tuberculous fistula in his neck which had resisted treatment for months. Under phenol-camphor treatment the fistula healed in twelve days. In another case an old leg ulcer on a soldier healed under three applications. The relief from pain and the feeling of warmth suggest that the benefit may be due to artificial hyperæmia, as in Bier's passive congestion; but the latter technique requires trained supervision, which is unnecessary with the phenol-camphor dressings. A folded mull compress impregnated with the phenol-camphor is placed around the focus and dry cotton over it, the whole held by a loose bandage. When the focus is incised a strip of mull impregnated with the mixture is introduced in the opening. C. Ehrlich (*Münchener medizinische Wochenschrift*, Bd. liii, No. 11).—*Journal of the American Medical Association*.

Chloride of Ethyl.

While a large number of papers upon this subject have appeared there has not been any very noticeable advance suggested or technique described. Two facts stand out, however, as commonly recognized—the one that the large number of inhalers which individual ingenuity has suggested is unnecessary; the other that although in point of safety ethyl chloride, when administered by skilled hands, comes between ether and chloroform, it is far from being an absolutely innocuous anesthetic, as some persons seem to wish the public to believe. It is indeed, matter for serious comment that it should be exploited by persons who hold no medical qualification and no experience or power to treat any complications which occasionally arise in administering any anesthetic. In the *Lancet* of November 25, 1905, a very able paper by Dr. Flora Murray appears. It deals with her experience of chloride of ethyl as an anesthetic for young children. The patients were aged from five days upward, and many had no special preparation and were weakly and ill-nourished. The operations were in some cases for the relief of conditions which had caused respiratory embarrassment, but even with these Dr. Murray found the anesthetic successful. She regards watching the respiration as the surest guide, the ocular reflexes in children being untrustworthy. As regards respiration, it is pointed out that, being a powerful respiratory stimulant, chloride of ethyl may, if too large doses are given cause apnoea and tonic contraction of the diaphragm, with a fatal result. She met with no deaths, but four children stopped breathing;

they, however recovered. Her method is to spray three cubic centimeters upon a sponge in a celluloid cone held near the mouth, as the breathing of infants is too feeble to evaporate the anesthetic if it is sprayed into a bag. Air is given when the narcosis grows deep, and more anesthetic added when signs of consciousness appear.

Upon the other hand, Dr. W. J. McCardie, who has done such excellent work with this anesthetic, traverses the immunity to danger in cases of respiratory embarrassment. He regards patients with obstructed breathing as bad subjects for chloride of ethyl. Narrating his experiments with various mixtures of his drug with chloride of ethyl, Dr. McCardie has come to the conclusion that the pure drug is better and more satisfactory than any such mixture. His experience is in consonance with that of many others, that such mixtures as the so-called somnoform, which contain bromide of ethyl, are by no means devoid of danger. The death rate is difficult to ascertain; Dr. McCardie suggests one in 10,000 for chloride of ethyl. Dr. Ware has met with six nearly fatal cases in 1,000 administrations. The dangers are respiratory failure (this is by no means uncommon), and if a concentrated dose is given for some time cyanosis and asphyxial phenomena may soon appear; fall of blood pressure occurs, which is lowered in spite of the bright color of the face and this often deceives the inexperienced; actual syncope is rare. Several deaths have been recorded during the year, but in some of these it is doubtful whether the drug was the only factor in bringing about the fatality.

Mr. G. W. Bamfylde Daniell gives a careful summary of his experience with this anesthetic in dental practice. He found that 5 per cent of his patients vomited. The difficulty in giving chloride of ethyl when prolonged operations about the mouth and its neighborhood are in progress has been overcome by an ingenious method, designated by Dr. G. A. H. Barton and described in the *Lancet* of July 8, 1905. Planchu advocates chloride of ethyl in obstetric practice and advises that it should be given from gauze held in the hollow of the hand. Gaudiana records 200 cases of which he kept notes. In one he failed to produce anesthesia, and in others he met with temporary respiratory paralysis. He used chloride of ethyl for patients with bronchitis, albuminuria and heart disease, but without dangerous consequences. Gaudiana found vomiting to be absent unless food had been taken recently. He convinced himself of the safety of this anesthetic as compared with bromide of ethyl, as under the latter, he asserts, twenty-four deaths have been recorded. Craig's experience coincides with this.—*Lancet*.

Menthol in Gastropathies.

Louis Amblard (*Journ. des Prat.* December 1st, 1906) has for the past three years systematically employed menthol in the treatment of various gastric disorders, especially those accompanied by pain. He finds that its effect is not limited to the relief of gastric pain, but that it can check vomiting. In virtue of its powerful antiseptic properties and its analgesic action on the mucous membrane of the stomach, it has proved of the greatest use in those cases where pain and vomiting have been troublesome features. In all cases of dyspepsia characterised by pain, vomiting, sensation of fullness after eating, and distension especially in those cases where there is no organic disease of the stomach, and in which these symptoms are the result of disturbance in the innervation or secretion of the stomach, menthol causes a marked amelioration of these symptoms; thus in chlorosis, in the dyspepsia of early phthisis, and in gastric neurasthenia, a marked improvement soon occurs. In the gastric crises of tabes menthol has proved most valuable in rapidly cutting short the attacks and allaying pains. In several cases of intractable vomiting in pregnancy menthol has proved most satisfactory in checking this troublesome symptom, after most of the other methods of treatment had been employed in vain. Even in some cases of simple ulcer or cancer of the stomach, where vomiting and pain have been marked features, menthol has given relief to these symptoms, and its use has never provoked hæmatemesis. In those cases of ulcer of the stomach where hæmorrhage frequently occurs, the drug has not proved of service either in allaying the vomiting or in checking the hæmorrhage. In prescribing the drug only small doses are to be given, from 0.1 to 0.2 grain being usually sufficient; the drug is best given in the form of a cachet with sugar of milk once a day, and followed by a draught of water.—*The British Medical Journal*.

Diuretin and Urea as a Desirable Diuretic.

A diuretic that stimulates the renal epithelium only is always desirable. Here caffeine, which is used so much, has the disadvantage of stimulating at the same time the vasomotor centers in the central nervous system. To obviate this evil cognac is usually added to the caffeine in order to retain the dilation of the blood vessels. The alcohol is of course objectionable frequently. J. Zajackowski had recourse to diuretin which he combines with equal parts of urea, in 0.5 grams (gr. 7 1-2) *pro dosi*, four, six, up to eight such doses in twenty-four hours. He recommends the remedy to be taken three hours after meals so that the HCl of the gastric juice should not set free the salicylic acid of the diuretin.

With the above combination Zajaczkowski obtained after three days' administration a diuresis three times stronger than before. The remedy served well not only in deficiencies of aortic and mitral valves, but also in hepatic contractions in which diuretics are usually inactive. Even in five cases with peritoneal exudations, which were tapped, the diuresis was stimulated with the combined remedy, so that the rest of the fluid was excreted in that way.—*Wien. Med. Presse*, in *Pharm Centrbl.* p. 243, 1906.

Calcium Salts in Epilepsy.

D. Linguerri (*Bull. d. Sci. Med.*, Bologna, December 1906), after trying various salt of calcium administered to epileptics in different ways, concludes that calcium carbonate, given twice daily in the form of a cachet containing 11 grs. is of real service in the treatment of epilepsy. His experiments deal with 5 epileptics, and extended over two years; his object was to determine (1) how far the treatment diminished the number of fits occurring per diem, and (2) how far it improved the mental condition of the patients. He alternated periods of two to four months during which calcium carbonate was given with similar periods during which expectant treatment was adopted. He finds that the daily average of fits is considerably lessened while the salt is taken, and that a very great improvement is to be observed in the mental and psychical conditions of the patients; they are less confused, irritable, and excitable while taking calcium carbonate.—*The British Medical Journal*.

OPHTHALMOLOGY.

On the Cure of Hypopyon by Drainage of the Anterior Chamber with a Horse-hair.

BY

PROFESSOR E. ROLLET,

Of the University of Lyons, France.

The innumerable methods described to combat hypopyon-keratitis render it difficult to say anything novel with regard to the treatment of that common and formidable affection. The method of Saemisch has not been replaced by any really new surgical technique, and one is simply limited to modifying the direction of the corneal incision. The inconvenience of the Saemisch method consists in the rapid closure of the corneal wound, with consecutive retention of the contents of the anterior chamber. In order to obviate this, Saemisch advised that the point of a fine probe

be employed to separate the edges of the corneal wound during the first few days after operation.

Each time that a surgeon evacuates a collection of pus he takes care to drain the cavity of the abscess. This has led me to think that it would be useful to initiate a similar procedure with regard to the eye, and that after the pus had been liberated, the anterior chamber should also be drained. The following describes the plan which I now habitually follow when dealing with hypopyon: the patient is placed on the operating table, and after local anaesthesia has been secured by cocaine and holocaine, the eyelids are separated by means of a speculum. The globe is steadied by fixation forceps, and with the aid of a cataract knife the cornea is punctured at a point on the limbus, about equidistant from the lower edge of the cornea and the margin of the pupil. The blade quickly passes through the collection of pus, and emerges from the limbus at a point directly opposite to the orifice where it entered. The knife is then withdrawn, but without severing the rest of the cornea between the two punctures, *i.e.*, that of entry and of exit. It is, in fact, the first step of an anterior sclerotomy, but without complete section of the flap.

The end of a piece of horse-hair, having a length of 5 cm. or 6 cm., is then introduced into one of the punctures in the cornea made with the cataract knife, passed through the anterior chamber, and guided out of the chamber by the other puncture. The piece of horse-hair projects about 2 cm. from each side of the cornea, as shown in the illustration. The eye is closed and bandaged, after the previous application of a little mercurial ointment. The drain is left in place for about 48 hours, and the pus (concerning which there is no necessity to be uneasy) follows the hair little by little by a process of capillarity, forming long filaments, as may be seen on removing the bandage for the first time. Step by step, the corneal ulcer simultaneously becomes clean.

After having carried out this operation, which I believe to be original, on two occasions, I have recently studied the question with my *chef de clinique*, Dr. Moreau, and we have conjointly published 17 cases in the *Revue Générale d'Ophthalmologie* of 30th November, 1906. Three new cases treated in this way encourage me to make the method more generally known, which I have pleasure in doing through the medium of THE OPHTHALMOSCOPE.

I recommend the new operation whenever it is thought necessary to incise the cornea, in order to evacuate pus from the anterior chamber. Speaking for myself, slight cases I still treat by means of subconjunctival injections of mercury. But when the pus lies near the lower border of

the pupil, I now always liberate it by surgical methods. It is the amount of the pus, therefore, which in any work determines whether the treatment shall be surgical or otherwise.—*The Ophthalmoscope*.

The Spirochæta Pallida, with especial reference to affections of the Eye.

BY

W. ANSTRUTHER MILLIGAN, M. D.,
*Pathologist To The North-Eastern Hospital
For Children, London.*

Amongst the many attempts that have been made to discover the specific organism of syphilis, none has attracted so much attention as the investigation begun by Siegel who discovered and described a flagellate protozoon—the cytorrhynes luis—which he believed to be the specific organism of syphilis. In consequence of this discovery, the Berlin Imperial Board of Health requested Schaudinn and Hoffmann to investigate the whole question of the presence of micro-organisms in syphilitic lesions. During the course of the year 1905, these observers published various papers indicating the progress made. By the end of the year they expressed the belief that they had found the organism which they believed was the specific organism of syphilis. Step by step this organism, the spirochæta pallida, had been found in various primary and secondary syphilitic lesions, but never in control experiments performed on non-syphilitic persons. Hoffmann summed up the results obtained by Schaudinn, himself, and others, as follows:—

The organism has been found:—

(1) In the syphilis of adults:—(a) in genital and extra-genital primary sores; (b) in genital and peri-genital papules, both secreting and intact; (c) in moist papules between the toes; (d) in papules and pustules on the skin, far removed from the genital organs; (e) in the papules of mucous membranes; (f) in lymphatic glands; (g) in splenic blood; (h) in blood taken from the ball of the finger?

(2) In congenital syphilis:—(a) in the pemphigus bullæ and skin papules; (b) in the liver; (c) in the spleen; (d) in the lymphatic glands; (e) in the lungs; (f) in the blood.

(3) In the primary lesions of monkeys that have been experimentally inoculated (Metchnikoff and Roux).

Schaudinn wrote that he was convinced that the organism occurs regularly in all forms of syphilis up to the tertiary stage, but in this latter

he had uniformly failed to find it up to the present. "I expect, however, that in the late form of syphilis, the spirochæta will be found in the less characteristic granule-like resting stage, which I have described briefly in my first publication with Hoffmann."

The organism, which is not a typical spirochæta, Schaudinn agreed with Veullemin, should be called, "Spirochæta pallidum." Still later, Hoffmann describes how the organism has been demonstrated in the tissues, by means of the method by impregnation with silver.

Shennan, of Edinburgh published papers on the Spirochæta pallida. In these he gives an account of the literature on the subject, and says that "it is astonishing with what unanimity this discovery has been accepted on the continent." He concludes by saying that "while there is a very considerable probability that spirochæta pallida bears an ætiological relationship to syphilis, we require to know more about the spirochætes in general, and to have better methods of distinguishing the many forms intermediate between the typical spirochæta pallida and the typical spirochæta refringens, before we can unreservedly accept this as a completely proved fact in pathology."

Sydney Stephenson contributed a brief note on the occurrence of the spirochæta pallida in syphilitic lesions of the eye, in which he mentioned two cases of keratomalacia under his care, where an organism identical morphologically with the spirochæta pallida was found. Up to the present, he wrote, most of the work in this direction has been experimental and he mentions such experiments carried out by Schulze, Bertarelli, Greeff and Clausen. It thus appears that the demonstration of the spirochæta pallida in Stephenson's two cases is the first recorded example of the presence of the organism in actual disease as opposed to experimental lesions of the eye.

Babs found spirochæta in the eyes of three syphilitic still-born foetuses.

With regard to the occurrence of the spirochæta in tertiary lesions, no definite information is as yet forthcoming. Amongst other papers published on this point may be mentioned those by Tomaszewski, Dontrepoint and Gronven, and Neisser.

Then, again, another important point is as to whether mercurial treatment causes the disappearance of the spirochætes, and on this point authorities are not yet agreed. Lipschutz, says that a short energetic treatment has no influence on the demonstration of the spirochæta pallida. Bodin states that they disappear during mercurial treatment.

The Organism.—The spirochæta pallida is an extremely delicate, actively motile, spiral-shaped organism. Its length varies from 4 to 20 μ (roughly equal to the diameter of a red blood corpuscle) and its breadth is about 0.25 μ .

It is made up of sharp narrow spirals about 8 to 16 in number, and these spirals have the peculiarity of being visible in the living organism, both while in movement and while at rest.

The presence or not of flagella is still undecided. Schaudinn found a long delicate flagellum at each end, and noted the absence of the undulating membrane found in other forms of spirochætes. With this opinion most observers are in agreement. The organism most likely to be confused with the spirochæta pallida is the organism known as the spirochæta refringens. This latter organism, amongst other places, occurs on moist and ulcerating syphilitic surfaces, and may then be accompanied by the spirochæta pallida. It differs from the latter in being thicker, and more distinctly refractile. Its curves are flatter and longer, and it possesses a vibratile membrane and no flagella.

Methods.—The demonstration of the spirochæta pallida can be carried out as follows:—

(1) From an exposed surface, by cleaning the part to be examined, and then either rubbing a stiff platinum loop over the surface until a copious supply of serum appears, or else using a sharp spoon and scraping the surface. Too much blood must not be in the film.

(2) From an enlarged gland, withdraw by means of a hypodermic needle, the juice from the interior.

(3) From the blood—by Noeggerath and Stachelin's method—*viz.*, take 1 c.c. of blood from a vein, mix with 10 c.c. of $\frac{1}{2}$ per cent. acetic acid in water—centrifugalise, and examine the deposit.

(4) From the tissues—by means of Levaditi's method.

(5) There seems no reason why the organism should not be demonstrated in syphilitic eyes by the withdrawal and subsequent centrifugalisation and examination of the aqueous humour. This, so far as I know, has not yet been done, although a suggestion as to its possibility was made eleven years ago by Stephenson.

The organism is extremely difficult to detect in the living state. When seen, its motility is found to be of a three-fold character, *viz.*, corkscrew, swaying, and bending.

Film preparations, after having been fixed, are best stained with Giemsa's stain, made up as follows (Emery):—Giemsa, 10 drops; distilled

"In July 1905 Dr. T. M. Nair, of Madras, asked me to make some sections for him of a nasal polypus. These sections, which were exhibited at the meeting of the British Medical Association at Leicester, showed that the polypus was due to a parasite. The impression then formed was that the parasite belonged to the Sporozoa, and specimens were submitted to Professor E. A. Minchin, of University College, London. On his return from Uganda, Professor Minchin and Mr. Fantham very kindly examined the sections, and Professor Minchin writes: "There is no doubt whatever that the parasite is the same as that to which we gave the name *Rhinosporidium Kinealyi*."

This parasite was first brought to notice by Major F. O'Kinealy in May 1894, but the first full description with a classification of the parasite was given by Minchin and Fantham in the *Quarterly Journal of Microscopical Science* of December 1905.

In regard to the clinical history of my case, I have very little information. The polypus arose from the septum of the nose, and on removal there was very troublesome hæmorrhage. Dr. Nair has had four similar cases. In all of them the bleeding was very profuse, and the polypus was growing either from the septum or from the floor of the nose. All the patients came from the same part of India—the small native State of Cochin on the West Coast, the State which has given the name to "Cochin Leg'.

HISTOLOGICAL APPEARANCE.—The tissue was studded with minute white dots which were quite visible to the naked eye, and could be dissected out. They were round or slightly oval, and had a somewhat chitinous envelope. Examination unstained showed them to be cysts which varied in size. The walls were homogeneous or hyaline-looking in structure, and of variable thickness—the larger cysts having thinner walls. The contents of the smaller ones were granular, while the larger were filled with definitely rounded bodies, suggesting spores.

The tissue had been fixed in methylated spirit. Sections were made in paraffin and stained with eosin and hæmatein, Heidenhain's iron hæmatoxylin, Leishman's stain, Giemsa's stain methylene-blue and eosin, safranin and light green, iron alum, and light green, etc.

The growth was polypoid in character, the surface being covered by several layers of epithelium, which was very much folded and indented. The cells showed marked evidence of proliferation, and mitotic figures were fairly abundant. At places the epithelium was invaded by leucocytes, mainly of the polymorpho-nuclear type and many of the cells showed definite phagocytosis to these leucocytes. Here and there, but not at all commonly, there were parasitic cysts completely surrounded by the epithelium, and also free spore-morule which appeared to be making their way to the surface between the epithelial cells.

Beneath the epithelial cells was a stroma of delicate fibrous tissue. At places this tissue was myxomatous, and at other parts it was extremely cellular. The cellular areas were not specially in relation to the cysts, but at places there were distinct

collections of polymorpho-nuclear leucocytes in which the spore-morulae were seen. The whole of the sub-epithelial tissue was very vascular, many of the vessels being quite young and newly developed. Haemorrhagic areas were seen, and in these spore-morulae were quite common. The histological appearances of the tissue point to a proliferation of the normal mucous membrane of the nose with its underlying tissue.

The cysts are present in great numbers in the sub-epithelial tissues. They vary much in size, in shape, and in the nature of their contents. The fully developed ones are mostly rounded; but others are oval, tubular, or branched. This irregularity in shape seems in most cases, at any rate, to be the result of pressure from neighbouring cysts. One fits into another so accurately, a bulging in one corresponding exactly with a depression in another, that pressure is the most likely explanation. At the same time, amoeboid movement of this trophozoite stage of the parasite may account for the irregularity in some cases, and some of the smaller cysts with their vacuolated protoplasm certainly suggest amoeboid forms. The cysts are on the whole most numerous immediately beneath the epithelium, and the fully formed ones nearest the surface. This arrangement, however, is not by any means constant; some fully developed cysts are seen quite deep in the tissues.

CHARACTERS OF CYSTS.—*Wall*.—This varies very much in thickness: the larger, fully developed cysts have comparatively thin walls, while some of the degenerated cysts, which are referred to later, have very thick walls. In specimens stained in Leishman's solution the cell wall in the developing and fully developed cysts takes on a dark purplish-blue colour, while the wall of the degenerated cysts, and that of many small ones which appear to be young forms which have aborted, stain reddish. O'Kincaly stated that there was a definite pore in the cyst wall. This was not confirmed by Minchin and Fantham. The figures before you show the spore morulae escaping from the cyst and the invasion of a degenerated cyst with fibrous tissue through a very definite aperture. The margins of this aperture in many of the cysts are rounded off, and the cyst wall is thinner at this point. Further, in some of the cysts where a pore cannot be made out there is distinct conical elevation of the wall at one point, and here the wall is also thinned. These appearances certainly suggest the presence of a pore; but we must admit that they may be explained on other grounds. As we shall have to point out later, in the cysts which show both immature and fully developed spore-morulae, the former are seen at one pole of the cysts and the latter at the opposite pole. The fully developed ones are pressing against the wall of the cyst, and these may cause bulging and thinning previous to rupture. The definite rounding off of the edges is not so easily accounted for on this view.

In preparations stained with iron haematoxylin and light green the cyst wall is seen to be made up of several layers.

1. An external thin layer which stains very intensely with the haematoxylin, and composed of fibrous tissue in which definite nuclei of spindle cells are seen. This is apparently derived from the tissues in which the cyst lies.

2. Internal to this is a very much thicker layer which stains green by this method, and appears with ordinary staining methods to be hyaline and structureless. In some of the degenerated cysts where fragmentation of the cyst wall is taking place it was particularly noticeable that the cleavage was in very definite lines parallel to

one another and in the diameter of the cyst. This suggested the possibility of the cyst wall being striated. This had been stated by Vaughan, but Minchin and Fantham found no trace of striation. In order to clear up this point various staining methods were tried, and though some gave faint indications of the striation, it was not until a combined stain of iron haematoxylin and Giemsa was used that this striation could be definitely made out. It is very likely that this striation is largely lost in hardened specimens on account of swelling of the envelope by the fixing reagent used.

This layer in some of the cysts can be split up into an outer more dense part, and an inner part staining more lightly with the green.

CONTENTS OF CYSTS.—1. *Small cysts* varying much in size, from 0.1 to 0.3 mm. in diameter. These are rounded or oval, and have distinct though thin cell walls. They are filled with an undifferentiated granular mass of protoplasm. In the smaller ones there is a pale nucleus, with a distinct nuclear membrane and a nucleolus which reacts to the chromatin stain with iron haematoxylin. In the larger ones the nucleus is not so definite, but there are irregular chromatin masses, varying in number, which may correspond with the divided nucleus.

2. *Somewhat larger cysts*, rounded or very irregular in shape, with granular protoplasm and one or more definite chromatin masses. These correspond with the trophozoite stage described by Minchin and Fantham.

3. *Large fully developed cysts*, 6 to 8 mm. in diameter. These are filled with spherical or ovoid bodies, the spore-morulae (0.2 to 0.3 mm. in diameter), which have a definite cell wall. Each spore-morula contains in its interior smaller rounded bodies, the spores, with a well-defined nucleus which reacts to the chromatin stains. The spore-morulae in each cyst are very numerous, closely packed together, but separated from one another by an alveolar structure, which will be described later.

4. *Various intermediate stages*.—(a) Cysts in which, especially towards the centre, there are numerous minute bodies reacting to the chromatin stain; these are apparently nuclei in an undifferentiated mass of protoplasm. These represent the early stage in the formation of the pansporoblasts.

(b) Cysts in which these nuclei have collected round themselves a certain amount of protoplasm and have become definite, rounded or oval bodies with a delicate cell wall and a central nucleus. Some cysts are filled with these bodies. In others they are especially seen at the periphery, and stages can be traced between these and larger spore-morulae.

At first, as has been stated, the pansporoblasts are small oval or rounded bodies with a single nucleus. Division of the nucleus now takes place (though no evidence of mitosis is seen), the pansporoblast enlarges and surrounds itself with a definite membrane. Division of the nucleus continues with segmentation of the protoplasm until we find within the wall of the pansporoblast four up to fifteen or sixteen spores. Each spore is a minute rounded body with a very thin wall and a central nucleus. Minchin and Fantham have pointed out that this development of pansporoblast to definite spore-morulae goes on progressively from the periphery to the centre of the cyst, the younger forms being at the periphery, where they are developed from an undifferentiated layer of protoplasm which lines the cyst wall. In many of the cysts the younger forms are at one pole and a progressive development takes place in many cases from one pole to the opposite pole of the cyst. Thus it would seem that the

development does not take place in the whole of the undifferentiated protoplasm lining the cysts, but only from one portion of it, and that polar in position.

At the periphery of some of the cysts the early pansporoblasts are seen to be separated from one another by an indefinite framework, but as one passes to the centre of the cysts this becomes less marked, though in some of the fully developed cysts there are traces of it round the spore-morulae, and in some, from which the spore-morulae have been freed either artificially or by rupture, the empty alveoli are quite obvious.

This framework is continuous with the capsule of the cyst. In its staining reactions it corresponds with the wall of the spore-morulae. There seems little doubt that it is made up simply of the residual protoplasm in which the pansporoblasts have developed and that the capsule of the developing spore-morulae is a condensation of part of this "cystal residuum." In fact, the cyst wall both of the spore-morulae and of the large cyst must be regarded as a condensation rather than a secretion. This might explain the greater thickness of the degenerated and undeveloped cysts—the actively growing or what we might call the "germinal," layer being in these cysts also converted into a capsule.

Further each spore-morula in the fully developed cysts seems to lie in a kind of bath of fluid or semi-fluid material which is also a part of the cystal residuum. When the cyst ruptures the spore-morulae are shot out into the surrounding tissues and are accompanied by this material which, in stained specimens, can be seen to be homogeneous and structureless. It extends from the cyst to the expelled spore-morulae, forming as it were a tail to a comet, the head being the spore-morulae.

5. *Degenerated cysts.*—It has been already indicated that in these the cyst wall is often very thick, and that it is not coloured by the aniline blue stains. The spore-morulae also degenerate, the wall ruptures and disintegrates and the spores escape. These then undergo a necrotic change, and the cyst becomes filled with a mass of irregular granules.

Cysts which have ruptured and discharged their contents also undergo degeneration. The cyst wall undergoes the changes already described, and the cysts become invaded by granulation tissue. The cyst acts as a foreign body, and the irritation set up causes a proliferation of the surrounding cells, and nature attempts in her usual way to remove the irritant. At places the new connective tissue can be seen invading the interior of the cyst through the aperture by which the spore-morulae have been discharged.

Fate of spore-morulae after they have been discharged from the cyst.—Some are seen free in the tissues, and are usually surrounded by a mass of polymorpho-nuclear leucocytes, at places forming minute abscesses. Others are engulfed by mononucleated cells.

This phagocytosis was seen in several specimens, but does not appear to take place to any marked degree.

The majority of the freed spore-morulae remained intact, but some showed disintegration of the capsule and discharge of the spores, which were seen in isolated spots free in the tissues.

No developmental stages could be traced. The spore-morulae are undoubtedly discharged with the secretions, but of their after history no clue was given in the

specimens. There are certainly very small cysts which correspond in size and shape with the discharged spores, and gradual transitions might be traced from those to the fully developed and ripe cysts. This development may take place, but it seems more probable that the spore-morulae are protected by their envelope, are discharged and undergo further changes outside the body or in the tissues of another host.

Classification of the Parasite.

Minchin and Fantham, who gave the name *Rhinosporidium Kinealyi* to the parasite, place it among the Protozoa in the class *Sporozoa*. On account of the spore formation commencing at an early period and proceeding continuously, during the growth of the trophozoite, they place it in the sub-class *Neosporidia*. The position in the sub-class they are not clear about. The amoeboid trophozoite and the minute spores suggested the *Microsporidia*, but there were very sharp differences,—as, for example, the absence of a "polar capsule."

After examining my specimens, Professor Minchin wrote: "The cysts in these specimens show in many cases a sort of coagulum or framework between the spore-morulae. If it were a framework it might be comparable to the alveoli of the *Sarcosporidia*."

We have already referred to this framework, which we consider quite definite. Further, we have pointed out the striated capsule and the polar development of spores, points which also ally this parasite with the *Sarcosporidia*. On the other hand, we have not found the spores to correspond with the chlamydispores or the gymnosporidia of that sub-class.

At present, therefore, the place in the sub-class must be left undetermined.

In conclusion, I have to express my indebtedness to Dr. T. M. Nair, of Madras, for permission to utilise the material; to Professor Minchin and Dr. Fantham, of University College, London; and to Professor Laveran, of Paris, for the trouble they have taken in examining specimens for me, and for their valued opinions on various points; and also to Mr. Richard Muir of this Laboratory for much valuable help in regard to staining methods, and for the microphotographs and drawings."

Since handing over the growth to Dr. Beattie we have seen two more cases of psorospermiosis. The growths removed from those cases are still with us, which we intend to send to Dr. Beattie at an early date.

We are glad to inform our readers that the **Pasteur Institute of Southern India, Coonoor**, has been opened for the treatment of persons who have been bitten by rabid animals on the 1st April 1907.

CORRESPONDENCE.

TO THE EDITOR,

"THE ANTISEPTIC."

Sir,

To my article on Guinea worm published in the January 07, number of this Journal, I have a few more remarks to add. (1) The operation of cutting down upon the worm with a view to extracting it, as suggested in my article, will be greatly facilitated by first passing a curved needle under the worm and thus fixing it before the incision is made. In this way not only is a good point to cut down upon secured, but the length of the wound will be minimised and unnecessary pain to the patient obviated. (2) If after a portion of the worm has been extracted, any difficulty be experienced in pulling it further. All that needs to be done is to wind up the worm on a piece of lint and make the patient walk about for 10 or 15 minutes and then to knead the part gently and make another attempt, when in most cases the worm will be easily extracted. If this does not succeed, the wound should be dressed and bandaged and a third attempt should be made after 24 hours, when the worm is certain to come out without any difficulty whatever. (3) To successfully extract the worm without breaking it requires some care and practice. The traction should be made not by continuously pulling at the worm, but by alternately pulling and relaxing it with a gentle and rapid motion.

I shall be glad if your readers will give my suggestions a fair trial and publish their experience in your widely circulated journal.

Yours faithfully,

D. M. KUMARASWAMI PILLAI,
Hospital Assistant, Local Fund Hospital,
Yemmiganuru, Bellary District.

ACKNOWLEDGMENTS.

We acknowledge, with thanks, receipt of the following journals:—

The Polyclinic. The Bristol Medico-Chirurgical Journal. The Medical Brief. The International Journal of Surgery. The California Medical Journal. The American Journal of Clinical Medicine. The Dietetic and Hygienic Gazette. The Good Health. The Indian Medical Gazette. The Practical Medicine. The British Journal of Children's Diseases. The Sanitary Record and Journal of Sanitary and Municipal Engineering. The Northumberland and Durham Medical Journal. The Canada Lancet. The American Journal of Ophthalmology. The China Medical Missionary Journal. The Medical Review of Reviews. The Post-Graduate. The Therapist. The Canadian Practitioner and Review. The Australasian Medical Gazette. The Caledonian Medical Journal. The Montreal Medical Journal. The Louisville Monthly Journal of Medicine and Surgery. The Monthly Cyclopædia of Practical Medicine. The Buffalo Medical Journal. The Ophthalmoscope. The Dental Era. The Madras Law Times. The Interstate Medical Journal. The United India and Native States. The Medical Notes and Queries. The Calcutta Medical Journal. Folia Therapeutica. The International Therapeutics. The American Journal of Surgery. The All-India Hospital Assistants' Journal. The Hospital Assistant.

THE ANTISEPTIC.

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Original Articles.

* DIETING AND COOKING FOR THE CONSUMPTIVE
AND FOR THE THIN AND UNDER-NOURISHED.

BY

THOS. BASSETT KEYES, M. D., OF CHICAGO.

Chairman of The First Organization Committee of the American Congress of Tuberculosis, and one of the Vice-Presidents of The International Congress of Tuberculosis, St. Louis Exposition, 1904; One of the Vice-Presidents of The International Congress of Tuberculosis, N. Y., 1906, and Chairman of its Section on the Relation of Insanity to Tuberculosis. Formerly Editor of the "Tubercle," a Journal on Tuberculosis, Etc.

[This is the third contribution we have been able to present to our readers from Dr. Keyes, now recognised as one of the world's foremost authorities on tuberculosis. The article is written as supplemental to the treatment which he has worked out and advanced in former articles, among which may be mentioned those which have appeared in *The Antiseptic*, viz: The Cure of Consumption with Subcutaneous Injections of Oils, Dec. 1906, and The Pathology of Consumption Indicates the Use of Oils injected Subcutaneously as a Cure: *The Antiseptic*, 1905.

That Dr. Keyes has always had a good knowledge of consumption is shown from the fact that he was one of the first, if not the first, to recommend tent colonies for the tubercular. His knowledge of the effect of out-door tent life comes from practical experience, having had many patients under such treatment at his Summer Camp in the pines of Northern Wisconsin. But, says Dr. Keyes: "By the injections of oils into the tissues we build up nutrition so rapidly that the disease can be cured by this method in any climate, and is far in advance of out-of-door tent life, as a cure, the latter being of benefit only so far as it influences nutrition." Dr. Keyes reports many cases that he has cured in Chicago, with

* Specially contributed to "The Antiseptic."

subcutaneous injections of oils, some of which gained as high as one hundred pounds and recovered from well formed cavities in the course of several months treatment. His article on dieting is therefore of great interest and will be appreciated by our readers.—Ed.]

CHAPTER I.

Nutrition in the Prevention and Cure of Consumption.



MAKE the assertion that tuberculosis is a disease of mal-nutrition, and while the presence of the germ confirms the diagnosis, before the germ can grow it must find a suitable soil, there must exist a pre-tubercular condition. It is estimated that all breathe in a great many of these germs but that they cannot grow in a healthy, well-nourished individual. People who have consumption do not eat fats, oils and cream in sufficient quantities. The first requisite in an attempt to cure tuberculosis has been, for many years and particularly of late years, to feed the patient on various oils, and the most successful sanitariums have adopted a process of food forcing, using the fats of meats, butter and cream as the principal foods to be relied upon to effect a cure, each article of diet being selected for its fat-producing and strength-giving properties. To this out-of-door life has been advocated, because it promotes appetite and the out-of-door life is conducive to place the body in condition for the absorption of more fats.

To maintain nutrition has long been considered the prime requisite of cure; and an increase of weight is an indication that nutrition is overcoming the disease, and as weight increases there comes strength, and the passing away of the other distressing symptoms such as the products of the disease, expectoration of mucus, fever, and finally cough. Professor Osler has stated that the arrest and cure of the disease is entirely a matter of nutrition and that the whole object of treatment is to fortify the patients' constitution against the inroads of the disease so that the individual cells of the body have the stamina to fight against and destroy the tubercle bacilli. Regarding tuberculosis, Dr. J. H. Elliott, *Canadian Journal of Medicine and Surgery*, March 1903, says that nutrition is dependent upon the proper assimilation of food, while improvement must be proportionate to the increase in the amount assimilated. All therapeutic measures, says Marfan, should be devoted to the end of nutrition, and the earlier such measures are instituted the greater the prospect of cure. The methods of Dettweiler, von Leyden and Hoffman, of Germany, depend for results upon nutrition, and to this end they have advocated forced diet

regardless of appetite. If the patient was to recover he must eat. Out-of-door life was important inasmuch as it supplies to some extent the appetite.

It has been said of the evolution of living matter, that it is born, grows and dies. This is true of all living matter, whether it be animal or vegetable, man or the tubercle bacilli. There are many conditions which will advance living matter more rapidly towards death which is as certain as others; on the other hand, there are many conditions which will prolong the life of living matter. Living matter, in all its varied forms, is characterized by its power of assimilating such nutritive material as is essential for the maintenance of its vitality, and when this power ceases, it dies, whether it be man or the minute tubercle bacilli.

It is proved conclusively, that before the tubercle bacilli can grow, it must first find a suitable individual who possesses the soil, that weakened non-resistance of tissue which comes from mal-nutrition, for if it were not so, all would have succumbed to the disease. If the weakened cells of the blood, which carry nutrition throughout the system, had been supplied with the material which was so essential to the organs and all the body to be in a healthy condition, so as to resist disease and repair itself, then tuberculosis never could have affected the body. By a proper nutritious diet we build up the body, so that there is no soil for the growth of the tubercle germ. On the other hand, the weakened individual succumbs to the disease.

The germ maintains its vitality from impoverished conditions. Conditions which produce vitality of the individual are incompatible and directly opposite to the conditions which give vitality to the germ. When the nutrition and cell activity of the body are built up to the highest point, it is inevitable that the germ dies naturally through decline of those conditions upon which it fed. Life and vitality of the human being are dependent upon a sum of forces, the principal of which is the blood. The blood furnishes the nutrition of the body, and is dependent upon proper aeration—and proper nutrition from food, to carry on the metabolism of the tissues. The blood is composed largely of living cells, which are its essential workers, and are enabled to perform their functions by the volume of fluid which rides them to the tissues, and for aeration to the lungs. Oxidation, or the repair of the tissue and displacement of old tissue, is one of their functions.

That which characterizes living matter is its instability, as manifest in its growth, assimilation of other matter, its irritability, motility, and power of reproduction. By the power of assimilation, living bodies or cells of the blood unite with such affinities with which they come in contact.

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All these powers depend upon nutrition. If the cells of the blood do not come in contact with such nutritious affinities, in sufficient quantities, they cannot grow or reproduce themselves as rapidly, and like all living matter, adapt themselves to circumstances, as to number, length of life, and amount of nutrition absorbed.

Because of the power of assimilation upon which the vitality of living matter depends, the amount of nutrition which it receives greatly affects its character and appearance of its elements, sometimes identical with itself, according to the amount of nutrition upon which it grows. Nutrition affects the living blood cells directly, by feeding them so that they are enabled to grow, both in size and numbers, and increase their strength and working powers. The presence of nutrition is necessary to feed these blood cells, and for the formation and growth of new tissue. The power of attraction and assimilation of the blood cells is the power alone which furnishes and carries on nutrition to other parts of the body, and sustains life, and through this power furnishes the elements of all tissues of the body, and is the characteristic of all living matter.

If nutrition is not furnished by proper foods, then the blood cells cannot exist in numbers sufficient to ward off disease. By proper nutrition the blood cells find for their growth or repair, or for the nourishment of other tissues, that which they readily appropriate.

Life is dependent upon a constant transformation of matter, which assures to it a proportionate and constant reparation, and it is by this that we can interpret all the processes of growth and repair, while, on the other hand, conditions of disintegration and destruction are due, particularly and principally, in diminution of nutrition.

Nutrition is, therefore, the principal part in the maintenance of life. Through nutrition, living matter is enabled to live, develop, and reproduce itself. When living matter is no longer nourished it dies. If the blood is not nourished it cannot maintain itself, to say nothing of maintaining the strength and resisting powers of other organs. It has little to give, it has less to change and repair, and, in proportion to the function of the organ, will correspond a diminished quantity of functional power. We have said that the body is nourished by the blood, which, in turn, gathers its nutrition from the food we eat. If, for any reason, proper food is not eaten or assimilated, then the blood lacks in nutrition.

The vital organs of man differ so as to constitute, as it were, a number of individuals, and their life, as of the smaller cells of the body, are dependent upon nutrition. This is true of the lungs, as of all protoplasm. There is a constant change of worn-out tissue, and, as the lungs

1907.]

never cease working it is reasonable to expect that they demand the highest amount of nutrition, which they gather only from the blood.

The blood must contain nourishment for the lungs' vitality and repair of their tissues, and for the formation of connective tissue, all of which can be derived from fat tissue. The adipose tissue of the body yields first to supply nutriment to more vital tissues.

Temperament and diathesis are terms which have been used in connection with the disease tuberculosis, indicative of a dynamic character of the organism relative to the individual variations of nutritive activities, and have been used synonymously to an inherited tendency to mal-nutrition. We have only to apply this condition as another evidence for nutrition for the prevention and cure of consumption.

Lung tissue has been placed high in the hierarchy of differentiation of elements necessary for its reproduction, and, as a consequence, lung tissue is often healed and replaced by connective tissue, which during its formation, is but little differentiated from fat tissue, and in its growth, enjoys a relative and corresponding dependence to the formation of the latter tissue, which repairs the lungs, and contributes by itself, pure and simple, in the formation of a cicatrix, which takes the place of the unregenerated elements of the lung, and this increases its volume and functional activity, while the elements of connective tissue will change from their common origin and assume the habits and tendency of elasticity, etc., of the lung tissue.

The formation of connective tissue being similar to the formation of fat tissue in its early stage, that which will increase the nutritive properties of the blood must aid in the formation of this tissue and the healing of diseased tubercular areas.

To prevent consumption the people must be educated as to the value of living upon a liberal diet, of fats, butter and cream, and by so doing use the remedies which cure the disease.

Consumption as its name implies, is a disease of progressive wasting, the pulmonary variety being characterized, first, by an impoverished system, due to an abhorrence or to the non-use of fats in the daily diet, which gives rise to a variety of pre-tubercular symptoms. The system being weakened and impoverished, the lungs are not able to gather the nutrition from the blood which is their only store for taking material necessary to their life and repair, and being organs which never rest, but are always active, even though the body sleeps, they require great nutrition for their wear, and the blood is unable to give that which it does not possess in its weakened and impoverished state. The necessary food

has either not been eaten or it has not been assimilated, and the unfed, weakened, vitiated lungs, are in a condition to furnish the soil for the growth of the tubercle bacilli.

The war against tuberculosis has been going on attacking the enemy in open field, devoting all efforts in educating the people as to the germ, giving little thought to building up the defensive powers of the body, so as to withstand this germ. But if we are to be successful in stamping out the disease we must build up the body. This can be done by eating fat foods, which makes us immune from the disease.

CHAPTER II.

Mal-nutrition as a means furnishing the soil for the disease Tuberculosis. Fat Foods in its prevention and cure as pointed out by the history and literature of Tuberculosis of all centuries.

INTRODUCTION.

Tuberculosis is and always has been a subject of much scientific discussion because, as is indicated by ancient literature, it has been the most prevalent disease of mankind, and while the human race has clamored loud and long against it, it would seem that little effectual good has come in the prevention of the disease. And why? Because while the literature of all centuries has indicated and pointed to the fact that the disease was one primarily of mal-nutrition, and that super-abundant nutrition has proved most valuable in its treatment, these facts have not been as forcibly impressed in a practicable way as they should be; their principles of application have not been thoroughly understood or studied out. Tuberculosis can be prevented by building up the defensive powers of the system with a proper diet; then the germ cannot produce the disease. In the Twentieth Century Practice of Medicine, a modern text-book, the statement is made that the germ will not grow in the healthy individual even though breathed into the lungs.

The Index Catalogue of the Library of the Surgeon-General's office, U. S. A., vol. 11, 1890, under the head of "Phthisis" contains seventy-nine pages giving the titles of works upon this subject, among them being about 1580 articles (estimated) in the English language, while in vol. 14, of 1893, under the classification of tuberculosis, which is a distinct classification from the former, we find 55 pages of titles including about 1,100 essays in the English language on tuberculosis. This is the last classification of the Surgeon-General's Catalogue, but taking the Index Medicus from that date we find in the English language by actual count during

the year 1894, under the classification of Phthisis, 88 essays, and under Tuberculosis, 84. In the year 1895, under Phthisis 27, under Tuberculosis 24, in the year 1896, under Phthisis 56, under Tuberculosis 96, in 1897, under Phthisis 138, under Tuberculosis 130, in 1898, under Phthisis, 94, under Tuberculosis 141, in 1899, under Phthisis 158, under Tuberculosis 187. Thus to the year 1900, there have appeared in the English language more than 3,900 articles upon the subject.

As the Index Medicus is no longer issued we will turn to the Medical Review of Reviews and we find there about 2,000 leading articles indexed under the headings of consumption, phthisis, and tuberculosis, estimating that among them are at least 700 in the English language. Most of these articles are contained in the Newberry Library of Chicago, it being the second largest medical library in the United States, and in my endeavors to find all that has been written on the practical treatment and cure of this disease, I have during the past ten years read all of the articles on the subject, both special books and those found in various journals. This article, however, is not to take up the practical drug treatment of tuberculosis, though it would be unjust to that vast army of writers to say that there had not in all these writings been suggested many practical treatments, the knowledge of which in the management of this disease, will at the proper time often prove useful. But if such treatments are not given with judgment which comes from experience in the treatment of many tubercular cases, such drug treatment will often be harmful rather than beneficial, or without effect owing to its being improperly carried out from a lack of understanding of the treatment, or of the disease, and of what can and should be accomplished under varying circumstances. It would necessarily be inferred that in the taking of notes on the practical treatment of this disease from the English literature of all the centuries that much practical knowledge should be gained, and in a future issue of this journal I shall try and classify and arrange the practical drug treatment of the disease, but in this paper it will be my endeavor to unravel the thread upon which the whole wofe and superstructure of the literature has been founded, and that is that the disease from earliest antiquity to the present date has always been looked upon by many as one primarily of mal-nutrition, and that supernutrition has formed the basis and most important point in its cure, and that nutrition, in the form of fats and oils.

As journal articles are often special, to prove the point that mal-nutrition is the first and most important factor, we would gain much by referring to such special articles, but this is not the purpose of this paper and I shall refer only to the standard text-books on Medicine, as these should

represent the opinion of the majority of educators on our subject, so that the extracts which I shall make from time to time will be taken either from their chapters on the subject or special text-books on the same.

For much of the early medical writings I am indebted to the labors of the Sydenham Society of London who have translated the works of Hippocrates, Aretaeus, Palus Ageneta, and parts of Gallen, Phases and other ancient authorities.

History of Phthisis.

In commencing the history of phthisis we shall begin by following the course of events of a subject which is as old as history itself; even before the disease had a modern name it was written about as a wasting disease and all subjects of mal-nutrition were thought to be afflicted with this disease. As such, it was described by the ancient physicians of Egypt, Assyria, then by the writings of Moses in Leviticus, but we must pass by what might be said of the manners and customs of these ancient people, when medicine formed part of the priest-craft of early nations, of those semi-fabulous ages in which tradition run riot, of what might be said of the early practice of medicine among the Jews, of the writings, which recent discoveries show that Hippocrates, 400 B. C., learned much of medicine from his predecessors, he who was skilled in all the arts and sciences of his day and from whose time medicine assumed the rank of science, must have been well grounded in the learning of medicine from his accurate description of this and other diseases. The Hippocratic face or countenance of the tubercular from Hippocrates' description has followed largely through the literature on the subject in the description of the symptomatology of the disease, and is the face and symptoms of those who do not live upon a proper diet. Indeed, I observe this form of countenance among those who do not eat a sufficiency of fats. You will find it an accurate guide. A sharp nose, hollow eyes, temples depressed, the ears cold and contracted, the skin above the forehead hard, stretched and dry, all the face of a greenish color or black or livid are mortal signs.

Hippocrates also mentions cases of consumption which he believes to be due to lack of diet and a hard life. It is interesting to note that the disease was described more particularly as one characterized by gradual loss of weight, and those most frequently subject to this disease, being the smooth, the whitish, the blue eye, the red haired; those with the scapulæ having the appearance of wings, etc. Pus formed and was expelled by coughing: this pus, it was thought, came indirectly from the brain, mucus distilling or falling from the palate and pharynx into the

1907.]

lungs, there producing suppuration and ulcers. Hippocrates believed the disease often followed and led to suppuration of the lungs.

We shall now follow this thread of mal-nutrition, pausing only occasionally to note some distinct advance.

Celsus, 50 A. D., described three forms of the disease, viz., the first due to lack of nutrition, the second cause which is only a modification of the first, as the effects of chronic disease, poverty, injurious medicines, etc. But the third cause undid his other good definitions, viz. *Tertia est longe que periculosissima species quam Graeci nominarunt*. It begins in the head, is distilled into the lungs, which it ulcerates to cause fever, which when quieted recurs.

Aretaeus, 50 A. D., the Cappadocian, mentioned many of the prominent truths which latter day science proves; among these we may mention: "The habits most prone to the disease are the slender, those in which the scapulæ protrude like folding doors or like wings, and those who are pale and have narrow chests." His treatment was mainly dietetic. He recommends sea voyages as benefiting gestation; he says, "After the gestation, having rested, the patient is now to be annointed with fat oil."

The prevalence of the disease and its association with thin and under-nourished tissues is shown by the author of this extract. "For if one of the common people see a man pale, weak, affected with cough and emaciated, he truly augurs that it is consumption."

We may note that a contemporary, Isocrates, made such observations as to show the communicability of the disease and it was held as such by him and that Vegetius, the veterinary surgeon, remarks that tubercles like boils form in the lungs of cattle.

Galen, 140 A. D., recommends his patients to dry climates, Vesuvius being a favored locality both for its sea air and sulphur. Galen describes the phlegmatic temperament as being attended with a soft and slightly tremid skin. He contributes the disease in their case to a cocochymy, that is to say, to cachexia.

Pliny speaks of navigation as beneficial to gestation and a popular remedy in phthisis.

Avicennas' treatment consisted in giving large quantities of asses' and goats' milk, and in general was like that of Aretaeus.

Haly Abbas prescribed the milk of asses in the morning and at night the syrup of poppies. He also praised goats' milk. Alsaparavius approved in general of a milk diet.

Rhases, the Arabian, described several varieties of consumption and in his treatment strongly recommended the milk of asses.

The writings on consumption were nearly abandoned by men of note, for the Medical Historian finds little and nothing new concerning the disease for a period of 1,400 years, all accepting the assertions of their eminent predecessors, even though the disease remained incurable.

Early in the seventeenth century, interest was again awakened in the subject through the study of anatomy and observations commenced as to the correct pathology of the disease. It would be interesting to note the steps of many who gained eminence by their devotion to the study of the pathology of this disease and to observe the hindrances placed in the way of advancement by men who would hear of nothing but their old teachings. Hard it is for unthinking man to change who has accepted unfounded teachings as truths, but the rising sun could not be thrust back with the gates of the morning, though the accurate description of tuberculosis was nearly one hundred years in advance of its recognition and acceptance; even then the eighteenth century closed with ignorance and bigotry, for the vast majority still clung to the ancient views of the Grecian fathers. The principal literature of this period was devoted to the study of the tubercle, and while it is valuable and interesting, we must again take up the thread of malnutrition and unravel it from the various early text-books.

In 1809, "The Physicians Vade Mecum" by Robert Hooper, gives much attention to the Hippocratic countenance and habit which we have before described.

B. Rush, 1818, 'Medical Inquiries and Observations' says, "I shall begin by remarking, that the pulmonary consumption is induced by predisposing debility."

Wm. Cullen, M. D., 1822, 'First Lines of the Practice of Physics' says, p. 499, "There must be perseverance in such measures as are calculated to give strength and tone to the system."

George Gregory, M. D., 1829, 'Gregory's Practice,' p. 424, says, "It occurs for the most part in that peculiar habit of body (the scrofulous) which is characterized by a delicate organization of blood vessels"; page 434, "The diet of a person who has shown a disposition to phthisis should be nourishing."

J. Coster, 1831, 'Physiological Practice' (translated from the French) page 131, says, "But experience has demonstrated that the predisposition, the peculiar irritability of which we speak, is most frequently found among individuals who have the constitution which has been

named phthisical, the character of which are the following: narrow chest, long and small neck, slender limbs, a tall thin stature, delicate skin, circumscribed redness of the cheeks, the lymphatico sanguine temperament."

John Armstrong, M. D., 1837, 'Armstrong's Practice of Medicine' in his discourse on consumption says that "tubercles are found in the lungs of the lowest classes, because the diet is too spare, because they breathe bad air, and because the clothing is deficient in the higher ranks, because the diet is complicated, because the clothing is deficient, and because the habits even of the children of this class are dissipated."

Robby Dunglison, 1842, 'The Practice of Medicine,' among the causes of tuberculosis says: "Faulty alimentation is doubtless, also one of the important extrinsic causes of phthisis and of the tuberculosis condition. Exclusive vegetable diet, or a defective supply of animal food, has been regarded specially obnoxious."

Wm. A. McDowell, M. D., 1843, 'A demonstration of the curability of pulmonary consumption in all its stages,' says, p. 77, as to causes: "All such matters and things, then, as tend to interrupt nutrition, or to obstruct excretion are exciting causes to a degenerate condition of the blood which is the proximate cause of tuberculous disorders."

John Elliotson, M. D. 1844, 'The Principles and Practice of Medicine,' p. 798, regarding causes of consumption says: "There can be no question but that it is greatly predisposed to by bad food." He gives Hippocratic description of mal-nutrition above described.

J. C. Massie, M. D., 1854, 'Southern Practice of Medicine' has little to say about consumption and nothing as to its cause. He recommends and says "Cod-liver oil and gentian are highly extolled by the English physicians and I think deservedly."

George B. Wood, M. D., 1858, 'A Treatise on The Practice of Medicine,' 2 vol., p. 87, says, "Nature and causes: Phthisis does not consist merely in the disposition of tubercles in the lungs, and its consequences. There is, besides, a morbid state of system which precedes and attends the disposition of tubercles in the lungs, and its consequences, and upon which it probably depends."

Thomas Watson, M. D., 1858, "Lectures on The Principles and Practice of Physic," p. 158, says, "I have lately met with the following curious statement bearing upon this question as it regards the human animal: According to the very trustworthy report of Dr. Schleusner, who was sent by the Danish Government a few days since to investigate the sanitary condition of Iceland, no combination of what are commonly

accounted the predisposing causes of consumption and scrofula could be more complete than that which exists among the mass of the Icelandic peasantry. Whole families are huddled up with their sheep, not only during the night but during the greater part of the day, for half the year in most miserable hovels, destitute of any ventilation but that afforded by the chimney. Their clothing is not once removed or changed during the whole of that time, their food is scanty and the external atmosphere is both cold and damp. The unhealthy condition of the population is evidenced by its extraordinary liability to epidemic disorders, and by its want of increase or even in some districts, by its absolute diminution. And yet, amongst this remarkable people, the most uneducated peasantry in Europe so far as regards what is commonly accounted education, scrofula and consumption are unknown." The writer (in the Westminster Review) ascribes this immunity to the highly oleaginous nature of their diet, which consists in great part of the oily bodies of piscivorous birds.

Wm. Aitken, M.D., 1863, 'The Science and Practice of Medicine' p. 380, vol. 2, says, "For there can be no doubt that in the tubercular or wasting disease, as well in those of the diathetic order, there is a latent condition existing before the tubercles are apparent. The relation of the nutritive and other morphological changes between the solids and the fluids of the body has everything to do with the development of the tuberculous state." Page 425, "The indications of general treatment are therefore, first, *to improve nutrition, which is the cause of the tuberculosis cachexia, and of the exudations assuming the character of tubercle.*

"To fulfill the first of the indications it is of all things important that fatty matter be assimilated in large quantities, and it appears that such are most readily absorbed and assimilated when in the fluid condition." Page 428, "Besides cod-liver oil other fats and oils, where they can be taken and assimilated, are sure to be followed with benefit."

Virchow (in 1864-65) the eminent pathologist, in his lectures at the Berlin Institute of Pathology, believed that two factors were to be borne in mind in regard to the prevention and the cure of the disease, viz., the avoidance of the predisposition and of all irritation. These points, he said, were to be secured first by improvement of nutrition, by cod-liver oil, sojourn in the open air, moderate exercise, care of the skin, etc.

Thomas King Chambers, M.D., 1865, 'The Renewal of Life,' says: "The tendency of the formation of tubercle resides in the constitution of the individual; that this tendency may be either hereditary or acquired at once; that the circumstances which quickest develop this tendency

are the same as contribute to anæmia, want of supplies for the formation of tissue, viz., starvation, bad air, deprivation of light, exposure to cold without power of resistance, fatigue, previous illness, in short all depressants of the powers of life." After citing a number of cases cured, he says: "Where there is a lack of appetite it will return by frequent feedings." He continues: "Leave the respiratory organs alone, and direct your thoughts to the organs of nutrition, the stomach and bowels, which will receive with thankfulness and return with interest any care which you may bestow upon them. It is truly by aid of the digestive viscera alone that consumption can be curable. Medicine addressed to other parts may be indirectly useful sometimes, but they commonly impede the recovery, whereas, aid judiciously given in this quarter is always beneficial and usually successful. The chest is the battle-field of past conflict, the stomach the ripening ground for new levies of life." He recommends cod-liver oil, and it will be seen that all his efforts were directed at building up nutrition.

Chas. J. Hempel, M.D., 'Homœopathic Theory and Practice' p. 794, "An excellent remedy, or rather palliative, in pulmonary consumption is cod-liver oil."

Thomas Hawkes Tanner, M.D., F.L.S., 1866, 'The Practice of Medicine' p. 108, "Tubercular diseases are not only preceded but are frequently accompanied by a discorded state of the primæ viæ, such as,—billiousness, acid eructations, flatulence, a general bad appetite, conditions which are so constant that some authors speak of them as *strumous dyspepsia*." Page 370, Treatment: "When the disease is present, when tubercles have become developed in the lungs, we must endeavor to improve the general nutrition." He recommends cod-liver oil, by mouth, rectum, and by innunction, also other oils and fats in general.

Dr. Herman Eichhorst, 1866, 'Hand-Book of Practical Medicine' vol. 4. p. 266, "In factory towns and cities, where proletariat supports on scanty food its overtaxed life in damp, dark, crowded cellars, it is commonest. Scarcely any disease is so much affected by the influence of constitution." He recommends cod-liver oil.

Archibald Billing, M.D., 1868, 'First Principles of Medicine' did not believe in the cure of phthisis though he thought "there were many palatives and believed the system expelled the tubercles by their softening into a cream like condition and in exceptional cases if the system were strong the patient recovered"; on page 642, he mentions a case of pluro-peripneumony, the general symptoms were cough, muco-purulent expectoration, hectic fever, and emaciation. Abundant nourishment cured the patient in a few months.

Bernhard Baehrm, M. D., 1869, 'The Science of Therapeutics:' According to the Principles of Homœopathy, p. 658, vol. 2.: "The formation of these deposits or tubercles depends in most cases upon peculiar conditions of the organism with which we are almost unacquainted; it is very questionable whether tubercles can ever be formed without some constitutional anomaly. In almost every case tuberculosis can be demonstrated as developing itself under the following circumstances: It may result from a deficient supply or the bad quality of the food in the same manner as has been indicated for scrofulosis."

Dr. Felix von Meineyer, 1872, 'A Text-Book of Practical Medicine:' "That feeble and ill nourished persons should be in far greater danger of becoming consumptive than vigorous, well nourished ones, will not appear extraordinary from this point of view. Daily experience teaches us that a bad state of nutrition is usually accompanied by a feeble power of endurance of noxious influences. But delicacy and liability to pneumonic and other inflammatory disorders are not the only distinctive marks between feeble, ill nourished subjects and those who are well nourished and strong. All the inflammatory derangements of nutrition occurring in the former class give rise to a very profuse formation of young, indeterminate and perishable cells. It is said of such persons, that their flesh does not heal, that is, that a trifling wound is to be followed by severe irritation, and copious suppuration of the wounded part. This peculiarity is partly attributable to an increased irritability which accompanies constitutional weakness, and partially to the fact that badly nourished or ill developed organs when inflamed are more prone to the formation of cells of a decrepit and perishable nature, than to the formation of such as are capable of development into new tissues. Among the influences by which a liability to consumption is acquired, or by which a congenital predisposition to it is aggravated, that of an insufficient or improper diet stands first. Feeding a suckling babe with bread, pap, etc., instead of the mother's milk, may sow the seeds of the malady. An erroneous regimen is often kept up throughout the entire period of childhood. The child is ill fed ("verfüttert") as the laity say, and consequently acquired a feebleness and susceptibility to disease identical with a scrofulous predisposition. The comparatively greater prevalence of consumption among the poor than among the more well-to-do classes is in a great measure dependent upon the wretched diet of the former, which consists chiefly of vegetables." He recommends cod-liver oil.

Ziemssen, 1876, 'Cyclopædia of The Practice of Medicine,' vol. 20, p. 488: "Bad air and improper food generally go together, and are the common causes of the high percentage of mortality of consumptives

among the poorer classes in large cities;" page 492: "Food of poor quality promotes the occurrence of phthisis, not only by inducing inanition, etc. The poorness in the quality of the food exerts especially an indirect influence upon the production of consumption;" page 609: "When fat is used in an easily digested form, such as cod-liver oil, good butter, or milk fresh from the cow, its presence in the affected blood-vessels and lymphatics, whose endothelium forms the standing point for the microscopic miliary tubercle, may so improve the nutrition of these parts as in various ways to limit the formation process of the tuberculous inflammation."

Frederick T. Roberts, M.D., B.Sc., M.R.C.P., 1876; 'The Theory and Practice of Medicine,' p. 428: "The mal-nutrition resulting from an imperfect supply of nutriment to the system from any cause has a powerful influence in developing phthisis, especially in the young. This may be associated with an insufficient amount or improper quality of food, or with a want of power of assimilation on account of dyspepsia and various diseases interfering with digestion. Some observers have laid great stress on a deficiency of fat in the system as a cause of phthisis, either from its not being supplied or because it cannot be digested."

J. Milner Fothergill, M. D., page 185, says: "Now we know that recovery from conditions either actually tuberculosis, or tending to tubercle is very common. In nearly half of all cadavers we find traces of the nutritive disorders from which pulmonary conditions proceed". (Nieme-
yer), page 188, "Especially then will tubercle manifest in those who, naturally delicate and predisposed to tubercle, reject all fat. It is well known that fat is wanting in tubercular tissue, that, in other words, the absence of fat is a great cause of tuberculosis degeneration in inflammatory products. Consequently, a rapid cell formation in such individuals is commonly followed by tuberculosis degeneration. Such is the actual history of much of the tubercular consumption we see around us. Dampness of sub-soil may exert such influences, but the unwise yet prevalent custom of permitting children to leave all the fat of their meat on their plates untouched is a much more powerful factor. It is just those slight fragile forms to whose system fat is so absolutely necessary for healthy tissue-building, that reject fat most persistently, and where the parents should most steadfastly insist upon their taking fat in some form or other. When once they can be induced to take fat the dislike to it vanishes and not rarely becomes transformed into a positive craving for fat, in which case a cure or its equivalent, is not rarely achieved. Such is one of the greatest of our curative agents, it is equally potent as a preventive measure."

M. Charteris, M. D., 1878, 'Handbook of the Practice of Medicine,' p. 136: "Phthisis, Pulmonary Consumption,—The general symptoms are first dyspeptic: want of appetite, a faulty digestion a marked aversion to all forms of fatty foods."

J. Hilgard Tyndale, M. D., 1876, 'The Present Status of the Pathology of Consumption and Tuberculosis,' p. 1: "Consumption decline must needs exist where there is either too great a waste or a lack of supply."

John Huges Bennett, M. D., F. R. S. E., in 'Reynolds System of Medicine,' 1880, p. 119, vol. 3: "In the higher classes two causes more especially are found, viz., an hereditary taint, and improper nutrition. On looking at the whole train of causation, it seems to me certain that they may all converge in mal-assimilation or deficiency of food. As far as the strength of the economy and constitution it matters little whether deficient vitality be caused by the food being deficient, or if abundant, its not being digested ;" page 121, "And here we must remember that all food essentially consists of albuminous, fatty, and mineral constituents, which are reduced in the alimentary canal to a fluid condition by the mechanical triturating action of the teeth, jaws and stomach, as well as by the chemical solvent acid of alkaline and acid juices. An observation of the peculiar dyspepsia which so frequently accompanies tubercular disease will satisfy the observer that it depends upon excess of acidity in the alimentary canal which favors the solution of the albuminous and mineral matters, but is opposed to the emulsionizing of fat. In youth the disposition not to eat fatty substances is well marked, and among the ill fed poor it is fat which is the most costly ingredient of food. In either case it is the non-assimilation of the fatty elements of food and their diminution in the blood, while the albuminous elements are comparatively in excess, that gradually interferes with nutrition; the molecular basis of the chyle is impoverished, the elementary molecules so necessary for the formation of healthy blood corpuscles are diminished, the liquor sanguinis consequently is poor in fat but rich in albumen, the entire growth of the constitution as a result, is affected, and its powers rendered weak; lastly, when exudations do occur, more especially in the lung, they are of an albuminous character, exhibit slight power of transformation into cells, and only produce that slow absorptive nuclear material which is called tubercle. Such is the theory of phthisis we consider most consistent with all recognised facts connected with the origin and progress of the disease, the correctness of which is still further supported by what is now known; first of the chemical constitution of the food, and the transformations it undergoes in the body; secondly, of the relations which exist between digestion and

the working powers of the individual; and thirdly, as we shall subsequently see, by what experience has taught us of its successful treatment." Treatment, page 133: "All good food must consist of a proper mixture of albuminous, fatty and mineral principles; the two former holding the third in solution, after being prepared by the digestive fluids, the chyle, out of which the blood is formed. In phthisis, however, the process of chyliification is impaired; the fatty constituents of the food are not separated from it, and assimilated, or they are deficient, as very commonly result from a dislike to fatty substances. In either case the blood abounds in the albuminous elements. To induce health, it is necessary to restore the nutritive elements which are diminished, and this is done directly by adding a pure animal oil to the food. By so doing we restore the balance of nutrition, which has been disturbed; respiration is again active in excreting more carbonic acid gas; the tissues once more attract from the blood the elementary molecules so necessary for their maintenance; the entire economy is renovated, so that while the histogenetic processes are revived, the histolytic changes in the tubercle itself are also stimulated and the whole disappears. We have previously seen that food rich in fat will occasionally produce these effects, but then the powers of the stomach and alimentary canal must not have undergone any great diminution. In most cases, however, the patient is unable to tolerate such kind of food, which is not digested." Under these circumstances, he recommends cod-liver oil and further says: "By giving it we save the digestive apparatus, as it were, the trouble of separating fluid fats from the food. By giving the oil directly, a large proportion of it enters the system, unites with albumen, and thereby forms the molecular basis so essential for the chyle. Since the days of Liebig, chemists have generally supposed that albumen forms the basis of the tissues, and is a flesh former, while fat is necessary for respiration, and by its decomposition furnishes heat. An unacquaintance with histology is the cause of this error, fat being demonstrably necessary for the development and support of muscle and of every tissue. Hence the universal craving and necessity for fat by the vigorous and working man, whilst a dislike to it is a strong system of inherent weakness and an incapability of assimilating it the chief cause of tubercular disease."

Henry Hartshorne, A. M., M. D., 1881, 'Essentials of Practical Medicine,' p. 34: "Tuberculosis may be pathologically defined as a constitutional tendency to the formation of blood, the plasma of which is defective in organizable capacity; so that in nutrition, instead of healthy tissue, it forms in one, or very often many of the organs, aborted blastema;" page 233: "There has been discovered, as yet, no specific to arrest tuberculosis."

But cod-liver oil and alcohol, and in lesser potency, iron, quinine, and other tonics, in a certain number of cases do manifest an important conservative and restorative influence and palliation of symptoms. My confidence in the frequent value of cod-liver oil is based chiefly upon observation. Three individuals in one family for example, under my care, notwithstanding a well marked family tendency (shown by the previous death by phthisis of three sisters, their mother and uncle), recovered from incipient consumption under the use of the oil. Other cases, much more commonly, have life prolonged by it. Unfortunately, however, in quite a considerable number of persons, the stomach turns against cod-liver oil."

Alonzo Palmer, M. D., 1882, 'The Science and Practice of Medicine,' vol. 2, p. 285: "The causes of consumption may be divided into those which act locally upon the lungs, and those which act generally upon the system at large;" page 290: "Diseases of the stomach and bowels, leading to imperfect nutrition and general depression are not unfrequent causes;" page 322: "The leading indications for the treatment of the disease when actually present are: first, to improve faulty nutrition, considering this in its largest sense, including digestion, excretion, elimination, and purification, as well as building up the tissues. Faulty nutrition is at the foundation of the tuberculosis cachexia." He recommends cod-liver oil; among other things, page 326, and says: "It not only when useful, contributes to the production of fat, but it modifies morbid states and contributes to the production of healthy nutrition. Under its use the physical signs sometimes improve, the progress of the disease is very often retarded, and the symptoms certainly very often improve." Says Dr. Williams about cod-liver oil: "This article, when taken into the system in sufficient quantities and for a sufficient time acts as a nutrient, not only adding fat to the body, but also promoting the healthy growth of the protoplasm and of the tissue cells, and in some way as an alterative counteracts the morbid tendency to the proliferation of the decaying cells of pus, tubercle, and kindred aplastic matters."

I. J. M. Goss, A. M., M. D., 'Practice of Medicine,' p. 132: "An hereditary tendency or predisposition to this disease exists in many constitutions, but it is possible that an acquired debility of the system (which may be developed by various causes) may at times give rise to it;" page 134: "Cod-liver oil has long been used, rather routinely, as a kind of specific."

Roberts Bartholow, M. A., M. D., L. L. D., 'Practice of Medicine,' p. 428: "As phthisis is pre-eminently a wasting disease, it is highly important to put the organs concerned in nutrition into the highest state

of efficiency. In tubercular and fibroid phthisis among the earliest symptoms are stomach disorders, poor appetite, especially repugnance to the fatty elements of food;" page 429: "The utility of cod-liver oil in incipient phthisis is very great."

Angel Money, M. D., London, 'Practice of Medicine,' p. 142: "Treatment—As much fat as possible should be taken by the patient. Malt and cod-liver oil may agree, or either may be taken alone."

John Mason Good, A. M., M. D., 'The Study of Medicine,' p. 31, vol. 2, says: "Dr. Wilson Philip has formed another variety of consumption to which he has given the name of dyspeptic phthisis, and which he supposes to be produced by a previously diseased state of the digestive organs, in which the lungs ultimately participate. In by far the majority of cases in which both the lungs and the digestive organs are affected, the affection of the digestive organs precedes that of the lungs."

Wm. Osler, M. D., 'The Principles and Practice of Medicine,' p. 250: "Treatment—General Measures,—There are three indications, first, to place the patient in surroundings most favorable to a maintenance of a maximum degree of nutrition."

Austin Flint, M. D., LL. D., 'Practice of Medicine,' 7th edition, p. 107: "Impaired nutrition denoted by diminished weight is frequently one of the earliest symptoms. As a rule, reduction in weight continues so long as the disease is progressive; on the other hand, the disease may be considered as non-progressive if the patient be not losing weight, and still more if he be gaining in flesh;" page 111: "Causation—The causes of pulmonary phthisis relate, first, to the specific micro-organism, the bacillus tuberculosis; and second, to the conditions which constitute a tuberculosis predisposition or diathesis. The disease is never produced without the parasite, but the efficiency of this agent depends on the predisposition or diathesis." In his treatment with regard to cod-liver oil, page 128, he says: "All clinical observers unite in according to it more or less value. Its usefulness in a certain proportion of cases can hardly be doubted. Of the cases of arrested or non-progressive phthisis which I have analyzed, in several the treatment consisted exclusively in the use of cod-liver oil and hygienic measures."

Loomis and Thomson, 'American System of Practical Medicine,' p. 836: "The measures directed to the prevention of tuberculosis may be considered under, first, those which are concerned with the destruction of the wide spread germ; and second, measures directed to maintain the nutrition of the individual at its maximum;" page 840: "As the healing of a tubercular process is largely dependent upon the state of general nutrition, the question of diet becomes of the very first importance."

Persistent failure properly to digest food is an unfavorable feature in any case."

Lartigau, 'Twentieth Century Practice of Medicine,' vol. 20, p. 101: "Predisposing conditions—most certainly any condition which tends to diminish the vitality of an individual necessarily increases his susceptibility to tuberculosis. Clinical evidence sustains this view in a most emphatic manner." Knopf, p. 238, of the same text book says: "Many a pulmonary consumption has been preceded by digestive disturbances or typical dyspepsia. Bad eaters are nearly always candidates for consumption;" page 287: "Consumptives, as a rule, have small appetites, and it requires sometimes no little art to make them eat. The one important truth that they should be made to understand is that their digestive powers are far greater than their appetites indicate. To eat a great deal of butter and cream is especially to be recommended to pulmonary invalids;" page 288, "There is little fear that the patient will ever overdo in regard to the eating of butter. He should be urged to take it with all his meals, fresh or salted, whichever he likes best;" page 291: "While I do not believe in going to extremes, saying that we can treat pulmonary tuberculosis without any medicinal substances, I think, nevertheless, that we may reduce their number to relatively few. To build up the system, cod-liver oil may be given whenever the stomach can support it."

Dr. Hermann Richhorst, 1901, 'A Text-Book of the Practice of Medicine,' vol. 2, p. 471: "Infection with tubercle bacilli will occur the more readily if favored by contributory factors. Among these, in the first place, the conformation of the body constitution is to be included. Experience has shown that generally not thick-set and robust persons are attacked, but rather tall, delicate, pale persons. It can be understood that the danger of infection is increased by all such conditions as diminish the resisting power of the body, including defective nutrition;" page 483: "Treatment—Recommends first pure air and nutritious diet."

'An Epitome of Medicine, Surgery and Obstetrics' by A. Stille, M., D. D. PH., L.L.D. and R.A. Penrose, M.D. (Modern), p. 127: "Phthisis, Physical Constitution—There is a certain amount of weight to be attached to the fact of slender build, long limbs, long neck, bright eyes, narrow chest, and a general appearance of being loosely knit together;" page 132: "Cod-liver oil is a semi-food. It is the drug for consumption. It is a concentrated and digestible food and supplies fuel and spares tissues."

Wm. Pepper, M.D., L.L.D., 'Text-Book of the Theory and Practice of Medicine,' vol. 2, p. 569: "For the development of tubercular inflammation in any part of the body, there is necessary the proper predisposition of the individual;" page 579, "The curative treatment of chronic

miliary tuberculosis is embraced in two principal things, climate and feeding. The feeding consists in enabling the patient to eat and digest considerable quantities of wholesome food and fats."

From the foregoing extracts it will be seen that from earliest times to the present date that the disease, tuberculosis, has been best controlled by building up nutrition, and that this nutrition is best supplied in the form of fats and oils. It may be asked—Why do not all improve when fed upon fats and oils? and I would answer by saying, that with those who have not formed the habit of assimilating oils, that weeks of constant training are often required and consequently in these cases the good results are not obtained that are in those cases who assimilate the oils and fats. Instead of the oils being assimilated with many people they are broken up into fatty acids and glycerine and expelled, never entering into the system, where they would be expelled in the form of carbon principally from the lungs. A study of the digestion of the fats and assimilation of oils shows that they enter the blood, practically in the same manner as if they were injected into the tissues and there assimilated into the blood. Some time ago, I described in this journal, under the title of 'The Cure of Consumption with Subcutaneous Injections of Oil and Its Digestion by the White Globules of the Blood,' my method of treating consumption, and results obtained, by injecting oils subcutaneously, prove it to be the greatest of all therapeutic agents in the cure of consumption.

(To be continued.)

* DIABETES MELLITUS.

BY

SURGEON-MAJOR R. E. WRAFTER, B.M.S. (RETIRED.)

Dehra Dun.

Many years ago diabetes was not regarded as a malady specially affecting the natives of India, Dr. Morehead stating only six cases had come to his personal knowledge. However this may have been formerly, there is no doubt that very large numbers of Indians suffer from it now, especially in Bengal. Dr. Chevers believes that among the upper and middle classes of natives in Calcutta, almost every family has lost one or more of its members from diabetes, and in one family nine suffered from the complaint. Dr. Temulji of Bombay states he has met with many more cases of diabetes recently than in former years; perhaps, he remarks, because the urine is more frequently examined. It is not probable that

* Specially contributed to "The Antiseptic."

diabetes is really more frequent among Indians than it used to be. More cases are discovered in consequence of so many more natives coming under skilled medical diagnosis, the result partly of increasing desire among natives to avail themselves of such skill, and partly arising from the large number of Indian practitioners who have been educated in the different local Colleges. *Diabetes Mellitus* in natives has been attributed to rice-eating. Many, however, live principally on rice and do not apparently suffer. Rice is mainly starch in its composition, containing very little oil (hence its constipating tendency) and only from five to seven per cent. of albuminous or flesh-forming constituent. But something more than a rice diet is required or the malady would be much more prevalent, and more prevalent among the lower classes in the rice-eating districts than it is. Indolent, obese, well-to-do, perhaps gouty natives, are the class principally affected. Although perhaps not eating meat they take abundance of ghee, rice, sweetmeats, and sugar, with little or no physical exercise. They may also take liquor or opium. The process of assimilation of their rich or mainly carbonaceous food and drink is obstructed from want of oxygen which can be obtained by physical exercise only, and which alone can remove the superabundant carbon in the shape of carbonic acid. Fat accumulates under the skin, and in other parts of the system, producing stoutness as its first effect, and afterwards diabetes, which may be regarded as an effort of nature to get rid of superabundant fat by turning into sugar in the laboratory of the liver. Mental strain has also been regarded as an exciting cause of diabetes, and Indians engaged in mercantile pursuits, or occupied in office work, are much exposed to worry and anxiety. There is also the undoubted tendency of diabetes to heredity, demonstrated by what has previously been advanced of the numbers of Indians of one family suffering. But the pathology and cause of diabetes is conjectural. It has been ascertained that obstruction to the breathing and other forms of obstruction to the flow of blood, will, as stated by Dr. Pavy, occasion a highly saccharine state of the urine, such as is observed in Whooping Cough, Pneumonia and Coma. In healthy persons the blood which passes from the liver to the lungs is saccharine. At its exit from the liver through the hepatic vein, it contains the maximum amount of sugar; after it mixes with the blood from the lower parts it is less saccharine, and as these conjoined currents (in the *vena cava ascendens*) mix in the right auricle of the heart with the blood flowing into it through the *vena cava descendens* it is still less saccharine. While the blood passes through the lungs from the right to the left heart, it loses its saccharine principle altogether, probably from oxidation. It is, therefore, evident that a function of the

lungs consists in the destruction of sugar, the arterial system being thus protected from invasion by saccharine element. When, however, the liver produces sugar in excess, it cannot be destroyed so fast as it reaches the lungs; it invades the arterial blood, and is removed by the only easy mode of egress, that is, by way of the kidneys. Thus *Diabetes Mellitus* may result as theorised by either an increased production of sugar, or from the diminished destruction or consumption of the quantity nominally produced. This over production and diminished consumption depend on an increased ingestion of saccharine material into the stomach and bowels or on such an alteration of nerve-influence as will modify the relative proportions of the sugar produced and the sugar destroyed. The following cited from an official report is typical of *Diabetes Mellitus* as it occurs in natives: "A.B. a stout, flabby-looking Hindu, a clerk in comfortable circumstances, aged forty, states that twelve months back he noticed frequent and copious micturition of colourless urine, which he ascribed to exposure in a malarious climate. When he came under treatment he was found to be suffering from occasional attacks of intermittent fever of irregular type, with enlargement of the liver, his pulse being weak and tongue red and furred. He was passing 180 ounces of pale urine in the twenty four hours, containing much sugar, with a specific gravity of 1036 and acid reaction. Appetite voracious, thirst urgent, skin dry, bowels costive, pains in the back and loins; impotent." Occasional symptoms are emaciation from the first, but often Indians do not show this emaciation for a long time. The disease may also come on suddenly, but this is rare, for although it may not have been recognised, careful inquiry will usually adduce sufficient evidence to show the malady has been long persistent. Often patients state they were first suspicious of something wrong by noticing ants and flies being attracted to their urine, others from itching of the genitals, others from impairment of sexual power or wasting of the testicles. There is indeed every reason to believe that Indians often suffer from diabetes for many years without feeling cause for alarm or applying for medical aid. Still in a minority of instances the disease is rapid, leading to early progressive emaciation, and perhaps sudden death from coma. Other occasional symptoms are local perspirations, one limb for instance being moist while the body is dry, or *vice versa*. A chloroform-like smell of the breath is often noticed. Not unfrequently there is a foul dry mouth, the teeth being covered with adhesive mucus. The gums may become red, tender and swollen, and the teeth loose, so that the person may at first be thought to be suffering from scurvy, which indeed he is, with the complication of diabetes. *Diabetes Retinitis*, and especially cataract, may also

occur. *Diabetes Insipidus* and *Mellitus* may co-exist, and Polyuria is more likely when mental exciting causes previously mentioned are evident. The tendency towards a fatal termination is greater in the young than in the elderly. The most frequent end is by some form of cerebral paralysis, either from hæmorrhage or effusion followed by coma; or by coma produced probably by nervous exhaustion without effusion. The next most frequent termination is by some intercurrent lung-affection followed by exhaustion. It is sometimes complicated with loco-motor ataxy, carbuncle, boils. Nephritis and cancer may also be regarded as occasional terminations. *Diabetes Mellitus* must be distinguished from that glycosuria of a temporary character which occurs during or after certain other diseases, such as cholera, diphtheria, typhoid, malarious fevers, or from digestive or nervous derangements, or after some poisons, as Morphia, Chloral Hydras, Hydrocyanic Acid, Mercury, and Alcohol. Temporary glycosuria does not lead to the extensive tissue-derangements and general deterioration of *Diabetes Mellitus*. Diabetic urine is of a pale straw colour, sweet taste, and faint apple-like odour. Thirty or more pints may be passed in twenty-four hours. The specific gravity varies from 1,030 to 1,060. It often causes heat and burning of the urethra. When kept in a warm place it ferments rapidly; deposits a sediment, and forms quantities of torulæ or fungi, seen under the microscope to consist of round transparent nucleated bodies. The best tests for diabetic urine are Moore's and Trommer's standard. Moore's test consists in adding half the bulk of pure Liquor Potassæ to the urine and boiling it in a test tube over a spirit lamp; if sugar is present, melassic acid is formed, and the liquid becomes a dark brown colour. Trommer's test consists in adding a drop or two of sulphate of copper solution to the urine, and then Liquor Potassæ in excess. On boiling, a yellow brown precipitate of sub-oxide of copper appears. If there is no sugar the mixture becomes green and a black precipitate will fall. The ready-made solution known as Fehling's may be used. But Fehling's solution is affected by heat, and therefore not so well adapted for use in India as in England. The above tests for sugar should be tried several times at intervals, as it may be merely a temporary constituent of the urine. As a rule the second test will be sufficient. The best treatment for Indians is directing them to live as much as possible on anti-diabetic diet, but as many will not take meat, this is the more difficult. Whatever diet is laid down, care should be taken to introduce it gradually, so as not to disgust the patient. Then much may be done by the use of fish, if this also be not against the caste; by gluten or bran cakes, or almond bread, or prepared biscuits, and by green vegetables and green pickles. Cream, skimmed

milk, cheese and butter in moderation may also be used, as they are only sugar-formers by virtue of the glycerine they contain. Cocoa made from nibs may also be taken, and tea without milk or sugar, or with the smallest addition of saccharine tablets. Most fruits are forbidden, but pulpy oranges, Indian grapes, and pummaloos may be taken in moderation. On the other hand, there is the avoidance of all articles containing sugar and starch. Claret and water is the best drink, and if any spirit is allowed it should be good whiskey, which contains less sugar than any other liquor. Thirst may be relieved by washing the mouth out with iced water which is better than taking copious draughts of water. Lemon water, or lemon sliced in tea, will also relieve the thirst and cleanse the mouth. As medicines, tonics will be most advisable. Salicylic acid in ten or fifteen grain doses sometimes does good, and small doses of opium or codeina are generally beneficial. Constipation is best relieved by small quantities of Carlsbad salts or Hunyadi Janos water. Warm clothing is a *sine qua non*, as the diabetic are very liable to chills and chest-affections. Warm salt baths and change of climate to the sea-side are also advised. The weight of the patient should be taken frequently, for the increase or decrease indicates the efficacy of the treatment or the reverse. Exercise should be taken to as great an extent as possible, short of fatigue, and massage, or shampooing the limbs, seems beneficial, probably by increasing metabolism. From the above it is obvious that the treatment of *Diabetes Mellitus* is more effectual by appropriate diet than by medicines; but any change of diet made should be gradual and not abrupt. When sugar is being passed in the urine, the food should be nutritious, but free from material containing sugar or starch.

Our Contemporaries. MEDICINE.

Alcoholic Neuritis (Sciatica).

BY

By JOHN V. SHOEMAKER, M. D., L. L. D.

Professor of Materia Medica, Therapeutics, Clinical Medicine, and Diseases of the Skin in the Medico-chirurgical College and Hospital of Philadelphia, Pa.

GENTLEMEN: This morning I have the pleasure to show you a patient suffering from an affection rather common, yet the ætiological factor which produces it in this patient is quite rare.

The patient is Mr. F. McG., of this city, age 35 years, nativity Ireland.

Complains of, on admission—severe pain in the right limb, extending from the hip, radiating through the thigh along the course of the sciatic nerve into the calf of the leg. The pain is so severe that he is unable to straighten up at all. When he walks his body is bent over to almost at right angles to his lower extremities, interfering very much with locomotion.

Family History.—His father died of inanition at the age of 85 years. The mother is living and in good health. Three brothers and two sisters died in infancy; the cause of their death is unknown to him. One brother and two sisters are living and in good health.

The family history as regards carcinoma, tuberculosis, and other hereditary diseases is negative.

Previous Personal History.—As a child he had measles and scarlet fever. At the age of 14 years he had influenza, which left him with a cough for almost one year.

Five years ago he had an attack of acute dyspepsia, which became chronic and lasted over a year.

One year ago he was operated upon for hæmorrhoids, caused by his habitual constipation. He denies venereal diseases.

Social History.—He has been married for the past seven years. His wife gave birth to one child, which died at the age of three weeks.

By occupation he is a bartender, and is exposed to dampness constantly.

Habits.—Drinks tea and coffee moderately, chews and smokes tobacco excessively, drinks whiskey excessively; he states that he drank as much as a pint of whiskey daily. He also states that he eats hurriedly and partakes of meats in large quantities.

Present Illness.—Twenty months ago, while asleep in bed, he suddenly felt a sharp, lancinating pain in the calf of his right leg. The pain soon passed away, but the entire limb felt sore for almost three months, when he was again suddenly seized with a similar sharp, lancinating pain in the hip, which radiated along the course of the sciatic nerve, down the thigh and leg to the ankle-joint. Since then the pain has been constant along the course of the sciatic nerve and extending into the leg. At times the pain is more severe, especially so on locomotion, which is greatly interfered with, and during the night. For the past four months the pain has been so severe that he has been unable to get rest without resorting to large hypodermatic injections of morphine.

LABORATORY FINDINGS.

Albumin, a faint trace; *sugar*, negative; *specific gravity*, 1012; *reaction*, alkaline; *color*, pale yellow; *appearance*, clear; *casts*, absent;

leucocytes, a few; *phosphate crystals*, a few; *amorphous phosphates* small amount; *urates*, absent.

BLOOD EXAMINATION.

Color, bright red; *coagulability*, slow; *consistency*, thin; *flow from puncture*, freely; *erythrocytes*, 4,864,000; *leucocytes*, 7,406; *hæmoglobin*, 84 per cent

RED CELLS.

Size, normal; *color*, normal; *shape*, normal; *contour*, normal; *crenation* normal; *poikilocytes*, absent; *neucleated*, absent.

Diagnosis.—The diagnosis of this disease is never difficult. From the history of the onset, the characteristic pain and tenderness along the sciatic nerve, and the peculiar gait, are usually sufficiently evident to arrive at a correct diagnosis.

It is always well, if at all possible, to fathom out the primary or secondary origin. Especially is this valuable in women to ascertain whether or not the trouble is due to faecal accumulation or pelvic tumors.

In this patient we have a history of sudden pain in the lower extremity, lancinating in character, extending from the hip along the sciatic nerve to the calf of the leg. He has been a habitual drinker of large quantities of alcoholic liquors, which has undoubtedly caused a neuritis of his sciatic nerve in the right lower limb. We can safely pronounce this trouble sciatica, caused by alcoholic intoxication.

Pathology.—In the early stages of the affection the nerve looks reddish, due to the hyperæmia of the vasa nervorum. Later there is infiltration of the leucocytes between the nerve sheath and the nerve, followed by infiltration of the leucocytes in the connective tissue of the nerve.

If the disease continues to exist the lymphoid cells present may develop into true connective tissue which may eventually replace the nerve fibre, the destruction of the nerve fibre being due to the pressure of the rapidly forming connective tissue.

Ætiology.—Sciatica is more common in men than in women, and between the ages of forty and fifty-five years. It occurs seldom in children.

The predisposing causes are rheumatism, gout, and syphilis. Exposure to cold, wet, dampness, and drafts frequently causes a perineuritis, which develops into a severe form of sciatica.

Some of the other exciting causes are alcoholism, tobacco-poisoning, metallic poisoning, as in painters; traumatism, infectious diseases, and pressure on the nerve, due to neuromata and pelvic tumors.

Treatment.—In the treatment of sciatica, as in this patient, the first requisite is to remove the cause. The patient is suffering from excruciating pain, and is in need of relief at once. Hence we will give him a deep hypodermic injection, over the course of the nerve, of morphine sulphate (gr. 1/4) and atropine sulphate (gr. 1/50). As long as the pain is so severe we will give him hypodermic injections into the nerve, or as near to it as possible, of atropine sulphate (gr. 1/120) three times daily. When the pain becomes less severe the dose of atropine will be lessened. Internally we will also give him a combination as follows:

R/ Tincturæ nucis vomicæ,
Fluid extracti hydrastis,
Fluid extracti cimicifugæ, ʒʒ; fʒss.

Misce. Signa: Begin with twenty drops three times daily after meals and at bed-time, increasing the dose one drop every day.

Of course the patient is kept at complete rest in bed, and in severe cases it is well to apply a splint which will often hasten recovery.

Counter-irritants, such as the galvanic cautery, which is the best, especially if used at the onset, and blisters of cantharides and iodine, may often be of great value.

The use of a heating apparatus to bake the limb daily, is one of the best means to assist in the cure of the disease. The limb is wrapped up in a blanket and placed in the apparatus. The heat is then run up gradually to three or four hundred degrees Fahrenheit, and kept there for at least half an hour.

When the disease is due to some predisposing cause, as gout, rheumatism, or syphilis, treat the cause first, and often the sciatica needs no additional special treatment.

Prognosis.—The prognosis in these cases is always good as to life. The sciatica is overcome in most instances, but it may require months to effect a cure. I believe that this patient will be entirely relieved in a comparatively short time.—*The Medical Review of Reviews.*

Sciatica: Therapeutic Points.

BY

W. C. ABBOTT, M. D., Chicago, Ill.

Look first for the excitant cause in disease of the pelvis, the rectum being most frequently to blame.

Flush the large bowel, dilate spasmodic anal sphincters, cure piles, fissures, fistulas, pockets and papillæ, and any other ailment found.

A small fly-blisther exactly over the sacrosciatic notch does wonders when the nerve is pinched in passing through it.

Obstinate sub-acute cases do well under macrotin, gr. 1 three to seven times a day, best in hot water.

Obstinate recurrent attacks are benefited by the persistent use of strychnine arsenate, gr. 1-67 every hour till full tonicity is secured.

A hypodermic injection of atropine close to the nerve needs no morphine to cause speedy and complete relief in acute attacks.

Rheumatoid cases—and others as yet undistinguished—are quickly benefited by rhus tox., small frequent doses to effect.

Solanine, gr. 1-12 and theine, gr. 1 to 5, injected close to the affected part of the nerve, have been praised highly.

When the nerve is encumbered with exudative masses massage is useful; or absorb with phytolaccin, gr. 1 three times a day for months.

The absorption of encumbering debris is usually if not always indicated in every chronic case; examine and note the exudative masses.

The most powerful absorbent mixture is mercury biniodide gr. 3-67, iodoform and phytolaccin gr. 1/8 each, arsenic iodide gr. 1-67, three to seven times a day.

Robust forms with fever and defective elimination do surprisingly well on veratrine, gr. 1-134 often enough to cause slight nausea or diarrhœa.

To break up an acute attack quickly: Zinc phosphide, quinine arsenate, ext. cannabis, aa gr. 1/8; strychnine arsenate gr. 1-30; four times a day.

Sciatica is neither rheumatism nor neuralgia; generally a material lesion may be found, impinging on the affected nerve trunk.

It is doubtful if massage causes absorption of exudative masses as quickly as the powerful absorbent combination given; the former costs far more.

Those who have secured a good specimen of rhus and used it most are by far the most enthusiastic over this remedy.

Tracing sciatica to pelvic maladies is a beautiful example of the advantages of thorough physical examination instead of simply prescribing blindly.

Never forget that the principal cause of chronic disease of the nervous tissues is feeding them impure blood, fæcal poisons.

The advance of years brings wisdom, knowledge; and also grief for the cases of earlier years we could have relieved had we but known.—*The Canada Lancet.*

The Diagnosis of Pleural Effusion, and of Empyema in Children.

BY

DR. GEORGE S. MIDDLETON.

(The Practitioner, Nov. 1906, p. 606.)

In all cases in children, in which a diagnosis of pneumonia has been made, empyema ought to be suspected, and an exploratory puncture made:

1. *If there is Undue Delirium.*—The pneumonia of childhood is not characterized by much, or wild delirium. If there is wild delirium, especially if early in the course of the disease, say the second or third day, the disease is probably empyema.

2. *If there is Marked Oscillations of the Temperature.*—In pure pneumonia the oscillations, up to the crisis, rarely go beyond a degree, or a degree and a half; great oscillations, therefore, are very suggestive of empyema.

3. *If there is Tenderness Over the Affected Part.*—Marked tenderness on examination of the chest is quite unusual in pneumonia, and always suggests empyema.

4. *If there is any Fulness in One or More Intercostal Spaces in the Dull Area.*—This is most likely to occur in empyema after more than a week's duration, but may occur early.

5. *If there is Prolongation of the Fever With or Without Acute Symptoms, Beyond the Ordinary Period of Crisis of a Pneumonia.*—Unless the persistence of the fever is explained by well-marked evidence of the extension of the pneumonic process in the same or in the other lung, empyema should be suspected. In most such empyematous cases, the temperature comes down a degree or two about the fifth or sixth day and goes on with oscillations indefinitely, the illness becoming apparently less acute, but liable to so-called "re-lapses." Many such cases find their way into hospital as curious cases of pneumonia.

6. *If there is any Doubt, Every Reasonable Precaution Having Been Taken to Come to a Correct Diagnosis.*—This is because of the great importance, in regard to treatment, of an early diagnosis in the case of empyema.

Empyema in children may also be confounded with *phthisis pulmonalis*. I have made the mistake myself, and I have seen it made by others, even in the hospital. The misleading facts here are the presence, in some cases of empyema, of cavernous breath sounds, and large, hollow, moist rales. In most of the cases of this kind which have come under my notice, there have been extensive dulness over one side with in many

instances, Skodaique resonance at the apex. The very extent of the abnormal resonance, in such cases, should make one suspect that the disease is not phthisis, and a careful scrutiny of the history should serve to point to empyema. In some instances, the signs dulness, tubular breathing and moist, clicking rales—are limited in extent to the apex of one lung, and might readily be interpreted as those of tubercular excavation. In such cases, the history is the safeguard. All that I have seen have been brought under my notice as cases of pneumonia that did not resolve but, with or without a slight remission, "passed on into phthisis." These are cases of encysted empyema. The acuteness of their onset is very unlike that of a tubercular lesion, and should raise suspicion leading to exploratory puncture.—*The Post-Graduate*.

Treatment of Nocturnal Enuresis.

GEORGE F. BUTLER, M.D., CHICAGO.—If possible remove any condition, or group of conditions, that may be found in each individual case to contribute to the malady. Nocturnal enuresis is a symptom only. The patient should be toned up with tonics, the best, perhaps, in these cases being the arsenates of iron, quinine and strychnine, given in small tonic doses—about 1-200 gr. of the strychnine and 1-60 gr. of each of the others, three times a day.

Exercise in the open air and in the sunlight, and even change of climate, is advisable in some cases. Cold baths, especially cold sponging over the spine and inside and outside the thighs; cold compresses to the perineum, and in obstinate cases, general massage are beneficial.

All sources of irritation, such as thread-worms, must be removed.

The urine should be tested, and if found to be abnormal, proper remedies should be given.

The diet should be regulated, care being taken with the evening meal, which should be light and easily digestible. No tea or coffee should be drunk. Strong animal diet is objectionable. Flatulence should be prevented, if possible. One-twelfth gr. to 1-10 of menthol, alone, or with the sulphocarbonate of soda gr. 2½ will usually allay the flatulence.

Watch out for nocturnal fits, and if they occur, solanine gr. 1-67, upwards, increasing the dose until the patient feels some irritation in the mouth or throat, will well replace the bromides. Suitable doses for the age should be administered, and proper hygienic measures instituted at once to stop the convulsions.

Disciplinary influence, but not scolding or punishing, should be brought to bear on the hysterical and mentally weak. Every indulgence

that will minister solely or greatly to nervous excitement and emotional exultation must be refused.

Be careful not to overlook organic diseases of the central nervous system or tumors in the pelvis.

Encourage the child to exercise his will power to overcome his trouble. It is a good thing to begin early to develop a child's self control. That which most easily becomes a habit is the exercise of the will.

The child should pass his water the last thing before getting into bed and if possible empty his bowels in the evening instead of in the morning. He should be properly clothed so that he will be neither too hot nor too cold when asleep. The night-gown should be unirritating, the bed clothing not too heavy, and the mattress moderately hard.

He should never lie on his back during sleep. By attaching a spool or other body to the back he will turn over on his side, even when asleep, because the pressure of the spool will disturb him when he lies on his back.

Of drugs employed, atropine and strychnine meet with most favor. If the urine is concentrated asparagin, 1-30 gr. to 1-15 gr. every one or two hours; arbutin, 1-67 gr. to 1-30 gr. every half to one hour, or lithium benzoate, 1-6 to $\frac{1}{2}$ gr. every hour or two, in plenty of water, will be found to be beneficial.

In the use of belladonna or its alkaloid, atropine, the drug should first be given in small doses, gradually increased, until the pupils are moderately dilated.

The physiologic action of the drug may be maintained for two or three weeks until the habit of "wetting the bed" has been completely overcome, after which the quantity may be gradually diminished.

It is a good plan to give two doses daily, one after supper, and the other the last thing before going to bed. In this way the maximum action of the drug may be obtained at the desired period.

Strychnine should be given in small doses, preferably the arsenate from 1-400 to 1-137 gr. several times daily; and perhaps the best way to give both strychnine and atropine in these cases is hypodermically.

The fluid extract of *rhus aromatica*, a drachm of it being given in diminished doses during the day; or ergotin, 1-6 gr. or cantharidin, 1-5000 three or more times daily (the latter particularly if due to atony), are often helpful.

For nervous children, and especially those who have had chorea, arsenic in full doses is one of the best remedies that can be employed.

Indeed, in such cases the treatment applicable to chorea will prove markedly beneficial.

Very often enuresis is a chorea of the bladder. Many cases will be found to exhibit hyperæsthesia of the urethra, especially of the prostatic portion, when it is explored with a bougie. This will subside under daily applications of euophen suspended in pure fluid petrolatum, and the enuresis will be cured.—*Medical Herald*.

Heart Stimulants.

Some drug to stimulate the heart is indicated at one time or another in almost every case of serious illness, especially in those that are long continued and which drain the vital forces. There are many remedies that are classed under this head in text books, but they cannot be substituted indiscriminately one for the other. Although they all stimulate the heart, the effect is brought about in different ways, and each one has other effects upon various portions of the system.

Just which drug it is best to use in any particular case is not always an easy matter to decide. An ignorant or careless physician may do great injury to a patient in a critical state by using the wrong stimulant.

Let us review the action of the ordinarily used drugs of this class and see just when they are indicated.

Alcohol quickens and strengthens the beat of the heart, and relaxes the vessels over the entire surface of the body, producing a sense of warmth, but not raising the blood pressure to any great extent. It is a useful drug in most cases of sudden faintness and in the collapse which occurs during long, exhausting diseases. One of its chief merits is that it acts quickly, otherwise in some of these cases it would be better to use a drug which raises the blood pressure more decidedly.

Digitalis slows and strengthens the heart-beat, contracts all the capillaries and greatly raises the blood pressure. It lengthens the diastole of the heart. For this reason it is useful in many conditions of valvular disease, but when there is aortic regurgitation the lengthening of the diastole is a disadvantage, for the blood then has a longer time to run back into the ventricle. In these latter cases *cereus grandiflorus*, best given in the form of Cactina Pillets, is the drug of choice, for it raises the blood pressure slightly, at the same time strengthening the heart and accelerating its rate. The effect is somewhat similar to that of strychnia, but the influence of the latter is distributed over the entire system, while cactina acts more directly upon the heart and blood vessels. As it has no cumulative effects and does not disturb the stomach it may be profitably used in nearly all cases of valvular troubles or functional weak heart.

The effect of nitroglycerine (glonoin) is to quicken the heart and to greatly relax the capillaries, being somewhat similar to alcohol in this respect. It acts with great rapidity and is soon eliminated. It is much used in cases of internal congestion and does not irritate the brain as alcohol does.

The action of strophanthus is to slow the heart and to increase the force of its beat. But it raises the blood pressure only slightly. In cases of faintness produced by hæmorrhage, or when hæmorrhage is feared, this is the drug which usually gives the best results, the best action of the heart compatible with safety.—*Med. Prog.*

Asleep Two Years.

A former civil service official named Arnheim, aged 45, lives in Wilmersdorf, a western suburb of Berlin. During two years and four months Arnheim has never once opened his eyes, never uttered a syllable, and never shown the least signs of consciousness. Before falling asleep Arnheim was a healthy, vigorous man, without any abnormal characteristics. It is stated, however, that he belongs to a family whose members have shown a decided tendency to nervous diseases. Arnheim was descending from a tram car on June 10, 1904, when he slipped and fell backwards, striking his head on the curbstone. The doctors were unable to discover any injury to the brain, but from that moment Arnheim showed an unconquerable desire to sleep. After slumbering, with interruptions, for ten days, he fell asleep on June 20, 1904, and has not been awake since. Arnheim is lying on his back in his bed in a modest flat at Wilmersdorf, his head turned slightly toward the right and his forehead wrinkled as though the sleeper is troubled by bad dreams. He is not merely asleep, but in such a condition that his body remains indifferent to all outside influences. All sorts of attempts have been repeatedly made to arouse him. Prof. Eulenberg, the eminent specialist, thus describes his experiments: "The limbs can be freely moved. The skin has lost its sensitiveness; deep needle-pricks have not produced the slightest effect, and other incisions in the flesh, painful for normal beings, have not succeeded in awakening the sleeper. Deafening noises made close to the ears have failed to arouse him, and dazzling light turned on the eyes has likewise been ineffectual. The sleeper is regularly fed—he chews the food placed in his mouth slowly and swallows instinctively." When Prof. Eulenberg last visited Arnheim the patient's wife removed him from the bed, clothed him and placed him in an arm-chair near the open window. "Thus I found him," says Prof. Eulenberg, "and I must say he had a surprising appearance. The ghastly pale man, sitting there with closed eyes, had something uncanny about

him. The sleeper reminded me irresistibly of those wax figures placed in natural positions in wax work shows to deceive visitors into the belief that they are real human beings." Prof. Eulenberg considers that a sudden awakening is possible. Many medical experts have visited Arnheim and watched the sleeper for lengthy periods without coming to any definite conclusion as to the cause of his long sleep.—*The Med. Bulletin.*

SURGERY.

* Modern Methods In Renal And Ureteral Surgery.

BY

G. E. ARMSTRONG, M.D.

Surgeon, Montreal General Hospital.

In no department of surgery has the application of new principles and the use of new methods been of greater clinical value than in the extension of our resources in determining the pathological and functional variations in the kidney and ureter.

Until within comparatively recent times we were limited in the examination of the kidney to inspection, palpation, and the analysis of the combined urines from the two sides, together with the subjective symptoms of the patient. It is now a matter of wonder, not that unfortunate surprises and accidents were occasionally met with, but that they were not more common. To the many who contributed to the perfection of the cystoscope, and whose names you are all familiar with, we are indebted for our ability to inspect the interior of the bladder, to note the alterations in the position of the ureteral orifices, and to recognize foreign bodies, new growths, etc.

The value of the cystoscope was immeasurably enhanced when it was so modified and improved that we were enabled to pass the catheter along the ureter to the kidney. We can now determine whether the ureter is patent, narrowed, or obstructed, whether one or two kidneys are present, and their functional value.

Only second in value in modern surgery of the kidney is the X-ray apparatus. The use of this method in the diagnosis of calculi in the kidney and ureter requires experience and skill, but it is daily becoming of greater value.

For a time if it showed a stone distinctly, well and good, but if not the absence was only regarded as negative evidence. To-day by carefully arranging the position of the patient, by using a soft tube and a well adapted diaphragm, Kummell is able to say with his large experience

* Read before the Montreal Medico-Chirurgical Society, 1st February, 1907.

that the X-ray will show a stone, if present, in every case, regardless of its chemical composition, and in stout or thin patients. The value of the X-ray is not only in demonstrating the presence of a stone but its situation as well. To accomplish this, more than one plate should be made. It is found that calculi generally remain in one position and therefore constancy is an important element in the diagnosis. The shadow of a renal calculus is generally a little away from the spinal column and about the level of the second lumbar vertebra or just below the 12th rib. Variations in position might suggest a horse-shoe kidney or a dilated pelvis with the stone in the lower part. In one of my cases the stone was shewn to be in the ureter, and I was able to go directly down upon it, without opening or disturbing the kidney. This rendered the operation more simple and safe. In another instance two oxalate calculi were distinctly shown in the kidney itself. We have found it advantageous to read the plate in a dark room, placing it in a frame in front of a good light. Kummell sometimes uses an opera glass to get better definition.

I have not had any satisfactory results from the use of the segregator. I admit that my experience with it has been very limited. On several occasions I attempted to use Luy's pattern, but failed. On two different occasions, gentlemen professing to know how to use it and expressing faith in its efficiency visited my clinic and were afforded an opportunity of demonstrating its value. In both cases complete failure was frankly admitted by the operator.

In the following cases the ureters were catheterized by Dr. R. P. Campbell, late Medical Superintendent of the Montreal General Hospital, and I wish here to acknowledge my indebtedness to him, and to express my appreciation of his skill in this work, and his care and accuracy in carrying out the various examinations and tests of the urines removed. The catheterization of the ureters has been done as a rule, under local anæsthesia. If ether is given the flow of urine is temporarily arrested that, to get enough for examination, the patient must be returned to bed with the ureteral catheters *in situ*. It is obvious, therefore, if serious difficulty in finding the openings is encountered that no help can be obtained from the use of methyl-blue, as recommended by Castaigne or of indigo-carmin as recommended by Voelkers and Joseph. As a rule the operation is unpleasant and disagreeable, but not unbearable if the bladder and urethra are normal. The cystoscope and catheter are, of course, carefully sterilized and the bladder thoroughly washed out.

By catheterization of the ureters one determines, in the first place, whether the patient has one or two kidneys. Congenital absence, although not common, does occur.

Dr. Gillies, while pathologist at the Montreal General Hospital, found at autopsy, one kidney congenitally absent, in two cases. The need of deciding this point before doing a nephrectomy has, in the past, been regarded by some surgeons of sufficient importance to justify, if necessary, a preliminary abdominal incision.

Another great gain by catheterization of the ureters is the material aid obtained in the differential diagnosis, not only between the two kidneys, but between one or both and the bladder.

To illustrate, I will briefly relate the history of a man, aged 39, who was sent to me as a case of tuberculous cystitis. That there was a cystitis was proved by the presence of blood and pus in the urine, the frequency of micturition which occurred about every 30 to 60 minutes, night and day, and by the pain that immediately followed the act. That it was tuberculous was shown by the constant presence in the urine of tubercle bacilli.

A cystoscopic examination revealed a bladder whose walls were hyperæmic but otherwise little altered from the normal, save at one point on the left side high up, where were seen two small ulcers, with borders just touching at one point and one or two tubercles at the base of the trigone. The view left one with the impression that the bladder was not alone responsible for the condition and that probably the infection was a descending one from one or both kidneys. Four years previously the patient had felt a severe pain in the left kidney, but it never recurred, nor was any feeling of distress felt in the left loin afterwards.

Dr. Campbell found great difficulty in catheterizing the ureters in this case. The patient was unusually sensitive, the bladder was small and bled easily. Success was only achieved under general anæsthesia. The little ulcers seen high up on the left wall were found to mark the entrance to the left ureter, into which a catheter was passed. The right ureteral orifice was so displaced forwards and to the left that the catheter could not be introduced. The bladder was again washed, a catheter passed and the patient returned to bed with the left ureteral catheter in position and allowed to remain for two hours. We then had the urine from the left kidney coming through the ureteral catheter and that from the right passed into the bladder from which it was removed as it collected, through an ordinary catheter.

On examining these urines the following conditions were found:—

R—Amt. 75 c.c. Acid. Sp. gr. 1025. Yellow. Mucoid matter. 1. 7 per cent of urea. A trace of albumen. No sugar. Calcium oxalate. A few pus and blood cells. No tubercle bacilli. L—Amt. 20 c.c. Neutral.

Sp. gr. 1008. Pale. Flocculent precipitate. 0.3 per cent of urea. No sugar. Epithelium. A good deal of pus. Pus and blood cells, and tubercle bacilli.

It was now quite clear that the chief disease was in the left kidney that the disease was tuberculous, and that the kidney was functionally of little value. It was also demonstrated that the right kidney was functionally active, was sufficient alone to keep the blood at the normal density; in fact that the man was really living with his right kidney. It is obvious that any error, the result of admixture, would improve the showing. No evidence of tubercle could be found in any other organ. Nephrectomy was performed, no disturbance whatever followed, and he is now, four weeks after operation, going about with a good appetite, gaining in weight and able to hold his urine $2\frac{1}{2}$ to $3\frac{1}{2}$ hours, without the slightest discomfort. The last examination of the urine failed to find any tubercle bacilli. At the operation the ureter was felt as a tense, tight cord. This shortening due to the changes in the ureteral walls had elevated the left side of the trigone, thus changing the position of the ureteral opening, which made the operation of catheterization so difficult. Hurry Fenwick has described a similar condition. The kidney was excavated at both poles by tuberculous abscess cavities, and the central portion was occupied by large masses of cheesy material. Without ureteral catheterization it could not have been determined definitely that the bacilli were of renal origin, or if so, from which side, with sufficient certainty to warrant nephrectomy.

In another case, male;—pain felt in the left side. The urine contained pus, no blood, and there was a history suggesting tuberculous epididymitis. A cystoscopic examination was made and the ureters catheterized with the following results. About the left ureter was a small ulcer, and the urine coming from it could be seen to be more turbid than that from its fellow.

Right.—Clear mucous sediment. Sp. gr. 1009. Yellow. Alkaline. 2 per cent of urea. A few blood and epithelium cells. No bacilli. Left.—Turbid purulent sediment. Sp. gr. 1004. Very alkaline. 25 per cent of urea. Blood and pus in quantities. Tubercle bacilli present.

A tuberculous disease of the left kidney was demonstrated and the kidney was removed. It was found to be little more than a big pus sac, very little secreting tissue remaining. From the operation the man recovered nicely without any disturbance in the function of the right kidney and without any evidence of renal inefficiency. Six months later he died of miliary tuberculosis.

It need only be mentioned that in examining for renal calculi, the confirmatory evidence of blood from one kidney alone is of considerable value in interpreting the radiograph.

When there is sufficient evidence of disease in one kidney to call for its removal, it must be determined that the other kidney is not only present and free from active disease, but that it is able to do the work usually done by two.

Several tests may be applied to determine this point. One of the most reliable is the specific gravity taken, with proper precautions as to amount of liquids consumed, and on more than one occasion.

The induction of renal glycosuria, based upon the discovery of von Mehring is of value as an indication of renal efficiency, but we have not found it always trustworthy. This I quite think may have been due to faulty technique, particularly in the preparation of the solution. After a subcutaneous injection of 1 to 1.5 mg. of phloridzin the healthy kidney excretes urine containing sugar after 15 or 20 minutes, whereas a sugar reaction is shown much later on or not at all by the diseased kidney. It is of confirmatory value, but speaking from a very limited experience we would not be inclined to place unlimited confidence in it.

Cryoscopy of the urine and of the blood as an indication of renal efficiency has been brought prominently before the profession by Kummell. Many clinicians, particularly on the Continent, have made use of this test, and with somewhat varying results. I obtained the Beckman apparatus for determining the freezing point, seven years ago, and since then it has been used more or less in the Montreal General Hospital. Some of you may remember that three or four years ago Dr. Turner reported the results obtained in a series of, I think, one hundred cases. The technical difficulties in its use became at once apparent, and, I am satisfied, account in part at least for the discrepancies that have occurred and the widely differing estimates that have been placed upon its value. Dr. Campbell has used it in a number of cases and with such care and precision that his results have been uniform and of value. Solutions freeze at a temperature lower than their solvent, and equality in osmotic pressure may be inferred directly from the identity of the freezing points. I cannot outline the principles of this test better than by quoting from a recent article in *Surgery, Gynecology, and Obstetrics* by Kummell.

He says:—"The idea on which the method is based is that the function of the kidney must be considered as one of osmosis, or in other words, that the work of the kidney may be calculated from the product of the gland, i.e., from the urine and its source, the blood, or rather the blood serum, and that these two fluids, the solvent of which is water, are subject to the law of osmosis. By osmosis we understand the changing relations between two chemically similar solutions of different concentrations, which

have for their purpose the equalization of these differences of concentration. The equalization of the difference of osmotic pressure between the blood, *i.e.*, the serum and the urine takes place in the kidney. By virtue of its two antagonistic functions—the secretory activity of the glomeruli and the resorptive power of the convoluted tubes—the kidney, aiming in two directions, undertakes the regulation by the differences in tension, which are constantly being influenced by the metabolism, the heart's action, etc.

“This ingenious theory, which is built on Van't Hoff's teachings of osmotic pressure, although not new, was expounded by A. von Koryani, to whom the honour of having created a new method of examination in applied medicine is due. Koryani found, as had already been shown by others in the physiological laboratory, that in man there is a marked constancy in the osmotic concentration of the blood while the kidney function remains normal, and that, on the other hand, there is an increased concentration of the blood if there is kidney disease. He found, further, that with the increase of the osmotic concentration of the blood there was a corresponding decrease in the osmotic pressure of the urine. Everything was interpreted from the premises that while the kidney function is normal, all nitrogen, containing molecules will be excreted by the kidney, while if there be a disturbed kidney function a retention of nitrogenous compounds in the blood will occur.”

We have practised cryoscopy of the blood in only a few instances. Cryoscopy of the urine we have found to be a valuable confirmatory sign, generally agreeing very closely with the indications derived from specific gravity and the percentage of urea, although the presence of albumen does not alter the freezing point to the same extent as it changes the specific gravity. A normal freezing point of the blood in a patient with one useless kidney would seem to indicate definitely that the other kidney had normal functional power.

The same information regarding the quantity of inorganic matter present in the urine, especially of the salts, may be determined by estimating the electrical conductivity. Reinger, Gebbert and Schall have constructed a convenient apparatus for this purpose. It is especially useful when we have only small quantities of urine to work with, say 1 to 2 c.c.

In one young man 30 years of age, Dr. Campbell was able to show that both kidneys were diseased and contained tubercle bacilli. A very satisfactory result was obtained in a young woman 29 years of age, who came to Canada two months before admission to Hospital. She had suffered from back-ache for 7 weeks, and been unable to work for 3 weeks. The pain, always relieved by rest, had never been severe.

She was emaciated and presented in the right loin a mass continuous with the liver. Her temperature was normal and her pulse 132. The urine from the left kidney was normal save for a trace of albumen. The catheter could not be made to enter the right ureter, the orifice of which was surrounded by an ulcer. From its opening, however, could be seen issuing spurts of turbid urine, increased by pressure over the mass in the right side. It was removed from the bladder for analysis by catheter.

Phloridzin 1 mg. was given subcutaneously with the following result: Right:—Acid. Sp. gr. 1015. Urea 2 per cent. Albumen. No sugar. A few pus cells. No tubercle bacilli. Left:—Acid. Urea 2.25 per cent. A trace of albumen. Sugar present. A few pus and blood cells. Sufficient urine was not obtained from the left side from which to get the specific gravity. The high specific gravity on the right side was, in part, due to the pus present.

A diagnosis of pyonephrosis was thus demonstrated. The presence of a grayish ulcer at the right ureteral opening in the bladder made it highly probable that the condition was a tuberculous pyonephrosis and nephritis, although only one or two doubtful bacilli had been found in the urine. The left kidney being normal, and the right kidney being of little value, nephrectomy was advised and performed. The diagnosis of tuberculous pyonephrosis was confirmed. The patient did extremely well, there being no change in the quantity of urine excreted even during the first twenty-four hours after the operation. The albumen disappeared from the urine almost immediately. A subsequent examination showed the ulcer in the bladder completely healed.

In the following case we were called upon to make a most careful estimate of the patient's ability to undergo a major operation. A man 61 years of age presented a tumour in the left loin the size of a child's head. It was moveable, smooth, not tender, and apparently associated with the kidney. It was said to have been present only about three months and had been growing rapidly. The patient stated that, some years before, he had met with a coaching accident in Milan and injured his left side and had passed blood in his urine for several days afterwards. During the past three months blood had appeared in the urine from time to time in sufficient quantity to be easily recognized macroscopically. The rapid growth, the great size of the tumour, its mobility and the appearance from time to time of hæmaturia led to a diagnosis of tumour associated with the kidney, possibly malignant and probably a hypernephroma. The man was in delicate health with markedly sclerosed arteries, and a very weak irregular heart action. He had consulted several physicians at home

and in the United States, all of whom had made clear to him the gravity of an operation in a man of his years, and he came to Montreal very anxious to have the tumour removed, if possible, and willing to take any ordinary hazard. On catheterizing the ureters the one in the left side failed to deliver any urine until the catheter was introduced to the renal pelvis when 2 c.c. of clear yellow fluid coming in drops, not spurts, was secured in 15 minutes, while the ureter on the right side delivered 10 c.c. in spurts in the same time. In all about 50 c.c. was secured from the right and 10 from the left. On examining the urines the following results were obtained:—Right.—Amt. 50 c.c. Sp. gr. 1014. Reaction acid. Colour pale. Urea 7 per cent. Trace of albumen. No sugar. Freezing point 1.15. Left.—10 c.c. Sp. gr. 1008. Alkaline. Darker. Urea .1 percent. Large quantity of albumen. No sugar. Freezing point 0.3.

Microscopically a few traumatic blood discs were found in both sides. It was thus seen that the left kidney was secreting little or nothing. What little there was in the pelvis of the left kidney had few of the characters of urine. It was evident that the right kidney was functionally good and in fact that the man was already living with his right kidney alone. Therefore, if the kidney was removed one would have nothing to fear of renal insufficiency. Nephrectomy was performed. The diagnosis was confirmed. The patient made a perfectly smooth recovery. The tumour proved to be a carcinomatous growth, a true Grawitz tumour. The recurring hæmorrhages were due to the perforation of the renal pelvis at one point and the projection in of a portion of the tumour.

In the following case the value of catheterization as a therapeutic as well as a diagnostic agent is well illustrated. A lady, 60 years of age, had for several years recurring attacks of severe renal colic in the left side, the attacks being sufficiently severe to require rather large doses of morphia for their relief. She was admitted to the Hospital with a view to having the stone removed from the left kidney. An attempt to catheterize the ureters was unsuccessful, and the patient found the operation so disagreeable, and protested so strongly against a second attempt being made, and the diagnosis seemed so clear that nephrotomy was performed. The kidney was found surrounded by a dense mass of inflammatory tissue and adhesions. On an attempt being made to clear the surface of the kidney the hæmorrhage was profuse. On opening the kidney the pelvis was found to contain a large quantity of phosphatic debris, which was washed away as carefully as could be. It was not possible to pass a catheter down the ureter into the bladder. The inflammatory adhesions were so numerous and dense that one could not outline with anything like certainty the confines of the kidney, the pelvis or the

upper part of the ureter. Two cysts of considerable size were evacuated. The patient did well, but urine continued to flow from the wound in the back. It was thought quite possible that the ureter might be blocked by phosphatic debris. A catheter was passed through the bladder and left ureter to the pelvis of the kidney, and under ether the wound was reopened and considerable quantity of phosphatic sand was washed away. After this operation the urine continued to come through the back in such quantities that it was evident that very little passed *per via naturalis*. This view was borne out by the recurrence of symptoms of colic and the presence of phosphatic gravel in the bladder. In a few days very little urine was excreted from either kidney and it was feared that the patient would succumb to anuria. Two specimens were collected, one from the bladder and one from the back. Very little urine came from the right kidney through the bladder, apparently because of obstruction in the right ureter.

Right.—Turbid. Quantity too small for sp. gr. Albumen. Urea, 2 per cent. Freezing pt. .78. Left.—Turbid. Sp. gr. 1008. Trace. Urea 1 per cent. Freezing point .24.

Pus present in both specimens. That night no urine came from the bladder. Both ureters were now catheterized, and warm mild antiseptics used to wash out the pelvis of the right kidney. The patient's condition immediately improved, and the right kidney excreted 12½ ounces of urine in the following 24 hours, the quantity gradually increasing to normal. For four weeks matters continued in this state when the patient was again seized with chilly sensations and rise in temperature. The right pelvis was again washed out, after which the temperature became normal. At the end of another week another cessation of urine from the bladder occurred. The catheter on this occasion struck an obstruction about 2 inches up the ureter on the right side which was gradually overcome with evacuation of a quantity of pus. The pelvis and ureters were re-washed and no further trouble occurred. Large quantities of water were given by the mouth. An examination of separate urines showed slight difference in favour of the left kidney which all the time was excreting through the wound. It was quite clear that both kidneys were functionally impaired, and that the two were required to keep the blood of the normal density:—

Right.—Sp. gr. 1006. Clear. Floc. present. Neutral or slightly acid. No albumen. Urea 1.3 per cent. Left.—Sp. gr. 1006. Clear. Floc. present. Ditto. Trace of albumen. Urea, 1.3 per cent. A few pus cells on both sides.

Nephrectomy was therefore considered inadvisable and an expectant policy determined upon. She did well, gaining in weight and health

generally for four months. The escape of the urine of the left kidney through the wound continued.

A further examination at this time showed :—

Right.—Clear. Sp. gr. 1015. Acid. No albumen. Freezing point 1.05. Left.—Pale. Sp. gr. about 1005. Alkali. Albumen present. Freezing point : 6. Pus present.

It was thus evident that, whatever had been the case before, the left kidney was now doing but little work. The annoyance from the constantly escaping urine from the wound in the back was very great. It seemed impossible to get the left ureter free from recurring blocking with phosphatic debris, and the kidney was therefore removed. The operation was performed, and without the slightest disturbance to the urinary balance.

Reasoning from less fortunate cases it seems probable that on two occasions the washing out of the pelvis warded off an acute pyelitis if not uræmia.

The following is a very interesting example of the conservative influence of cystoscopic examinations. A man was brought to the Hospital with a history of a very severe renal colic persisting almost without interruption for 72 hours. During that time he had been under the influence of morphia and chloroform the greater part of the time, both night and day. The pain had all the characteristics of a renal colic on the right side. The pain occasionally passed down into the right thigh and right testicle. During a forced inspiration the lower pole of the right kidney could be palpated, and was found to be extremely tender. There was no special tenderness along the course of the ureter. On examining per rectum the tenderness on the right side was so great as to suggest the possibility of the condition being one of a pelvic appendicitis.

In looking into the bladder with a cystoscope a stone was seen occupying the right ureteral orifice, and when the point of the catheter was brought against it he would cry out with pain. He was put back to bed and given moderately large doses of morphine and copious draughts of water to drink. For some hours after the examination the pain was pretty severe, and then disappeared and did not return while he was at the Hospital. Before leaving, the bladder was examined again, and the right ureteral orifice was found empty. The edges were swollen and pouting and the mucosa around ecchymosed, a complete picture of the effects of traumatism. The stone could not be seen and although the man had been warned to be on the watch for it, I think it must have escaped during the time that he was pretty thoroughly under the influence of morphia.

Other instances illustrating the conservative influence of ureteral catheterization are seen in two or three cases that Dr. Campbell has examined where there was reason to suspect a calculus. In one instance I may say that an exploratory incision in the right kidney had been determined upon. On catheterizing the ureter, both sides were found alike and normal.

Any variation between the two sides is a deviation from the normal as taught by Casper. The urine from the two kidneys in health is similar in all its characteristics, in acidity, specific gravity, colour, freezing point, electrical conductivity, and the two kidneys have equal power to excrete methylene blue, indigo-carmin or phloridzine.

In the three cases in which renal calculi and renal disease were excluded as the result of examination of the separate urines, the subsequent history has confirmed the findings.

The cases of tuberculous cystitis associated with renal tuberculosis that I have reported confirm the views so ably advocated by Rovsing that in the majority of cases the kidney precedes the bladder infection. The latter is generally a descending lesion. The little ulcer so constantly found around the vesical orifice of the ureter is an indication of the side involved, and this without any exception, in the cases that I have observed. The thickening and shortening of the ureter noted by Hurry Fenwick and so conspicuously present in one of my cases is probably, as taught by Adami and the German School, a secondary and ascending infection from the ulcer at the vesical orifice of the ureter; the infection being carried up very largely by the lymphatics.

After a tuberculous kidney is removed, not only the system and bladder are saved from further infection, but the remaining kidney is relieved. It has fewer and less toxins to excrete. The albumen, if present, disappears, and it does its work without that handicap.—*The Montreal Medical Journal*.

Fractures of the Base of the Skull.

BY

ANTHONY BOWLBY, LONDON.

British Medical Journal, January 17, 1907.

The three most important features of fractures of the bases are :
1. Escape of blood. 2. Escape of cerebro-spinal fluid; 3. Injuries to the nerve. In fractures across the middle fossa (the most frequent site), all three symptoms may even be absent; the escape of blood occurs only if the membrana tympani is ruptured, and there will be no escape of cerebrospinal fluid unless the dura is broken together with the membrana

tympani. The escape of cerebro-spinal fluid must not be confounded with the escape of the normal mucus of the internal ear. The former is characterized by its copiousness, its watery character, low specific gravity and the presence of sugar. The auditory nerve is the one most frequently ruptured and only rarely does healing take place; the facial, on the other hand, usually regenerates. In fractures of the anterior fossa the blood escapes through the nose or pharynx. It must be remembered that the blood may arise from an injury in one of these cavities. The escape of cerebro-spinal fluid is usually not noted in fractures of the anterior fossa, because it is invisible and passes into the pharynx. Any of the first six nerves may be injured. The posterior fossa is less frequently injured than the other two because of the thickness of the bones. The diagnosis of basal fracture in this fossa is very difficult because it possesses no opening through which blood or cerebro-spinal fluid may escape. Occasionally the evidence of hæmorrhage may be noted by the presence of a hematoma in the occipital region. Injuries of the nerves are very rare.

The most common causes of death in basal fractures are hæmorrhage, sepsis and injury to the brain. To prevent sepsis it is important to keep the external communications scrupulously clean. This is more easily done in the internal ear than in the nose or pharynx. The after consequences of cranial fracture, *e. g.*, epilepsy, are briefly discussed by the author.—*The American Journal of Surgery*.

Anal Fissure.

Before resorting to radical operation palliative measures should always be tried. The most important thing is a laxative diet and soft bowel-movements by mild cathartics if necessary. On retiring each night there should be an injection of an ounce of olive oil, to be retained until morning, which aside from its local beneficial action will secure a soft motion. Next in importance to the regulation of the bowels, is that strict cleanliness should be maintained by bathing the anus night and morning and after each defecation with hot water. The parts should afterwards be dried with a sterilized piece of gauze, and a pad of the same material placed over the anus and kept in position with a T-bandage. The fissure itself may be burned once a week with stick nitrate of silver. *Therapeutic Gazette* says pure ichthyol applied to the fissure with a cotton swab two or three times a week is much better in most cases than nitrate of silver. It seems to act like a charm in allaying the painful symptoms, and often a few applications will prove sufficient.—*The American Journal of Clinical Medicine*.

Substitution of the Thumb by the Great Toe. (Ersatz des Daumens aus der grossen Zehe).

BY

F. KRAUSE, Berlin.

Berliner Klinische Wochenschrift, November 26, 1906.

The patient lost his thumb through an accident and was much hindered in his occupation thereby. Krause performed the following operation: The tissues over the stump were freshened; a transverse incision at the base of the great toe was made on its dorsal aspect, the joint was opened and the head of the metatarsal bone was excised to afford more space. The stump of the thumb was then sutured to the wound on the toe, tendon being sewed to tendon, fascia to fascia and skin to skin. The parts were immobilized for seventeen days; at the end of this time the plantar tissues were divided and the suture of the parts was completed. The result at the end of 3½ months was excellent both cosmetically and functionally. The joint is movable and the patient possesses some active motion.—*The American Journal of Surgery*.

OBSTETRICS AND GYNÆCOLOGY.

A New Method of Performing Ventri-Suspension of the Uterus.

BY

A. MACGREGOR SINCLAIR, M.B., C.M. (Aberd.),

Surgeon to the Victoria Hospital, Burnley, Lancashire.

Various methods have been described whereby the uterus may be fixed to or suspended from the anterior abdominal wall for retrodeviations. I make bold to add another to the number. It embraces, I think, all the good points of the operations previously described, while it does away with their disadvantages and dangers. In this operation it will be seen that there is no possibility of any bowel becoming strangulated, nor is there any interference with or hampering of the bladder. It is very effectual and suspends the uterus in a more natural position than any operation previously described. It is easily performed, and the patient does not complain of any pain or inconvenience after.

An opening is made through the anterior abdominal wall sufficiently large to permit of a thorough inspection of the contents of the pelvis. A self-retaining retractor is placed in the upper part of the wound, the handle pointing upwards. The displaced uterus is raised, and any adhesions present are broken down. The ovaries are then inspected and i

any abnormality be noticed, it is attended to. The round ligaments are next defined and followed outwards to where they enter the abdominal wall. Beginning at the point where the left round ligament enters the abdominal wall, with good strong catgut—not too thick—in a curved needle, I stitch the ligament to a fold of peritoneum and carry this on as a continuous suture embracing the round ligament and stitching it to the parietal peritoneum till the uterus is reached. At this point this suture is tied. Then with another catgut suture and curved needle the right round ligament is taken up where it leaves the abdominal cavity, and a continuous suture carried along in the same way as on the other side till the uterus is reached, and then the suture is carried along the front of the uterus suturing it also to the peritoneum till the first suture is reached. In the process of stitching, the round ligaments, which are usually found lengthened and thinned out, are shortened. The abdomen is then carefully closed in separate layers by continuous catgut sutures.

I have now performed this operation several times, and am well satisfied with it. I have examined patients after they have been going about for some time, and the position of the uterus is really excellent. There is no trouble whatever with the bladder. The first time it suggested itself to me was in the case of a young nulliparous married woman, whose abdomen I opened to rectify a bad retroflexion. I had intended performing the operation of suspension after the method of Sir William J. Sinclair. On opening the abdomen, however, I found that the appendix vermiformis was attached by its tip to a loop of small bowel which was also bound down in the pelvis. To get properly at this I had to enlarge my abdominal incision. After removal of the appendix, which was diseased freeing the bowel and cleaning up, I turned my attention to the uterus. Its anterior surface, which had been turned round and wedged down in the pelvis, did not look at all inviting to stitch to the peritoneum, so the method described above was followed. The patient left the hospital in three weeks feeling quite well.—*The Journal of Obstetrics and Gynecology.*

Case Illustrating the Effect of Pregnancy on Alopecia Areata.

BY

G. G. STOPFORD TAYLOR, M.D., and R. W. MACKENNA, M.A., M.B.,
Liverpool.

It is a matter of elementary knowledge that pregnancy produces changes in other organs of the body besides those more intimately associated with gestation. The skin partakes in these alterations, and the obstetrician is probably more familiar than the dermatologist with the

pigmentary changes induced in the integument by the gravid state. The *linea nigra*, the darkening of the areola, the development of the secondary areola, the proliferation and hypertrophy of the sweat and sebaceous glands,—of which the formation of Montgomery's follicles is a special instance—the improvement in the texture and the quantity of the hair, and the deposition of a large amount of subcutaneous fat, especially over the buttocks and in the mammary regions, are all indications that the skin and its subjacent structures are in a state of abnormal functional activity. Occasionally this activity brings about pathological changes such as pigmentary deposits in exposed parts of the body like the face, or the removal of pigment from one area of the skin to another giving rise to leucoderma.

The following case, which presents features of great interest both for the obstetric physician and the dermatologist, was recently seen at our clinique :

Case. Mrs. D., age 32. When the patient was between six and seven years of age she had a first attack of Alopecia areata consisting of some six or eight bald patches on the scalp. There had been no previous illness to occasion this loss of hair, and otherwise she was in good health. The attack persisted for about a year, recovery taking place under local and general treatment. At about the age of 14½ there was another attack, confined to the scalp, which lasted about four years. The hair on the eyebrows, and the eyelashes were spared, but on the scalp there was a progressive loss until complete baldness was established.

Menstruation began at the age of 15½ years, but though the patient's body underwent the usual structural modifications characteristic of puberty, such as the development of hair on the pubes and in the axillæ, the hair did not return to the scalp until between her eighteenth and nineteenth year. There was no further attack till after marriage, which took place at the age of 25. During her first pregnancy the patient noticed that her hair grew very thick and strong. When the pregnancy terminated, and during lactation, the hair began to fall out and continued to do so till there was complete baldness. This attack lasted for two and a half years, when the patient again became pregnant. A few weeks after conception the hair began to grow again, and by the time of parturition she had a plentiful supply. Since the pregnancy terminated, about two years ago, there has been universal alopecia, the hair having fallen from the scalp, the eyebrows, eyelids, armpits, genitalia, limbs and trunk. This is the most severe attack the patient has yet experienced, but the curious cycle of events is being repeated, for she is now again in the

third month of pregnancy, and there are signs of a rapid return of hair to all the denuded areas.

During pregnancy the patient enjoys very good health, and has not noticed any special pigmentation, or felt any special nerve pains. She suckles her children for about ten months and does not feel it a strain to do so.

There are many interesting points in this case. Of recent years there has grown up a considerable body of opinion that alopecia areata is a disease of microbic origin, and various microbes have been isolated and dignified as the causes of alopecia. This case, at any rate, adds to the weight of evidence against the microbic theory.

Another point of interest in the case is the fact that when menstruation was established, though the hair follicles on the pubes and in the axillæ, which usually become active at puberty, began to develop there was no similar activity generated in the hair follicles of the scalp, which remained bald for quite three years. The case is apparently one in which there is a constitutional tendency to alopecia, and the stimulus of pregnancy, producing as it does greater activity of the sebaceous glands and an increase in the total volume of blood in the body, communicates to the hair follicles with which the sebaceous glands are associated as germinal impulse which sets up active growth. When pregnancy terminates, the sebaceous glands cease to be so active, there is a loss of subcutaneous fat, and the volume of blood returns to the normal. The activities of the skin are more quiescent, and the hair follicles apparently lack sufficient vitality to keep up a growth of hair.—*The Journal of Obstetrics and Gynecology*.

Modern Obstetric Technique.*

BY

GEORGE L. BRODHEAD, M.D.

Professor of Obstetrics, New York Post-Graduate Medical School and Hospital; Instructor in Obstetrics, New York University and Bellevue Hospital Medical College.

In the short time allotted to me to-night, it is my purpose to invite your attention to a few of the more important points in obstetric technique.

Normal labor should, naturally, receive first consideration. For convenience, three sub-divisions of the subject may be made, first, the preparation of the patient, second, the preparation of the accoucheur, and third, the preparation of the lying-in chamber.

*Read before the Clinical Society of the New York Post-Graduate Medical School and Hospital, March 15, 1907.

The patient should be given a full bath, preferably of the shower variety, the pubic hair should be clipped close, or the parts may be shaved, after which the genital region should be thoroughly cleansed with a chlorin mixture, lysol, or bichloride. For the past few years, I have used the method advocated by Stewart, i.e., washing the parts with several parts of warm water, to which acetic acid and chloride of lime have been added, in the proportion of one teaspoonful of lime, and two of acetic acid, to the quart. The vaginal douche should not be used as a routine procedure in general practice, for it is my belief that the danger of introducing germs far outweighs the benefits to be derived from the use of the douche. The bladder should be emptied frequently during the course of the labor, and the bowels should be thoroughly evacuated by a cathartic, followed by an enema. In the second stage, sterile stocking drawers should be worn, and the abdomen should be covered with a sterile towel.

The accoucheur, in preparing his hands and arms, makes use of one of the well-known methods for hand disinfection. The chlorin, the permanganate and oxalic acid, the alcohol and bichloride methods, are all widely used, and go far toward rendering the hands sterile. Of these methods, the chlorin is most effective. The lime and soda plan is excellent, but I have relied, for a number of years, on the use of lime and acetic acid, two teaspoonfuls of the former and four of the latter to the quart of warm water. The hands and arms are first scrubbed for five minutes with warm water and green soap, the nails are cleaned with powdered pumice stone, and then the hands and arms are immersed for one to two minutes in the chlorin solution. A sterile gown and rubber gloves should be worn, and the greatest care must be exercised in avoiding contamination (of the gloves especially) by touching the bed clothes, etc. The ideal room for confinement is rarely met with in the homes of our patients, for bare walls, wooden floors and high, narrow iron beds, are to be found usually only in our hospitals, public and private. In private practice, however, we try to eliminate, as far as possible, all unnecessary draperies, furniture, etc., and we select, if possible, a large bright room, with good ventilation and have the room thoroughly cleaned. Sheets, towels and solutions should be sterile, and during the stage of expulsion, the patient should rest if possible, upon a large soft sterile pad. It is almost impossible to sterilize a Kelly pad, and the soft pads are not only much more comfortable, but they are easily sterilized. The mattress should be firm, but if not, the leaves of a table placed crosswise in the bed will answer admirably. In the management of breech cases, as in forceps work, delivery upon a table is preferable. Vaginal examinations during labor should be made as infrequently as possible, and then only with the greatest care.

The membranes should remain intact until full dilatation has been secured, and until preparations for delivery have been completed.

For delivery, the dorsal position seems to me to be preferable, although we believe this to be merely a matter of choice. During the stage of expulsion, rapid advance should be checked by the use of chloroform, and by pressure upon the head with the palmar surfaces of the fingers of one hand, while with the index finger and thumb of the other hand we make pressure against the upper portions of the labia majora in the effort to prevent the biparietal diameter of the head from slipping through the outlet. Advance should be slow and regular, the head should be kept well up under the pubic arch and no pressure whatever should be made upon the perineum itself. The fact should be kept in mind, that in vertex cases the danger of laceration is not over until the forehead slips over the perineum. The cord, if around the neck, should be slipped over the head, but failing in this, and also in the effort to slip it over the shoulders, the cord should be clamped and cut. Whether the anterior or posterior shoulder is born first makes, probably, but little difference provided the delivery is made slowly, but we ordinarily endeavor to bring the anterior shoulder down first.

At the end of fifteen or twenty minutes after the birth of the child, the patient is encouraged to expel the placenta voluntarily, but if the effort fails, the Crede method is used. If there is hæmorrhage, adouche is given, and unless there is some special reason for delay, such as exhaustion, lack of proper light, assistance, etc., laceration of the soft parts is repaired immediately. For the repair of torn vagina and perineum, No. 1-20 day, chromicized catgut has given excellent results. We have sutured the cervix only in the event of hæmorrhage from the cervical artery.

Episiotomy, in properly selected cases and correctly performed, is an operation which deserves a distinct place in obstetric technique. Where there is need of haste, or when the head is large and the perineum begins to tear when there is but little distention of the vulva, the operation is so easy, and the results so good, that we feel the operation ought to be performed more frequently.

Forceps.—The operation may be high, median or low, and the preparations are the same as for normal labor. Except in the simplest cases, the operation should always be done with the patient upon a table. Preparatory to all forceps work, the cervix should be fully dilated or dilatable, the membranes should be ruptured, the position of the head determined, and the bladder and rectum emptied.

High Forceps Operation.—In performing the high forceps operation, especially in the presence of deformed pelvis, the Walcher position is of

distinct advantage. In the choice of instrument, we believe that while the ordinary varieties of forceps may and do give excellent results, that the axis-traction forceps, especially in the difficult cases, will give better results, for the reason that the extraction can be made more easily, and with consequently less injury to the child. Traction should be made in the proper axis with great care, and very gradually in order to allow moulding. If the blades slip, knowing the danger of intracranial hæmorrhage, the operator should seize the head in a different diameter, use a different style of instrument, or perform podalic version.

The technique of the *median operation* is the same as for the high operation, except that, as the head is well engaged in the brim, and moulding has frequently taken place, the operation is usually easier, and gives better results than the high operation.

Low forceps.—This procedure is by far the most frequent of all obstetric operations. At the present time, among the better class of patients, it is necessary to perform the operation on primiparæ in a large percentage of cases, and fortunately the operation is attended with very slight danger, provided, of course, that the conditions for successful operation are complied with. Asepsis must be rigid, the head should be extracted very slowly and carefully, and we are convinced that the very best results are to be obtained with forceps having solid blades.

The early conservative application of forceps is certainly to be preferred to long delay, during which the child is suffering from asphyxia, and the soft parts have become edematous. During the birth of the head, the perineum is considerably relaxed by allowing the thighs to be well extended, instead of holding them up with a sheet or leg holders.

The instrumental rotation of a persistent occipito-posterior position of the head has come to be considered a well recognized obstetric procedure. The technique cannot be given in this short paper, but one should keep in mind the fact that the forceps blades are curved, not straight, and that rotation must be accomplished with the greatest care and gentleness, the tips of the blades being kept near the middle of the pelvis by a rotary movement of the handles, during rotation.

Version.—*External version* for malpresentations and breech, has been used successfully in many instances, the technique consisting practically of the gentle manipulation of the fœtus, through the relaxed abdominal and uterine walls, until a normal presentation has been obtained. The danger in such manipulation is practically nil, and can be disregarded.

Internal version still holds the very high place which it has always held, in obstetric science. In performing the operation in cases of protracted

labor, one must keep in mind the danger of rupture of the uterus. It is my belief that this occurs much more often than is generally supposed. In many of these cases of protracted labor, craniotomy would in my opinion be much safer than version.

Craniotomy.—This operation, it seems to us has been regarded, too long, as a procedure which is so difficult and so dangerous, that it is considered only after all other measures have failed. As a matter of fact, the operation, is frequently much easier than the high forceps operation, and again, much safer for the patient than podalic version. In any labor, where the child is dead, craniotomy is to be preferred to a difficult forceps or breech extraction. The technique of the operation is comparatively simple. After the usual preparations for labor have been made, the perforator of the Tarnier basiotribe is passed through a suture or fontanelle, and the brain substance is broken up.

The right and left blades of the instrument are introduced and applied as ordinary forceps blades. By gradual compression the head is slowly crushed, then carefully extracted. If the Braun cranioclast is used, the perforation is made with a Smellie scissors, the solid blade of the instrument is passed within the skull, and the fenestrated blade is applied over the convexity, after which the blades are screwed together and the head extracted. We believe that the operation, if performed in place of version, would save the lives of many patients every year.

Induction of Labor.—For the induction of labor, of the three well-known methods, the gauze tampon, the bougie, and the hydrostatic dilators, my preference is for the latter. The Champetier de Ribes bags in their present modified form, have given so much satisfaction that I use them almost exclusively. The technique is simple. The usual preparations for labor having been made, the cervix is dilated with the finger, or a steel dilator, so as to admit of the introduction of one of the smaller bags. The bag is rolled up and seized with a specially devised Champetier de Ribes forceps (or an ordinary uterine dressing forceps), and carefully passed into the cervix, after which the bag is slowly filled with a sterile solution of lysol or normal salt solution. For this purpose, the writer has devised a glass syringe, having a rubber plunger. The instrument can be boiled, and is always in order for use. There are two sizes, two and one half, and four and one half ounces, and they are useful for any purpose for which syringes are used. One may also use, for this purpose, the ordinary Davidson Syringe. When the bag has been completely filled, the stem is clamped and tied. If there is no need of haste, traction is not made upon the bag, but if it is desired that the dilatation be performed quickly, traction is made at intervals upon the stem.

The bag will soften and dilate the cervix, and if, when the bag slips through the cervix, labor has not yet begun, a larger bag is introduced. Labor usually commences within a few hours after the introduction of the first or second bag. In some few instances the cervix can be dilated almost completely with the bags, without provoking hard expulsive contractions, but in these patients, the membranes may be ruptured and if necessary the delivery completed by forceps or version. When a bougie is introduced, the membranes are not infrequently ruptured, but this accident rarely occurs in the introduction of a bag. After a fairly large experience with the bags, I am convinced that in their use, a great advance has been made in obstetric technique.

Accouchement Force.—Under this heading may be given the various methods for the rapid dilatation of the cervix, namely, manual or digital dilatation, the use of a steel dilator, such as the Bossi, and third, the use of rubber dilating bags. The Bossi dilator has been used rather extensively both here and abroad, but while many of the reports from the other side have been favorable, American operators have not as a rule been favorably impressed. Many have discarded the instrument, on account of the danger which attends its use. The dilatation of the cervix by the methods of Harris and Edgar is too well known to need comment, further than to state that digital dilatation has proved to be a most useful obstetric procedure.

When there is no need of great haste, the Champetier de Ribes bags have been very useful, but for rapid dilatation, the digital method has been used. Pomeroy has recently published the technique of rapid dilatation by means of a bag with which he has obtained good results. The bags are intended to compete with digital dilatation, in eclampsia, placenta previa, accidental hæmorrhage, etc. It is claimed that dilatation is brought about in a very gradual, even manner, and without the expenditure of the muscular energy which is necessary in making digital dilatation. The bags are of two sizes, the smaller of which is first introduced with the patient under anesthesia. Each bag really consists of two bags or compartments, the upper and smaller of which is called the anchor bag. The smaller bag is first filled, after which the lower bag is slowly inflated with a sterile solution, by means of a piston or Davidson syringe. When the cervix has been dilated as far as possible with this bag, the second and larger bag is introduced. This is slowly filled in the same way, and after full dilatation has been obtained the parturient canal has been dilated sufficiently to make delivery possible by either forceps or version. We feel that these bags should be given a thorough trial.

Cæsarean Section.—This operation has grown steadily in popularity, and the results, for both mother and child, are sufficient to justify it. The usual preparations for laparotomy having been made, the bladder is emptied by catheter, and the cervix, if closed, should be dilated to the extent of two fingers. An assistant then makes pressure at either side of the abdomen, thus bringing the abdominal and uterine walls closely together, and forcing the uterus well forward in the median line. An incision is then made, about six inches in length, in the median line of the abdomen, beginning at a point about three inches above the umbilicus. Sterile pads are then placed at either side of the incision, and then we make a median uterine incision of the same length as the abdominal. The child is seized by one or both feet, and quickly extracted. If in making the incision, the placenta is encountered, the hand is quickly forced through it, the child is extracted and the placenta removed at once. An assistant seizes the uterine arteries, and makes digital pressure, sufficient to shut off the uterine circulation. The umbilical cord is then cut, and the child is handed over to an assistant. While this is being done, an assistant brings the uterus up into the abdominal wound, and protects the peritoneal cavity with gauze pads. The placenta and membranes are removed manually, and the uterus is dried with a gauze pad. If the uterus is well contracted no packing is necessary, but if it is soft and shows a tendency to relax, the cavity should be packed with sterile gauze. Interrupted sutures of No. 2-20 day chromicized catgut, are passed through the inner two thirds of the muscular coat, down to, but *not including* the mucous membrane. Another layer of sutures of the same material is then passed through the peritoneum and the outer portion of the muscular coat, and finally a continuous suture of No. 1 catgut is taken in the peritoneal coat, in order to close in all raw surfaces, and to prevent contamination from the uterine cavity. All blood and clots are then removed from the peritoneal cavity, which is then filled with hot normal salt solution, after which the abdominal incision is closed, layer by layer, in the usual manner. A patient was seen recently, with rupture of the uterus in the ninth month of pregnancy, the foetus and placenta lying free in the abdominal cavity. The rupture had taken place through the cicatrix of a Cæsarean section which had been performed by me two years ago. The uterine incision in this case had been closed layer by layer, with continuous sutures of chromicized catgut, and the patient made a good recovery. Whether the rupture could have been caused by a weakening of the uterine wall, due to the use of a continuous suture, I am unable to state, but I am of the opinion that interrupted sutures are much safer.

Symphysiotomy and Hebotomy.—At the present time, the former operation is performed but very seldom, and the technique therefore need not detain us. Hebotomy or pubiotomy, has been performed about 300 times since 1894, when Gigli first proposed the operation as a substitute for symphysiotomy.

Through a small incision or by the subcutaneous method, a chain saw is introduced behind the pubic bone, and the bone cut through. Delivery is then completed by forceps or version. Montgomery, in a recent article, (*American Journal of Obstetrics*, December, 1906) is very enthusiastic over the operation, stating that in a recent personal communication from Gigli, the latter affirms that in the three hundred cases which he has collected, the mortality is only two to three per cent. while in those patients who were not septic when operated upon, there was no mortality. Montgomery compares these figures with those published by Rubinrot who stated that in all of the cases of symphysiotomy recorded up to 1899 the mortality was ten per cent., and the morbidity about 30 per cent. Jewett (*American Journal of Obstetrics*, December, 1906) however, states that in his opinion, the operation offers no advantages over symphysiotomy, and that it is open to all of the objections which obtain in the usual median section. We believe that the field for the operation is very small, and that more satisfactory results are to be obtained by the induction of premature labor, or if the patient has gone to full term, the operation of Cæsarean section.—*The Post-Graduate*.

Painless labor.

Lamphear (*Medical Record*) gives the following description of his method: When labor has progressed to the stage in which the os uteri is well dilated and the pains are becoming distressingly severe, a hypodermic injection of one quater of a grain of morphine and one hundredth of a grain of hydrobromate of hyoscyne may be given; in one hour the forceps may be applied and labor completed without any pain whatever, even though the perineum be lacerated and sewed up. There need be no hurry; the perfect analgesia will last for hours. If the patient is not asleep at the end of an hour after the injection, a few drops of chloroform may be given by inhalation, a dram at most usually putting the patient to sleep of some hours' duration. There will be none of the nausea of a prolonged ether or chloroform narcosis, no increased danger of hemorrhage as after chloroform, and no necessity for a skilled assistant to give the anesthetic.—*The Buffalo Medical Journal*.

Determining the Sex of the Fœtus.

In regard to this Sheill says that "a still tongue makes a wise head," but gives the following as the result of his own observations. The rule followed was that if the fœtal heart rate is 141 or less, the child will be a boy; if it is 147 or more, a girl; and if between these two limits the sex is doubtful. In 300 cases the prediction was correct in 56 per cent; omitting those cases in which the women were already in labour the percentage of correct predictions was 73; while counting only primiparas mistakes were made altogether in not more than one-tenth of the cases.—*Dublin Journal of Medical Science.*

THERAPEUTICS.

AN EMINENT NERVE TONIC:

An Old, Familiar, but little Understood Remedy.

I am surprised, writes an M. D. to us, that with so many new remedies being introduced into practice, and our obvious poverty in respect of a good nerve tonic, a well-known salt, bromide of potassium, is in its excellent character as a powerful nerve tonic so little understood and used by the profession to-day.

Bromide of potassium was introduced to us as a nerve tonic, and time and experience have proved its value, and also the fact that it will not be easily equalled. If this salt is not prescribed in this important function, the fault lies with those who ought to know better, rather than in any inherent objection to the drug itself. Through this lack of appreciation, bromides have lost the important *role* they once held in medicine; and having myself been taught their use as a nerve tonic by no less an authority than the late Sir William Jenner, I take the liberty of giving you my experience extending over many years, and of recommending my fellow-practitioners to prove and judge for themselves.

We frequently meet with nervous debility due to overwork, influenza, or other disturbance of the nerve centre. Where a nerve tonic is indicated, no amount of quinine, iron, arsenic, or other general stimulant will do that work. Bromide of potassium, or ammonium, or sodium is in the present day seldom thought of, for the simple reason that we have learnt that these are sedatives and not tonics. Although it is true that they are sedatives when administered in small doses, I have in experimentation on myself and in practice learned to understand the fallacy of this doctrine, and have found that the high value of bromide as a nerve tonic, particularly of the potash salt, will be fully proved when administered in sufficiently large doses. Small doses of 5 to 7½ grs. are,

no doubt, useful as a sedative, but the action of casual large doses of not less than 30 grs. up to 60 grs. potassium bromide will be found to produce a totally different effect. I say casual doses, and this preferably at bedtime. The effect of such a dose will be at once apparent as a potent nerve stimulant, lasting for twenty-four hours. The symptoms in feeble, nervous, debilitated, over-fatigued, or convalescent cases will assume a totally different aspect, and the patient will feel more like himself, with a good appetite and with loss of the feeling of sickness. If this same dosage be repeated two or three successive nights, it may be dropped for the fourth, and repeated on the fifth, but usually it will be found that normal strength and vigour will have sufficiently returned after three successive doses.

Bromide of potassium is now a cheap drug, but I am afraid that justice is not being done to the very excellent service it offers when properly administered. This is not, as I say again, the fault of the bromide, but the want of appreciation of its therapeutic properties. Small doses will lower the nervous tone, but large doses will build up, while there is no risk involved of poisoning. I have never noticed any toxic symptoms in myself or in any of my patients, neither have I met with a case in which the large dose has failed in producing the desired effect.—*The Therapist.*

Chloralamide.

For the selection of a sleep-producing drug the ingenuity of the professional attendant is often times much tried to find such to suit each individual patient suffering from organic or inorganic disease of some special organ which will not produce disadvantageous results in connection with the circulatory and nervous systems, especially when the heart, brain, liver, lungs, or renal organs are either permanently diseased or temporarily affected. The selection of a potent and suitable drug for the efficient treatment of the patient's condition capable of quieting the nervous system and producing necessary sleep is most important. Some of the more modern "hypnotics" are a great addition to the physician's list for selection and have greater advantages than morphia, chloral hydrate or opium when used in selected cases, and where a hypnotic or essentially a sleep-producing effect is required and one needful to act on the nerve centres to cause general quieting of the nervous condition arising in connection with diseases specially affecting the nervous systems of patients, as in certain varieties of heart disease, renal disease or hepatic as well as in cases of extreme irritation of the brain and neurotics caused by nervous prostration from whatever cause.

In Chloralamide, a drug composed of chloral and formamide, is found a suitable combination as a non-toxic and non-accumulative drug as a hypnotic, which I found most beneficial by producing seven to eight hours sleep given in twenty to thirty grain doses in cold milk from an hour to an hour and a half before the time sleep is desired to be produced. I have found it a most useful drug to produce general nerve quiescence and sleep in organic valvular disease of the heart without producing untoward results. It can be prescribed when chloral hydrate would not be safe, also when morphia may be contraindicated, where extensive lung or kidney diseases may be present and brain congestion exists. It is not a pain-relieving drug but one essentially a hypnotic.

Giving cachets is a convenient method, ten or fifteen grains in each cachet, as many patients, especially those of a highly neurotic temperament, are much averse to the taste of any drug. It is advisable that perfect quiet be enforced after taking the drug—no undue excitement in speaking, reading or movement, all of which in my experience tend to inhibit the speedy effect desired to be the result of a hypnotic.

I have prescribed Chloralamide in cases of valvular disease of the heart, one case being complicated with rheumatic fever and aortic regurgitant murmur, as well as a mitral systolic, with the addition of jaundice, due to a hepatic, cirrhotic condition, without any injurious effects resulting; and in another case of valvular heart disease, with cirrhosis of liver and kidneys and extensive dropsy (Anasarca and Ascites). I found it beneficial in a severe case of influenza, with hacking cough and lung complication (bronchitic) when other hypnotics, even in large doses, failed to produce sleep; this case was one of a highly neurotic temperament. It was effective in this case when large doses of Veronal failed. Why, I cannot explain, as generally Veronal I have found very effective.—*The Medical Times and Hospital Gazette.*

to the stools after purgen has been administered, you get a purple red color. This reaction does not ordinarily occur in the urine unless large quantities have been taken, thus showing that there is but little chance of an irritating action upon the kidneys. As to its therapeutic action, Gaudin, *Gazette des Hopitaux*, 1903, Vol. LXVII, page 1225, says that it acts directly upon the intestines, not being decomposed by the acid of the stomach; the secretion of the intestines being augmented without colicky pains. He states it can be used even in such conditions as hemorrhoids. As purgen is a carbolic acid derivative, it is to be expected that untoward effects might occur from its administration. Holz, *Berliner klinische Wochenschrift*, 1905, XLII, page 931, enters into a tirade against its use, describing the severe symptoms of poisoning after using it upon his own person. He cites a special warning against its use in babies who are especially sensitive to phenol. It would therefore seem that in purgen we have a synthetical preparation which, while mechanically identical with certain well-known laxative glucosides, is capable, under certain conditions, not understood, of breaking up in the system into poisonous compounds.—EDITOR—*Medical Notes and Queries.*

The Percentage of Phosphorus in Various Foods.

M. Balland has published in the *Journal de Pharmacie et de Chimie* for January a series of determinations of the amount of phosphorus present in various foodstuffs. The determinations were made on the actual food and not on the ash obtained by their ignition. The percentages of phosphorus, expressed as phosphorus pentoxide (P_2O_5), are as follows: Wheat (except Australian wheat) and oats, 0.65 to 1.11; maize, millet, barley, and rice, up to 0.8; carrots, cabbages, turnips, and onions, 0.1; asparagus and ends, cauliflower, lettuce, and leeks, 0.18; potatoes, 0.29; truffles, 0.5; peas, 0.6 to 1.0; haricot beans and lentils, to 1.35; beans, 1.45; cherries, currants, strawberries, oranges, pears, and grapes, to 0.1; dried figs, dates, and bananas, to 0.3; almonds and dried nuts, to 0.9; beef, veal, mutton, and fowl, to 0.45; fish, to 0.6; snails, oysters, and mussels, 0.26; to 0.35; cheese—Gruyere 1.81, Dutch 1.62, Camembert 1.1, average 0.68 to 1.81; roasted coffee, 0.4; cocoa, to 1.3; chocolate and milk (beverage), 0.62; hen's eggs, 0.26; white of egg, 0.015; butter, 0.13; and cod-liver oil, 0.05. M. Balland deplors the craze for fine white flour. Year by year in response to the demand of the consumer, machinery is perfected for producing still finer flour, containing as a consequence, still less phosphorus and nitrogen—*Lancet.*

THE ANTISEPTIC.

JUNE, 1907.

Regulations regarding the Sale and Private Possession of Cocaine, in Madras.

N July 1906 we had occasion to make some strong remarks on the regulations regarding the sale of cocaine in Madras which were then in force. Those regulations made it criminal for any chemist to dispense solutions of cocaine stronger than a one per cent solution, even with a duly qualified medical man's prescription. The regulations were absurd, of course. But we now understand that the credit of framing them really belonged to the Bombay Government and not to our own Madras Government. We therefore beg to transfer the language we used in July 1906 to the Bombay Government. Since then the Madras Board of Revenue been have working at developing some regulations of their own. They have now completed their labours in that direction, and let us look at the result. We may at once say that we do not feel competent to offer any remarks on the regulations regarding the sale of cocaine. That is a question for the local chemists or for the Pharmaceutical Society to discuss. We feel bound to offer some remarks on the uncalled for interference on the part of the Board of Revenue and the Madras Government with the professional liberty of members of the Medical profession.

The part of the regulations which we consider objectionable are quoted below in italics. "The Board further considers that the sale of cocaine to other than licensed persons should be allowed only on prescriptions of qualified Medical practitioners (including dentists) as defined below *and on prescriptions of other Medical practitioners only if such prescriptions are countersigned by the District Medical Officer of the district to which the practitioner belongs.*"

"Definition—The term qualified medical practitioner means all graduates in medicine of the Indian Universities and of all recognised universities of Europe and America; all medical practitioners eligible for registration on the Medical Register of Great Britain; *all Medical subordinates in Government employment including Hospital Assistants*; and all duly qualified dentists entitled to be entered in the dentists' section of the

1907.]

THE ANTISEPTIC

361

Medical Register of Great Britain * * * *Medical and other practitioners who wish to possess cocaine for use in the exercise of their profession, but not for sale will be required to take out a license, and will be permitted to possess not more than half an ounce of cocaine.*"

There are two very obvious objections to the regulations quoted above and we are glad to note that the Madras Government raised both those in their letter to the Board of Revenue. Here are the very words of the Madras Government:—

"But the Board states that for surgical work solutions of cocaine from 25 to 50 grains or more to the ounce in strength are required *and consequently every surgeon may have to take out a license.* The Board of Revenue is requested to explain further the necessity for this restriction."

Then again the Madras Government wrote as follows:—"It is also observed that, while all medical practitioners would wish to take out a license, the definition of a 'qualified medical practitioner' is so framed that Assistant Surgeons and Apothecaries and Hospital Assistants who are not graduates in medicine and who are not in Government employ will not be able to prescribe cocaine at all without a prescription being countersigned by the District Medical Officer. The necessity for this rule should be fully explained." These two objections raised by the Madras Government hit the nail on the head. They completely smash the Board's proposals. The reply of the Board to these two points is absolutely lame and unconvincing. We shall refer to it presently.

Let us first discuss the definition of a qualified medical practitioner. In every civilized country the State determines as to who shall be considered to be duly qualified medical practitioners within the limits of that country. India being a dependency of the British Crown, practitioners who are recognised as qualified in Great Britain as well as in her colonies and dependencies will find a place among the qualified practitioners in this country over and above those who are so recognised by the local Governments here. Then, leaving the qualified and registered practitioners of the United Kingdom who are also qualified practitioners in this country, it is for the local Governments to decide as to who else should be included in that category. There seems to be general agreement on the point that medical graduates of recognised Universities should be considered as qualified practitioners. That is as it should be. Very good. Well, who else? Are Apothecaries and Hospital Assistants without University qualifications to be counted among qualified practitioners? That is purely a question for the local Government to decide. We have nothing to say one way or the other. We are perfectly willing to abide

by the decision of the Government. And, of course, that decision will rest entirely on the standard of medical training which the Madras Government expects in the qualified medical practitioners within this Presidency. We presume that the Madras Government consider a man with either the Apothecary's or Hospital Assistant's qualifications to be duly qualified. Otherwise it is difficult to account for the action of that Government in placing Apothecaries and Hospital Assistants in responsible medical positions both in the Civil Medical department as well as in the Military. If the Hospital Assistant is not a qualified medical man in the opinion of the Madras Government then the position of the Commissioned Medical officers who are the superiors of the Hospital Assistants will be a very difficult one. All Commissioned medical officers must be registered in Great Britain. And it is a serious offence for a registered practitioner to be associated in professional work with men who are not qualified practitioners. There is an offence known to the General Medical Council as '*covering*' and many in Madras will have to be hauled up for that. No. It is too late in the day for the Madras Government to say that an Apothecary or a Hospital Assistant is not a qualified medical man. Well, if that is so, why should not a Hospital Assistant who is in private practice but not in Government employ be a qualified practitioner too? He has had the same training, he has passed the same examination as the Hospital Assistant in Government service. And yet the Board of Revenue thinks that the Hospital Assistant in Government service is competent to prescribe cocaine, while the one in private practice is not. In reply to the Government's enquiry as to why this distinction is made the Board says that the Surgeon-General advised the extension of the definition so as to include medical officers in Government employ down to the grade of Hospital Assistants. The Surgeon-General, no doubt, has done a fine stroke of business for his subordinates. If a prescription for cocaine is to be given to be made up at a chemist's, it must, of course, be for a *private* patient and not for a Hospital patient. And in private practice in this country it is surgical work that pays better than medical work, because the former is more free from the competition of the quack than the latter. And in surgery, the men of the grade of Apothecaries and Hospital Assistants both in Government service and in private practice have to deal with minor surgical operations, the major operations falling to the lot of men with higher qualifications. And it is exactly in the sphere of minor surgical procedures that cocaine is mostly used. And if the private Hospital Assistant is handicapped in that his prescriptions for cocaine will be ignored by every chemist, the Service Hospital Assistant gets a distinct advantage over his non-official

rival. So the result of the new regulations is a sort of preferential treatment for subordinate medical men in Government service. That is the recommendation of the Surgeon-General. We were under the impression that the present Surgeon-General was an Irish gentleman with a sense of fairness in him. His present proposal does not appear to us to have any fairness in it at all. He has a perfect right to back his service men against private medical practitioners in any legitimate way. But this is hitting below the belt. And if the Madras Government finally accepts this hopelessly one sided proposal they will lose a great deal of their reputation for fair and impartial treatment between man and man. Let us take the next point. Why is every qualified medical man who wants to keep an ounce of a 20 per cent. solution of cocaine for use in his professional work and not for sale, required to take out a license? "Because", says the Board of Revenue, "it would be dangerous to fix the general limit of possession sufficiently high to allow of medical practitioners, surgeons and dentists keeping a stock of cocaine for professional use." Dangerous to allow a surgeon to keep a stock of cocaine for professional use! From what country in the world do the men who talk like this come? Do they come from the wilds of Africa? Do they realise the enormous responsibilities of the members of the medical profession? Have they ever seen a patient under complete chloroform anæsthesia, with consciousness entirely abolished, and absolutely at the mercy of the surgeon? Have they ever witnessed a serious surgical operation where the surgeon boldly trephines into the cavity of the skull and cuts out portions of diseased brain tissue; or where the surgeon opens into the abdominal cavity and deals with diseased organs there? These are far more responsible and delicate duties than keeping a bottle of cocaine solution locked up in our Medicine chest. And we are considered qualified to do these and more, and we do these without any interference from the Salt and Abkari department of the Board of Revenue. And does not the physician every day deal with far more deadly poisons than cocaine? A man who can prescribe Digitalin, Aconitin, Atropine or Strychnine without any license from a Collector or a Sheristadar must needs get one for keeping a few grains of cocaine! Could narrow-minded departmentalism go further?

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The Polyclinic. The Bristol Medico-Chirurgical Journal. The Medical Brief. The International Journal of Surgery. The California Medical Journal. The American Journal of Clinical Medicine. The Dietetic and Hygienic Gazette. The Good Health. The Indian Medical Gazette. The Practical Medicine. The British Journal of Children's Diseases. The Sanitary Record and Journal of Sanitary and Municipal Engineering. The Northumberland and Durham Medical Journal. The Canada Lancet. The American Journal of Ophthalmology. The China Medical Missionary Journal. The Medical Review of Reviews. The Post-Graduate. The Therapist. The Canadian Practitioner and Review. The Australasian Medical Gazette. The Caledonian Medical Journal. The Montreal Medical Journal. The Louisville Monthly Journal of Medicine and Surgery. The Monthly Cyclopædia of Practical Medicine. The Buffalo Medical Journal. The Ophthalmoscope. The Dental Era. The Madras Law Times. The Interstate Medical Journal. The Medical Notes and Queries. The Calcutta Medical Journal. Folia Therapeutica. The International Therapeutics. The American Journal of Surgery. The All-India Hospital Assistants' Journal. The Hospital Assistant.

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Original Articles.

* DIETING AND COOKING FOR THE CONSUMPTIVE
AND FOR THE THIN AND UNDER-NOURISHED.

BY

THOS. BASSETT KEYES, M. D., OF CHICAGO.

Chairman of The First Organization Committee of the American Congress of Tuberculosis, and one of the Vice-Presidents of The International Congress of Tuberculosis, St. Louis Exposition, 1904 ; One of the Vice-Presidents of the International Congress of Tuberculosis, N. Y., 1906, and Chairman of its Section on the Relation of Insanity to Tuberculosis: Formerly Editor of the "Tubercle," a Journal on Tuberculosis, etc.

[Continued From Page 319, Vol. IV, No. 6.]

CHAPTER III.

Lung Development in Proportion To Nutrition.

THE LUNGS BOTH GIVE AND TAKE.



It is agreed that when the lungs once become actively diseased any exercise which is at all violent, or if carried too far, will result in injury, as it will often produce fever and extension of the disease.

Healthy lungs are often exercised too much and their vitality injured. At the meeting of the State Medical Society of New York (*Trans. of the Med. Soc. N. Y.*, 1886, p. 115) a paper was presented on pulmonary gymnastics, saying that physicians in general practice frequently, see patients with deficient pulmonary capacity, due either to lack of adequate chest development or to conditions of a chronic

*Specially contributed to "The Antiseptic."

nature which compress or condense the air cells, and that if any real benefit was to occur from the employment of pulmonary gymnastics it would only be gained after months of faithful practice; again, it says: "To recapitulate: Among the remedies in many conditions of defective expansion, inherited or produced by disease of a latent inactive character, pulmonary gymnastics should be accorded a prominent place. They are contra-indicated in all acute diseases of the lungs." In the discussion which followed in regard to the above mentioned paper, Dr. A. L. Loomis says: "One word in regard to pulmonary gymnastics, a subject just raised. When much younger I gave a great deal of attention to this matter, believing that it would prevent the development of latent phthisis in my own case. I became convinced during college that gymnastics, when practiced while the health is below par, enfeebled rather than strengthened the organs of respiration, and increased the liability to catarrhs, etc., so that unless one is in first-rate physical condition I think the proposed plan of pulmonary gymnastics will do more harm than good." "As to college training, rowing, gymnastics requiring prolonged effort which young men are being put through at the present time, it seems to me that it is laying the foundation for a great many cases of cardiac disease; and, from my own personal observation, I find that phthisis is developed in a large proportion of the prize-men at college, the men who head the nine. These are men who overstrain during the development period, and the men who are afterwards subjects of pulmonary phthisis. Within the past two or three years I have been keeping records, and I have been astonished at the large number of that class of men who develop phthisis or cardiac disease; and I believe it is nothing more or less than an overtaxing of the respiratory and cardiac organs during the development period."

Lungs give and take.—Let us now pick up the threads from where Dr. Loomis left them and see what is to be deduced and how the lungs are to be properly developed. In the discussion we are told that too much lung exercise is not beneficial. I maintain that the reason for this is that the lungs both give and take, and that the lung exercise must be in proportion to the food eaten which is to be oxidised. The lungs give oxygen to the blood, but they take away watery products, carbon and other matters. The oxygen unites with the blood and produces chemical changes, principal of which is the exchange of oxygen for carbon. Then if there is not a good supply of carbon (carbohydrates and fats or hydrocarbons) in the diet, and a good store of fat in the tissues, other more vital tissues will be drawn upon, and be oxidised or changed and given out through the lungs as carbon for the oxygen which has produced the

change. If this goes on and the body is not in a well nourished condition, and thus able to withstand this oxidation of tissue, then the system may become bankrupt, for the more vital tissues must yield to the chemical action until finally even the blood must yield itself for oxidation, and, as a consequence, there is a diminution of its constituents.

The stoker or fireman, the over-exercised lungs, has not only raked away the cinders, but has also burned up the supply of heat forming tissue (reserve fat), and if the exercise has been carried too far it exhausts the engine itself, burning up its vital tissues. Fortunately when this happens the body becomes too weak and exhausted to carry on further exercise and recuperates if not overtaxed, but proper heat producing foods must be supplied in just such abundance as not to allow the exercised lungs and increased oxygen to consume the body tissues, but to consume the fat eaten in our diet and which must be in sufficient quantities to supply other tissues. As evidence that lung gymnastics and rapid breathing exhaust the blood and body we may refer to the well known effects of cold and to the rapid breathing produced by high altitudes, which, when not counterbalanced by proper food, leads to pernicious anæmia. If we take more exercise than it consumes the fat of our diet, we weaken our lungs and other organs and tissues; therefore, development of the lungs by exercise must be proportionate to the amount of tissue forming and oxidizable foods which we eat.

Fat once taken into the system departs almost entirely by way of the lungs, in the form of carbon and hydrogen. That fat foods have the greatest influence in the development of the broad healthy chest I am thoroughly convinced from observation and study of many individuals. Lungs develop according to the amount of carbon they have to excrete, and since they both give and take, it is reasonable to believe that both functions are as important, the one to the other. The narrow, poorly developed chest is common to those people, more particularly, who do not eat a plentiful supply of fat, and who are descendants from parents who do not eat sufficient of these foods.

Exercise must be in just proportion to nutrition.—So far we have tried to make it plain that the development of the chest by exercise must go "hand in hand" with a proper diet, particularly of those foods which are oxidised and eliminated by the lungs, and when the relation is maintained, proper exercise, providing there is no active disease, is beneficial, and, also, that the lungs develop more from a plentiful supply of fats in the diet than by any other means.

CHAPTER IV.

Assimilation of Fats and Oils from
the Alimentary Canal.

The assimilation of fats and oils from the alimentary canal is largely mechanical. Various views are held as to the exact method by which oils are strained through the intestine into the blood; therefore this point is not exactly understood. The digestion of fat tissue is aided by the pancreatic juice and bile. The oily globules are separated from their connective tissue aided by the heat and mechanical action of the intestine. Fats and oils are often poorly assimilated, producing discomfort to the person, owing to the fact that the oils from not being absorbed remain in the canal and overcome fermentation of food, and thus delay digestion.

Some people who eat fats do not gain because the fat or oil is not assimilated, owing to the irregularity with which it is eaten when it may break up into glycerine and fatty acids and be expelled with other residue. There are others who have not an appetite and think that they cannot eat fat, but if they persist and eat fat with each meal they will in the course of a few weeks or months form the habit of digesting them.

Recent work would seem to point to the fact that oil is absorbed by the villi of the small intestine by osmosis through the epithelial cells, a straining, as it were, and then absorbed by the white blood cells, which are always in waiting to receive oils, the plasma of the blood varying as to the amount of oil contained. According to T. RUMPF, (*Virchow's Archiv.*, Vol. 174, No. 1,) it is very difficult to determine the normal percentage of fat in the blood, since it varies greatly as to amount, being larger after a meal of fats, and since the body possesses no organ which regulates the amount, as the liver does of sugar. It is estimated that the blood contains from 0.2 to 0.5, or even one per cent. fat, and sometimes contains so much of the fatty chyle as to be milky. After the absorption of fats from the intestine they are used in the repair of tissue, and to give energy to the body, or they may be deposited as adipose tissue. If the body is diseased, as with tubercular conditions, we know that more fats are necessary to replace the diseased tissues.

its inception from the example set by tuberculous parents. We shall now see how this habit of not eating fats leads to their non-digestion, mal-nutrition and tuberculosis.

WEBSTER defines *habit* as "a state of anything, implying some continuance or permanence; temperament or particular state of body, formed by nature or induced by extraneous circumstances, as a costive or lax habit of body, a sanguine habit; a disposition or condition of the mind or body, a tendency or aptitude for the performance of certain actions, acquired by custom, or a frequent repetition of the same act. Habit is that which is held or retained, the effect of custom or frequent repetition. Hence, we speak of good habits and bad habits. Frequent drinking of spirits leads to a habit of intemperance. We should endeavour to correct evil habits by a change of practice. A great point in the education of children is to prevent the formation of bad habits." All of the above is said in the dictionary in defining habit, while much more is attributed to habit by those who have written especially upon the subject, considering all physiological actions of the body as originally starting in habit, which by constant repetition has become automatic and constituted a reflex or physiological action.

Habit, then, is the originator of vital action, since all vital action, and every movement of the body or thought of the mind is set into action by some reflex or stimulus, and the metabolic functions of glands are controlled by these reflex centers, which inherited are physiological, and do not require consciousness even for their existence. All this being true of habit, then it has been a means of evolution of the species, though habit, in turn, has been greatly influenced by environment, and latter in man by climate, diet, and occupation, as instanced by the various tribes of savages and races modifying their development, physical growth, appearance, and ways of living. People improve or deteriorate from civilization, employment, climate and diet.

It is said that the lowest form of matter has powers of digestion and assimilation. Going higher into plant life, these may be fashioned into habit. Tracing the lowest form of animal life from its beginning, we can see how constant repetitions enforced upon it by its surroundings become habitual, which has resulted in its structural modification, and the formation of a track for the controlling nervous impulse, nerve tissues being prone to repeat, since constant stimulation renders them more or less automatic, and, perhaps, changes their molecular structure, and affords a line of least resistance to the force which causes their movement, and finally, these actions have become functional and physiological,

giving rise to the nerve centers and nerve systems. Constant repetition then, is habit, which may produce a physiological, or, if injurious, an abnormal reflex, which then becomes functional of the organs or tissues, and may, in the course of time, modify their structural form and utility. Thus, the functions of the body have all been formed by habit. It would, therefore, seem on account of the plasticity of organic materials, that habits implanted from birth, as abstaining from fats, would lead to a condition not favorable to their digestion; especially is this true of fats, on account of the manner in which they are digested.

In the walls of the villi of the intestine, after a hearty meal and under normal conditions, there are many white blood cells, which seem to be in waiting to absorb these fats like animals waiting to be fed. If there never were any fats to be digested and absorbed from the intestine, then the juices which are used to break up the fats would become lessened, as all digestive juices do when not called upon, as is instanced in the "faddists" who go without breakfast, and soon they have no demand or appetite for it. The digestive juices will not flow out in anticipation of an unexpected unhabitual meal, and so it is likely that the blood cells will not line up to absorb fats in the walls of the villi when there never has been any there for them to feed upon. Organs and tissues grow to the mode in which they are trained. If they are seldom called upon to digest fats they will not respond when fats are eaten only occasionally, the function becoming useless, like the blind, wingless grasshoppers, with extremely long antennæ and the blind, colorless cray fish, of Mammoth Cave; opinions being, that not having use for eyes they become rudimentary and other parts of the body adapt themselves to circumstances. Man soon adapts himself to poisons, as tobacco, and, when the habit is once formed, the condition is hard to overcome.

People who do not eat hearty meals on account of lack of appetite, will soon become of "full habit," when they are trained to eat regular and large meals, as is instanced with the tubercular patient who, troubled with anorexia and loss of appetite, when placed upon a forced diet and made to eat a given amount, will under these conditions experience a return of appetite in a very short time. Signs drawn from the habit of not eating fats are everywhere pointing to the conditions which produce tuberculosis, prominent among them, written in very strong characters, is the blood.

The following inferences may be drawn in regard to habit as here described: The non-eating of fats leads to their non-digestion, mal-nutrition, and tuberculosis. To re-establish the habit of digestion of fats

and oils a plentiful supply of them should be eaten; and, since in the thin anæmic pre-tubercular or tubercular patient fats may not be assimilated in sufficient amounts to meet the imperative quick demands of nutrition, oils should be injected subcutaneously to cure them, for a tubercular patient must be built up very rapidly and to a very high point that lung tissue may heal.

CHAPTER V.

Dieting and Cooking for the Cure and Prevention of Consumption.

THE PREVENTION AND CURE OF CONSUMPTION.

Consumption exists only among the poorly nourished; either the food of the consumptive has been poor in quality or he has failed to eat a sufficiency of fats. By proper dieting consumption can be prevented. From the very earliest history of medicine consumption has been looked upon as disease of mal-nutrition, that is, that first there has been a deviation from normal metabolism resulting in blood poverty, often lack of development, weakened tissues and organs. The prevention of the disease rests in establishing a habit of body which will digest or assimilate fat foods, and the eating of a diet with a sufficient amount of fats to maintain nutrition, so that the germ cannot grow or thrive. As physicians, we should certainly be brought to a full realization of our responsibilities as guardians of health by such data, and not confine our efforts merely to fighting the germ.

Diet for the Consumptive Invalid.—The diet upon which I put my consumptive invalid depends entirely upon the condition of his health when treatment is commenced and while undergoing treatment. Patients having any degree of fever I invariably put to bed, and if the fever continues I put them upon a milk diet.

The Milk Diet.—Milk, as a diet for consumptive patients, has been recommended from the earliest antiquity. It was largely relied upon by the very earliest physicians of whom we have any writings. In giving a milk diet to consumptives we must remember that, in order to cure the disease, the patient must be nourished to the greatest possible degree. The amount of milk taken should not be less than one gallon to start on, which should be increased to two gallons each day. This is best given every two hours for eight feedings. The amount will thus be one pint to one quart to each feeding. The milk should be given warm, and some diastase may be added should there be a tendency for it to lie heavy upon the stomach. A few crackers may be eaten by the patient with the milk

which should be drank slowly. The milk for our patient must be the pure and natural product, rich with cream and free from preservatives which would delay its digestion.

Koumiss.—Another form of milk diet is koumiss, and is of much greater value than milk because it is predigested and easily assimilated.

After a few weeks of the combined treatment which we have previously mentioned, principal of which is the subcutaneous injection of oil, the hitherto conspicuously prominent bones become covered with a thick coating of fat and muscle; the sunken and bloodless cheeks fill up and assume a rosy hue, the drooping spirits revive, and a most remarkable change transpires. The patient, who previously was suffering from fever, is apparently healthy, is ready to be trained to live upon a solid diet with an over-generous amount of fats, butter, etc., for this is essential that the patient may remain well.

Other Liquid Nourishment.—Where milk and its preparations, such as koumiss, are distasteful to the patient, a liquid of much nourishment and benefit may be made in the form of thick bean soup with butter or what we have termed cream of oats may be used. Bean soup may be made by soaking beans in water for about twelve hours, which are then crushed and boiled and then filtered through cloth; to this must be added a large amount of butter. Tofu, a bean cheese, is made by the Japanese from soy beans, first made into a bean soup similar to the above, without the butter, and in its composition this milky fluid resembles cow's milk as will be seen from the following analysis, taken from *Bulletin No. 58 of the Agricultural Gazette*.

COMPARISON OF THE COMPOSITION OF SOY-BEAN AND COW'S MILK.

Constituents.	Soy-Bean Milk.	Cow's Milk.
	Per cent.	Per cent.
Water	92.53	86.08
Albuminoids	3.02	4.00
Fat	2.13	3.05
Fiber	0.03	..
Ash	0.41	0.70
Nitrogen-free extract including carbohydrates, milk sugar	1.88	5.09

Cream of oats is made from oat flour. To two teaspoonfuls of this enough water should be added so that when boiled there will remain two glassfuls; add one sixth pound of fresh butter, season to taste. Extract

of beef may be added if the flavor is more agreeable. This preparation is very valuable throughout the treatment, and even when the patient is so far convalescent as not to have fever or cough or does not raise mucous, I continue with this, to be taken with the breakfast and late dinner. Patients becoming thus accustomed to the large amount of butter should continue with this even when thoroughly well to prevent the return of the disease.

While the patient is on the liquid diet, of milk or koumiss, I give internally about one ounce of olive oil twice a day at about 10 A. M. and after the last feeding at night. This is best taken, and more easily assimilated, by adding a little wine.

Sugar occupies a prominent place in milk. Milk might be considered a thin syrup holding in suspension small globules of oil. Sugar and fat are the chief fuel ingredients of milk and all other foods. Fat is a more concentrated fuel than sugar, yielding nearly two and a half times more heat. Of second importance to fat in the cure and prevention of consumption I consider sugar, because of the carbon which it yields and its ease of assimilation. In treating tubercular patients I have them take for nutritive value a cane syrup combined with stomachics, stimulants, and bitter tonics.

Diet for the Convalescent Tubercular.—After my patient has no rise from normal temperature I gradually increase the solids in the diet until he is able to be up and about, without increasing the temperature when I put him upon a full diet. In every case the patient is to be fed every two hours. With the tubercular not confined to his bed it is customary for me to commence feeding him an hour before he is to arise and begin with a rum punch, made by adding one or two teaspoonfuls of old Jamaica Rum with some sugar to a glass of milk or cream. By doing this the patient will not lose any vitality in dressing, and it often improves the appetite for a hearty breakfast.

Cooking and Dieting for the Prevention and Cure of Consumption.—In preparing and cooking food for the thin and poorly nourished and for those of a tubercular tendency, and particularly for those afflicted with the disease, large quantities of fats, butter and oil should be so incorporated in the cooking as to disguise them and make them palatable to those individuals who abhor fats. Dressings and gravies rich with fats should be prepared, and vegetables should be cooked with large quantities of butter and cream.

The Secret of Making Thin People Fat.—That which I hold of greatest importance to make thin people fat and well nourished is to combi

a diet coarse in fibre for its mechanical action, with plenty of fats for nutrition. To accomplish this one or two well cooked vegetables, which contain a large amount of fibre should be eaten with at least two of the principal meals. These must be cooked with butter or fats, otherwise there will be little nourishment to them. These coarse foods have two beneficial actions, both mechanical; one is, they hold by their bulk and fibre the oils and fats in the intestine until they are absorbed, and they also increase the strength of the intestine for a sort of gymnastics the intestine is given because of the larger bulk which must be taken care of and because of the large residue constipation is overcome.

The nutritive value of food depends largely upon its manner of preparation and cooking. To be palatable, attractive and appetizing, it must be of first quality, fresh, not kept by cold storage process, free from preservatives, and then must be well prepared and cooked.

THE AUTOCRATIC DOCTOR.

The following lines, taken from the *Practitioner*, are by a well-known actor, who has been under the care of DR WALTHER, of Nordrach. They give a vivid picture of the treatment at that place, from the patient's point of view:—

I.

When you've swallowed your Emulsion by the gallon or the jug,
When you've finished iodinin' of your back,
Will you kindly drop your sputum in my little china mug
And send it to a party at Nordrach?
He's an autocratic doctor with a rough and ready tongue,
But Tubercular Bacilli can't abide him:
And the patient finds him busy wiping something off his lung
By cramming lots of little things inside him.
Raw meat, cooked meat, meat of a hundred kinds;
Fifty chronics at table, striving to eat their lunch,
Each of them doing his level best to swallow the skins and rinds.
"Pass your plate for your credit's sake, and munch, munch, munch!"

II.

There are some who "pouch" in secret, asking no permission to,
For they know they wouldn't get it if they did,
Scraps of cheese and bits of lobster, lumps of meat they couldn't chew,
And a rather more than "gamey" piece of kid.
And having been so, so casual, they feel sorry when they're gone
(For the autocratic doctor's sure to out 'em).
When their lungs are going dicky, with the winter coming on,
"They'll miss the bloke who understood about 'em"

Cooked food, raw food, plenty of milk and rest,
Quarter o' pound of butter, Schwarzbrot by the hunch.
Each of 'em trying to raise his weight and widen his girth and chest,
Pass your plate for your credit's sake, and munch, munch, munch!

—*Medical Times*.

SOME OF THE AUTHOR'S CONTRIBUTIONS TO MEDICAL LITERATURE ON THE CURE OF CONSUMPTION WITH SUBCUTANEOUS INJECTIONS OF OIL.

KEYES:—The Cure of Consumption by Feeding the Patient with Subcutaneous Injections of Oil and Its Digestion by the White Globules of the Blood.—*Pacific Med. Jour.*, May, 1904; *Med. Brief*, June, 1904; *Maine Jour. Science*, June, 1904.

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SOME AIDS TO THE ABOVE TREATMENT.

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* THE EARLY DIAGNOSIS OF TYPHOID FEVER.

BY

JAMES DAVIDSON, M. D., EDIN., &C.
(Neyoor, South Travancore, India.)

As regards early diagnosis probably none of the Indian fevers presents more difficulty than typhoid. When once the symptoms in such cases are fully established, the clinical picture is usually an unmistakable one. But to make a diagnosis during the first week of the fever is often a

* Specially contributed to "The Antiseptic."

very difficult matter. We are always glad, therefore, of any aids to diagnosis. There are three or four such which, I believe, have not gained the place that they deserve, viz :—

- (1) Ehrlich's Diazo Urine reaction.
- (2) Widal's serum test.
- (3) Microscopic examination of blood films.
- (4) Examination of abdominal reflex.

Let us briefly glance at these :—

1. *Ehrlich's Diazo Reaction in the Urine* :—This reaction depends on the fact that if Sulphanilic Acid (amido-sulpho-benzol) be acted on by Nitrous Acid, diazo-sulpho-benzol is formed. This last named unites with certain aromatic compounds occasionally present in the urine to form aniline colours. Two solutions are necessary :—*A*. Saturated solution of Sulphanilic Acid in 5% Hydrochloric Acid. *B*. $\frac{1}{2}$ % solution of Sodium Nitrite. Both solutions should be as fresh as possible.

TEST :—Add to some urine in a test-tube an equal quantity of *A*. Add 2 or 3 drops of *B*, and shake till a froth forms. Render alkaline with ammonia. If the liquid becomes a *port-wine* colour, while the froth is red or pink, the reaction is *positive*. Now what is the significance of the test?

If the urine of a supposed typhoid case in the 2nd or 3rd week fails to give the reaction, the diagnosis is probably wrong. In very mild cases, however, the reaction may be absent. The reaction is also present in measles, typhus, and in tubercular disease which is spreading rapidly.

Budden¹ gives an exhaustive account of his experience of the diazo reaction, viz., in 3000 patients, performing it many times in each. The list included 600 persons in health, no one of whom yielded a positive reaction. He, therefore, concludes that the reaction is never present in normal urine. It was found present in—

96 out of 672 cases of various forms of tubercular disease.		
18	"	25 cases of measles.
17	"	21 typhoid cases.
5	"	5 typhus cases.
4	"	41 pneumonia cases.
4	"	4 cases of acute puerperal septicæmia.

The remainder, comprising almost every acute malady of common occurrence, yielded a negative result; excluding typhoid, measles, typhus, and puerperal septicæmia, every case which gave the reaction in the series proved to be the subject of tuberculosis. Dr. Ker² (Edin. City Hospital) believes that during the 2nd week of typhoid, the diazo

1. "Brit. Med. Journal," 6th May 1905.

2. "Practitioner," Mar. 1904.

reaction is almost always present—sometimes even as early as the 5th day. He goes so far as to say that a case of continued fever, which at any time between the sixth and twelfth days does not give the reaction, is in all probability not typhoid fever. He also found that the cases which reached hospital as early as the 5th or 6th day were invariably sent in by general practitioners who used the test.

2. *Widal's Serum Test*.—For this well-known test one requires a fresh culture of typhoid bacilli (best not more than 24 hours old). Blood is taken from the patient who is suspected of typhoid in a small capillary tube or pipette. It is *preferable*, though not essential, to allow the clot to settle and only use the serum.

Various dilutions are made, and there are various methods of doing so. But 1-20 or 1-30 is perhaps the best dilution. A control experiment should always be made with the examiner's own blood, or with that of some one who is not suffering or has not recently suffered from typhoid.

Under ordinary high power of the microscope (300 or 400 diameters) the well-known clumping or agglutination of the bacilli is seen.

The reaction may also be obtained by employing dead cultures instead of a fresh one in bouillon. The bacilli are killed by heating the bouillon to 60°C. for an hour, or by adding one drop of formalin to every 150 drops of bouillon. The test is a *macroscopic* or naked-eye one; for, on addition of serum from a patient who has typhoid fever, sedimentation occurs. The advantage of this form is that the test is at the disposal of the busy practitioner, who has no laboratory for the cultivation of living bacteria or who has but little time to spend in the laboratory he has.

Parke, Davis & Co. have taken advantage of the sedimentation form of test and have brought out what they call the "Agglutometer." I have given the instrument a fairly extensive trial both in Scotland and out here in India, and cannot say that the results have been very satisfactory. In clear cases of typhoid—cases in which the clinical symptoms are typical—the reaction is usually well marked, but in doubtful cases, where one is most anxious to make a diagnosis, the reaction, I have found, is often doubtful. It would seem, however, that in these later days the bacillus of Eberth has lost its reputation to some extent, for Prof. Netter teaches us that the agglutination test often fails with the *bacillus typhosus* but is found with cultivations of the *bacillus coli communis* or other allied paratyphoid organisms.

3. *Microscopic Examination of Stained Blood Films*.—Poepelmann¹ has pointed out that typhoid fever is not merely a local infection of the

intestine, but it must be regarded as a septicæmia, which has its point of origin in the intestinal mucous membrane, and the bacilli seem to pass into the blood at an early date. Thin blood films are made and allowed to dry. They are placed for from 2 to 6 minutes in a cylindrical bottle containing R. May Gruenwald solution. [This is a methylene blue-eosin mixture of somewhat similar composition to Jenner's blood stain.] The slides are transferred to distilled water for a minute and then rapidly dried. When examined with $\frac{1}{2}$ inch (oil immersion) lens, the typhoid bacilli are seen stained blue. The writer finds that blood taken before the temperature rises, *i.e.*, in the mornings, gives more bacilli. In every case the organisms were seen at an early stage. The method is intended as a practical one for the practitioner, and does not require the preparation of cultures, etc.

We recently saw a patient who was suffering from typhoid fever, the Widal test being positive. She had had what was probably malaria in childhood and the typhoid chart showed signs of the old periodic fever. There were also some rigors. Films were taken and stained by both Romanowski and by the ordinary eosin and hæmatoxylin methods. No malarial parasites were found, but abundant typhoid bacilli were observed by us.

4. *The Abdominal Reflex*.—Dr. Ker recently published an article in the "Practitioner" on the value of the absence of the superficial reflex as an aid to early diagnosis of typhoid. He there remarked that only in typhoid, appendicitis, and certain central nervous system conditions was this reflex lost. We have tested the phenomenon in a few cases since, and have always found that cases which showed the loss of the reflex turned out to be typhoid, and that in typical cases of typhoid the reflex was always found absent. We have not been able to investigate fully, but from results obtained in a certain number of cases it would seem that the reflex returns about the third week. This, however, does not destroy the usefulness of its absence as an aid to diagnosis, as the difficulty is always in the very earliest stages—where such an aid as this must prove very valuable.

I saw a case a few weeks ago of what I took to be hemiplegia caused by embolism in a case of typhoid fever. The abdominal reflex in that case was entirely lost on the side of the hemiplegia and only partially so on the other side. Was the entire loss due to the lesion in the Central Nervous System, and the partial loss an expression of the return in the 4th week of typhoid fever? At any rate, this was our diagnosis. Rogers has said that in his experience 80% of the cases of continued fever which has lasted 3 weeks have proved to be typhoid on testing with the Widal Serum reaction.

1. "Brit. Med. Journal," Dec. 1st. 1906.

It is very important that such fevers should be diagnosed early, and I am sure that if the above methods came into more general use there would be much less difficulty in the early diagnosis of typhoid fever.

* INFLUENZA, OR EPIDEMIC CATARRH.

BY

SURGEON-MAJOR R. E. WRAFTER, B. M. S. (RETIRED).

Dehra Dun.

Influenza is defined as a severe form of catarrhal fever called by the French *La Grippe*, under the name Sauvages first described it in 1743. This epidemic malady, which belongs to the idiopathic fevers, is often represented as a mere variety of Bronchitis, because inflammation of the mucous membrane of the bronchi, or ramifications of the trachea, constitutes one of its most prominent symptoms. But this is not a just view. With as much reason might Typhoid fever be omitted from the list of febrile maladies and described as a variety of Enteritis or of Diarrhoea. Catarrhal fever, or Influenza, is essentially an epidemic disease, and one which has visited the human race from remote antiquity. Its history is thus not confined to any particular time, or to any particular nation; yet, in spite of its frequency and wide prevalence, its cause is still reduced to uncertainty. We know nothing further of it than that it is an atmospheric poison traversing continents with extreme rapidity, just as cholera and other epidemic diseases do, affecting animals as well as mankind, and leaving behind an influence which shows itself long after the epidemic visitation. But what this state of the atmosphere is, which produces such potent results, is not understood. It is certainly neither heat, nor cold, nor damp, nor any recognizable physical changes in the surrounding air; for the disease has occurred at all times of the year, and in every kind of weather. Cold and damp seem to favour its appearance in low and insalubrious localities. It is supposed to travel from east to west, spreads swiftly and extensively, and rarely remains more than from four to six weeks in one locality. One attack is not preservative against a subsequent one in another epidemic. Each epidemic does not furnish the same train of symptoms; but they all agree in this; the disorder sets in rather suddenly, and attacks, pre-eminently, the mucous membranes. Generally it is the mucous membrane of the nose, eyes and bronchial tubes which suffers most, and we find the signs of coryza and of bronchial inflammation, a watery eye, sneezing, uneasiness about the throat, and severe paroxysms of cough. But, associated with these are great depression of spirits and usually an extraordinary amount of lassitude and

* Specially contributed to "The Antiseptic."

impairment of strength; much more than the cold in the head, or the laryngitis, or the bronchitis will account for. The skin is hot, at times moist with perspiration; the febrile symptoms generally assume a remittent type, do not run high. The pulse is of moderate volume, or weak; the tongue white and coated; the patient complains of extreme debility, of frontal headache and of aching pains in the limbs and back. Often there is some dyspnoea as well as slight epistaxis, hyperæsthesia or excessive sensibility, especially of the chest and head, and disturbance of the alimentary tract, evinced by loss of appetite, nausea and vomiting, or by diarrhoea. Commonly after three or four days these symptoms begin to subside, the cough and debility outlasting the other morbid signs. With reference to the cough we are often struck by the fact that its obstinacy and violence are not associated with adequate physical signs of the disorder. It is often very dry and harassing. But all epidemics do not run precisely this course. In some, the prostration is not so evident, and the febrile signs are more active and of an inflammatory type; in others, the pain and soreness in the limbs and in the joints constitute the most prominent symptoms; or we may find hemicrania, or torpor and delirium, or Parotitis with salivation (Ptyalism), or Otitis, or Epistaxis, or Icterus, or Capillary Bronchitis, or Pneumonia, as complications. Influenza is not ordinarily in itself a fatal disease. It is only so in the very young or the very old, in both of whom it is tedious, and apt to become complicated with inflammation of the smaller bronchial tubes or of the lung tissue. Catarrhal fever is easily discriminated from other maladies, though originally there is no broad symptom of diagnosis between a bad cold and an ordinary attack of Influenza. The peculiar epidemic character of catarrhal fever, and the prostration, prevent us from mistaking an ordinary cold or bronchitis for it. Occasionally the attending debility makes it look like the onset of a low form of continued fever. But brain-symptoms are present only in rare instances in Influenza; and, on the other hand, decided catarrhal symptoms are not common in typhoid or typhus fever. Before long, too, the occurrence of the eruption of these diseases clears up whatever doubt there may have existed. The all but constant absence of an eruption in Influenza comes also elsewhere into play: it serves to distinguish this disorder from measles or small pox. When Influenza is prevailing on a large scale, it is often found peering out from under the garb of other diseases, and it may be difficult then to separate its manifestations from those of the malady it accompanies. It should be remembered that Influenza is an epidemic catarrh of the air passages with adynamic accompaniments, so that to the aged and the feeble the ailment is not rarely a cause of demise. It differs in its characters from simple catarrh, and partakes of the nature of

specific pyretic affections. Although generally regarded as a trivial ailment, it should not be neglected, as other diseases may be excited by complications.

Epitome of treatment. In most cases of Influenza rest in bed, for a day or two, in a well ventilated room free from draughts is all that is necessary for the safety of the patient, and always hastens recovery with confinement in bed, nourishing diet, and in the case of elderly people, a moderate amount of alcoholic stimulants should be allowed. It is useful to begin medicinal treatment with a mild laxative followed by sudorific and expectorant remedies of a stimulant character. Influenza is not very much benefited by ordinary cough mixtures. During convalescence quinine will prove serviceable. If complications arise, the treatment for those affections should be pursued. After a severe attack of epidemic catarrh change of air is very desirable. During an epidemic of the malady, exposure to night-air is injurious.

Our Contemporaries.

SURGERY.

The Differential Diagnosis of Abdominal Tumours.

BY

MARY SCHARLIEB, M. D., M. S.

Senior Physician for Diseases of Women, Royal Free Hospital, etc.

There are few surgical problems more difficult than the differential diagnosis of abdominal tumours, and I must not pretend to exhaust so large a subject, but, with your kind permission, I will endeavour to indicate some of the errors into which we fall and some of the safeguards we may apply.

First, we have to decide whether there is a tumour.

Second, if there be a tumour, in what organ is it?

Third, does it spring from above or below?

Fourth, of what nature is that tumour?

Among the means of diagnosis at our command are inspection, palpation, percussion, mensuration, auscultation, vaginal and rectal touch, the use of certain instruments, such as the catheter, sound, volsellum, and certain proceedings such as anæsthesia, photography, the X-rays, and it may be a test breakfast, or the submission to further examination of the fluid obtained by aspiration, or by the hollow needle.

In photographing an abdominal tumour three views should be secured: (1) A profile from the side; (2) a profile from below; and (3) a quartering or intermediate view. We should include the umbilicus as a valuable landmark, also the mons veneris and the mammæ.

In dealing with this complicated subject it may be helpful to do as one does at the bedside, and consider the tumours that present themselves in the various regions of the abdomen, remembering the tendency that they have to develop towards the central space; also carefully enquiring whether they have grown from above downwards or from below upwards.

First, however, let us consider some of the conditions which may be, and which are, mistaken for abdominal tumours, such as: (1) fat, (2) tympany, (3) phantom tumour and pseudo-cyesis, (4) ascites, (5) distension of the bladder, (6) accumulation of fæces, (7) aneurism of the abdominal aorta, (8) pregnancy.

(1) *Abnormal deposit of fat*; (a) in the abdominal walls, (b) in the omentum.

Not unfrequently a patient, usually a woman of middle age, consults us about an enlargement of her abdomen. Well, it is large, so large as to burden and to annoy, and yet it is all due to fat in the parietes and flatus in the intestines. In this case the patient's age, sex, and habits of life probably put us on our guard, and the manifest uniform doughy thickening of the abdominal wall settles the question.

It is a little different when the deposit of fat has occurred also in the great omentum, and it is really puzzling when to various dyspeptic symptoms, vague pains, and functional irregularities, is added an evident, though ill defined, mass situated in the epigastric or hypochondriac regions. Such a case I saw two years ago, and found on operation an enormously fat omentum located almost entirely in the left hypochondriac and lumbar regions.

(2) *Tympany* may affect the whole abdomen or chiefly some special area of bowel.

The general resonance, the flatulent distress, and absence of any definable mass, will suffice to prevent error of diagnosis. It is well to remember that tympanitic distension of the intestines may be caused by obstruction of the bowel lower down.

(3) *Phantom tumour and pseudo-cyesis* are somewhat related to the states already mentioned. They are generally associated with deposits of fat, with flatulence, dyspepsia, and sometimes with inflammatory disease of

the viscera. Pseudo-cyesis is to some extent mental in origin and owes its existence to a fear or a hope of pregnancy, so that it is often found in the girl who has incurred the risk, or in the middle-aged woman whose longing for a family has pathetically outlived her physical fitness for maternity. In these cases an appeal to time, or examination under anæsthesia, will convince the patient's friends, although not always the patient herself. The symptoms of gestation are often well mimicked and often unconsciously. The breasts swell, there is morning sickness and amenorrhœa, to strengthen the evidence afforded by an apparent abdominal tumour.

(4) *Ascites*, when very great, may be confused with encysted dropsy and with renal and ovarian cysts.

In these cases the amount of fluid may be so great that the intestines are deeply submerged and percussion elicits a dull note all over the abdomen. The symptoms are more helpful than the abdominal signs, for the condition must be due to serious and long-standing disease of the heart, lungs, liver, to tuberculous or other chronic peritonitis, or to advanced malignant disease within the abdomen or pelvis.

Any ordinary degree of ascites may be recognised by central resonance with a corona of dulness in the dorsal position, the areas gradually changing when the position of the patient is altered.

Encysted dropsy of the peritoneum is often difficult to differentiate from other cystic swellings, such as ovarian and broad ligament cysts and fibro-cysts of the uterus.

(5) *Distended bladder* may be mistaken for a cystic tumour, especially when a tumour co-exists with it.

A woman, aged 68, was admitted to the New Hospital for Women. She had had "stoppage of the bowels two years before, and since then was badly constipated. She had since difficulty in relieving the bladder. The perineum bulged under the pressure of a large tumour which filled both the abdomen and the pelvis. Enemata failed to bring away fæces. At the time of operation a tense cystic tumour presented in the wound—an incision 75 inch into it gave exit to 3 xvii. of brown fluid with a urinous smell. When this had drained away a large solid tumour, part of which was jammed in the pelvis, was found. The small incision in the bladder wall was mended. The solid tumour was removed. The woman was discharged well on the twenty-second day."

(6) *Fæcal masses* in the intestines may be mistaken for solid tumours, especially in out-patient practice, where there is no guarantee that the

patient takes the aperient ordered, as in a case under my care, when O. P. Physican to the New Hospital. The patient had a tumour in the region of the cæcum. Suspecting a fæcal accumulation, I ordered aperients. Patient said she took the medicine, but the mass remained. I sent her in under Mrs. G. Anderson, who also ordered aperients, and then wrote to me saying the tumour had vanished, why had I not given the patient medicine? The existence of such a mass should always awaken the suspicion that although not itself a new growth it may be due to the obstruction caused by a new growth lower in the bowel.

(7) *Aneurism of the abdominal aorta* may simulate new growth and indeed is difficult to distinguish from some forms of sarcoma, but not even the most actively pulsating tumour has an expansile pulsation which separates the examiner's hands. In such a case the patient should be turned on the side so that a new adherent tumour may fall away from the aorta and cease to pulsate. It is a rare condition, occurring perhaps once to fifty cases of aneurism of the thoracic aorta.

An interesting case is detailed by Dr. Osler in his lectures on "The Diagnosis of Abdominal Tumours," 1895, p. 56. A man, aged 67, complained of a "fluttering lump" in his abdomen which he had noticed for three years. He had a dull, steady gnawing pain in the tumour with more or less pain in the back. "In the epigastric and upper part of the umbilical regions there is an irregularly rounded prominence which pulsates forcibly and almost synchronously with the heart impulse. . . . There is at times a distinct systolic thrill. . . . The whole mass can be grasped by the hand and the expansion in that way very readily felt. It is unusually mobile laterally, the up-and-down movements are very slight; it is not influenced by respiration."

An exploratory incision was made. The tumour was found to spring directly from the aorta just above the renal arteries.

Another case quoted by Dr. Osler was suspected during the patient's life and verified by autopsy after her death.

(8) *Pregnancy*.—Among the conditions which may be, and are, mistaken for abdominal new growths is the physiological tumour of pregnancy.

Once a case was sent into the New Hospital with a diagnosis of fibroid and a request that I would relieve the woman of her burden. On examination the tumour yielded three of the certain signs of pregnancy: (1) The rhythmical contractions; (2) foetal movements; (3) foetal heart sounds. Ballottement was not obtained as the pregnancy was too far advanced.

Another case was sent into the Royal Free Hospital—also with a diagnosis of fibroid. I have already reported this case in the *Empire Journal of Obstetrics and Gynaecology*, vol. iii., page 348.

The history was misleading. The patient, aged 51, had suffered from an abdominal tumour, and too frequent, not very profuse periods, since the birth of her youngest child five years before admission. She had been seen at another general hospital and had been told that she had a bleeding tumour. Three and a half months before admission to the Royal Free Hospital the hæmorrhages had ceased, but had been replaced by a discoloured, offensive discharge: on examination a fairly central tumour was found in the abdomen. It was rounded but uneven in contour, showing various knobs and bosses. No rhythmical contractions were noted; there were no foetal movements; no heart sounds, and no ballottements. There were no mammary signs. The woman looked ill, and the diagnosis was made of multinodular fibroid undergoing degenerative changes.

At the time of operation the tumour was found to be the gravid uterus containing a macerated foetus of about three months' development. There was also total placenta prævia. The woman made a rapid recovery. The discharge came from the disintegrating placenta, and the parts of the retained foetus felt through the uterine walls simulated the nodules of a multinodular fibroid.

It is sad to think that of our two reliable signs of pregnancy which are available when the foetus is dead, one at least may fail us, and the other may be simulated. The contractions in some cases of gestation may be so sluggish that they may not be perceived, and both contractions and ballottement have been obtained in more than one recorded case of fibroid (Kelly, "*Operative Gynaecology*," vol. i).

Severe cases of hydramnios may be mistaken for large paucilocular ovarian cysts, but the changes in the breasts and in the cervix will usually suffice to save us from error, and the cases are few in which menstruation is entirely absent in cases of ovarian cyst occurring in woman of the child bearing age.

FIBROIDS.

The consideration of pregnancy leads on naturally to the diagnosis of fibroids, which are probably the commonest of abdominal tumours, and which are frequently mistaken for pregnancy on the one hand and for ovarian tumours on the other.

Fibroids, or, as they may be better called, *fibro-myomata*, are supposed to be easy of diagnosis, but they sometimes prove to be puzzling. As relat-

ed above, a pregnancy may be diagnosed as fibroid, and I have known cases where the opposite mistake occurred; especially when the lower pole of a large submucous fibroid has obliterated the cervix and presents at the widely dilated os uteri. In such a case it may be remembered that the membranes in a *bona fide* case of labour would shortly burst or else become flaccid on the subsidence of contraction.

Mistakes between tense ovarian cysts and smooth uninodular fibroids are not rare. When I first took up work at the New Hospital I had a patient whose whole abdomen was filled with a smooth fluctuating swelling. The periods were absent, and my colleague agreed with me that it was a very ordinary ovarian cyst; on opening the abdomen the diagnosis was at once corrected to uninodular fibroid. The error committed was that the sound had not been passed. Shortly afterwards a very similar tumour with a similar history was sent in to me by a medical friend. His diagnosis was unhesitating. The case was, he said, one of ovarian cyst. The sound entered about 8 inches and the tumour proved to be a soft fibroid.

Besides ordinary fibro-myomata the uterus may be the seat of fibrocysts of several pathological interpretations, of endotheliomata, peritheliomata, and of sarcomata. All these are likely to be diagnosed before operation as *fibroids*.

It is desirable and pleasant to be accurate, but practically a certain number of cases will retain their incognito until submitted to microscopic investigation.

The sarcomata and theliomata easily rival ordinary fibroids in size, and do not always possess distinctive characters, but the carcinomata of the corpus uteri seldom attain to any great size, and are likely to lead to operation or to a fatal issue before they exceed the size of a four months pregnancy.

It is well to remember that fibroids and their imitators may be found in many varied relations to the uterus beneath the serous coat; under the mucous coat; in the substance of the musculature; pedunculated and hanging from the fundus, the anterior, posterior, and lateral aspects; opening up the broad ligament; stripping up the posterior parietal peritoneum; and replacing the cervix so that the corpus uteri sits on the top of the bulky mass like a toy cocked hat on a man's head.

Ovarian new growths may be cystic or solid, innocent or malignant, common or rare, and are not always easy to diagnose. Malignant cysts of the ovary give rise to few symptoms in their early stage, but later are associated with emaciation, loss of strength, also with ascites and œdema.

The solid growths of the ovary naturally simulate fibroids of the broad ligaments, but they seldom attain to a large size, probably because they are most frequently malignant and lead to a fatal issue before they have grown enormous. Solid growths, more or less symmetrically placed on either side of the uterus and associated with more or less ascites and œdema of the lower limbs, are very probably solid and malignant ovarian tumours. The rarer fibro-myoma of the ovary is likely to be unilateral. This was illustrated by a case under the care of Mr. Berry, at the Royal Free, in 1900. It had been diagnosed as a fibroid with a long pedicle, also as an ovarian cyst, but on microscopic examination it proved to be a fibro-myoma of the right ovary.

Cysts of the ovary, when large enough to form abdominal tumours, may be mistaken for pregnancy (especially for pregnancy complicated with hydramnios), for fibroids, fibrocysts, sarcomata and theliomata of the uterus. The use of the sound will often settle the diagnosis, but leads to error when the uterine canal is much distorted by fibroids so that it cannot be passed up to the fundus.

Ovarian cysts have also been confused with cysts and distensions of other viscera, such as the kidneys, gall-bladder, spleen, stomach, liver and pancreas. We are supposed to possess a guide to the diagnosis of retro-peritoneal tumours in the fact that colonic resonance is found on their anterior surface, while it surrounds the central dulness of pregnancy and other uterine tumours, also tumours of the ovaries, tubes and broad ligaments. Unfortunately, the colon may yield a dull note, because it is packed with fæces or because it is stretched tightly over the front of a retro-peritoneal growth.

Hydatids of the liver may be mistaken for ovarian cysts. I remember two such in the practice of the late Dr. Baxter, which were operated on by Mr. William Rose at the Royal Free Hospital, in 1880.

It is also useful to remember that the direction of growth of tumours is usually from the natural position of an organ towards the umbilical region, but patients are very unobservant and are often unable to say where they first noticed a swelling and how long it has been recognised. Thus, one of my patients had a cyst filling her abdomen so that dulness was obtained from Poupart's ligament to the costal margin. She was sure that the swelling had grown from below upwards, that she had never had fever, pain, or jaundice; at the time of operation the tumour was found to be an enormously distended gall-bladder.

In the case of another woman whose cystic tumour lay chiefly above the umbilicus, a diagnosis was made of pancreatic cyst, but the trouble

turned out to be an ovarian cyst with a long pedicle. In this case the pedicle was not recognised on examination *per rectum*, a method which usually leads to correct diagnosis.

I remember a mesenteric cyst which was diagnosed by Sir Spence Wells as ovarian; and have had, in my own practice, a mesenteric abscess which only escaped erroneous diagnosis because it was too small to fill the lower abdomen.

Cysts of the broad ligaments are often mistaken for ovarian cysts, and are, indeed, indistinguishable from a certain variety of ovarian cyst which burrows into a pocket on the posterior aspect of the broad ligament and thence acquires an extra capsule. The ordinary test afforded by the relatively deep position of the lower part of a broad ligament growth separating the rectum widely from the vagina would not help in such a case.

A cyst tightly held in the folds of the broad ligament is thought to give a less freely fluid wave than is obtained from a free cyst. They are also slower of growth and lead to pressure symptoms while still relatively small; but it must be confessed that owing to personal equation in the observer, and frequency of septa and loculi in ovarian cysts, the diagnosis in these cases has often to be completed after the abdomen has been opened.

Dermoid cysts of the ovary may often be recognised by their size, being small relatively to their known duration, by the thickness of their walls, and by the detection *per vaginam* or *per rectum* of hard masses, such as bones or teeth, in their deeper parts.

It would certainly not be expected that distensions or tumours of the Fallopian tubes should need diagnosis as abdominal tumours, but such is the case. *Lutein cysts* of the ovary are usually bilateral; they accompany or follow vesicular mole or chorio-epithelioma, and are characterised by their numerous, but not large, knobs and bosses due to their many loculi.

Tumours of the cæcum and of the sigmoid flexure may be mistaken for growths of the uterine adnexa, and a peri-appendicular abscess is hard to distinguish from tubo-ovarian abscess of the right side; all of them may form noticeable swellings in the iliac fossa; and are more likely to depend on symptoms rather than on signs for correct diagnosis.

One more class of tumours must be mentioned as a connecting link between those already mentioned and the tumours of the upper abdomen. These are the *retroperitoneal growths*.

Strictly speaking, tumours of the kidneys and pancreas are retroperitoneal, but the term is generally understood to mean neoplasms of the connective tissue covered by the posterior parietal peritoneum. These growths

are sometimes very large and before operation are usually diagnosed as uterine or ovarian tumours. They are, however, perfectly fixed and immovable. They do not ascend and descend with respiration as do some tumours of the stomach, liver, gall-bladder and kidney, nor can they be moved laterally like most uterine and ovarian tumours. These retroperitoneal growths appear centrally, increase rapidly, are often associated with pain, ascites, oedema of the legs, emaciation and cachexia. If the uterine fund can be passed, it usually shows that organ to be of normal size and movable, unless mechanically jammed by the tumour or invaded by it.

In my experience these tumours have nearly always been erroneously diagnosed—a matter of regret, for they are usually inoperable and should be left severely alone.

Tumours connected with the Stomach.—(a) Dilated and distended stomach; (b) contracted stomach; (c) massive or nodular neoplasms.

(a) *Dilated and Distended Stomach.*—Many cases of dilated stomach may be diagnosed on inspection, but it is not wise to rely on this alone. A similar appearance might be caused by other conditions. Percussion will contrast the clear note of the distended viscus with the dulness obtained over a cystic or solid tumour. Waves of peristalsis passing from left to right may be present and differentiate the dilated stomach from a dilated transverse colon in which the waves flow in the opposite direction. Palpation confirms the evidence offered by inspection and percussion, and in some cases shows the cause of dilatation to be a small, hard, usually movable tumour, anywhere in the epigastric, umbilical, or hypochondriac regions, but not unfrequently this evidence is wanting, the pylorus lying out of reach behind the stomach itself, or high up beneath the cover of the ribs.

Dr. Osler quotes a case in which a small tumour of the pylorus was so movable as to occupy positions in the epigastrium, under the right costal margin, in both hypochondria, below the umbilicus to the left of the mid-line and in the right iliac fossa. In this case an alternative diagnosis was made of movable kidney, based on the extreme mobility of the mass.

Another point occasionally noted is the gurgling of gas through the pylorus during palpation, and the obtaining of splashing on brisk movements of the patient.

Further evidence can be had by administration and subsequent withdrawal of a test breakfast for purposes of chemical and microscopic research.

And, finally, inflation of the organ by the administration of first an alkali, and then an acid, will show the amount of dilatation, and sometimes shows up a pyloric tumour (Half to one drachm NaHCO_3 dissolved in 4 ozs. H_2O , and followed by the same quantity of tartaric acid similarly dissolved.)

The results of examination taken with the history of the case should suffice for diagnosis; yet we find published cases of a dilated stomach being mistaken for distended colon, and, still more strangely, for a pancreatic or ovarian cyst.

The tumour formed by (b) *contracted stomach* may be detected in the epigastric region. On palpation a definite irregular mass may be felt, the inflation of which causes difficulty and distress. The result of palpation may be the suggestion of an infiltrated and rolled-up omentum, but the difficulty of inflation and the history of the case usually serve to correct the diagnosis.

(c) *Tumours of the stomach wall* cannot always be felt through the abdomen when they involve the cardiac orifice, the posterior wall, and the lesser curvature. But tumours near the pylorus, of the anterior wall, and the greater curvature, are generally palpable. Fortunately about three fifths of the tumours of the stomach are near the pylorus.

When very large, massive tumours of the stomach occupy not only the epigastric, but also the umbilical and hypochondriac regions, and may be mistaken for renal, intestinal, and pancreatic growths, from which they may usually be diagnosed by the history of the case, and by the symptoms.

TUMOURS OF THE LIVER.

Under this head may be considered the enlargements of the liver as well as its rounded outgrowths, because although they are not all neoplasms yet they form an important group of abdominal swellings.

We have all learnt from the classic pages of Murchison to divide liver enlargements into painless and painful. The painless enlargements are due to: (1) lardaceous disease; (2) fatty degeneration; (3) simple hypertrophy; (4) non-inflamed hydatid. The painful enlargements are caused by: (1) congestion; (2) interstitial hepatitis; (3) inflammation of bile ducts; (4) obstruction of the common duct; (5) pyæmic abscess; (6) solitary abscess; (7) cancer.

As Murchison pointed out, pain, jaundice and ascites are rare in the former and common in the latter group.

It is to be hoped that in these aseptic days we have fewer opportunities of studying lardaceous disease, than had Murchison. Still, we

sometimes see a case where the large, smooth, painless liver, the large spleen, and the large kidneys, secreting floods of albuminous urine, are associated with some long-continued suppuration or specific disease.

The *fatty liver* may not be so bulky as is the waxy, but it is fairly uniform in shape; the spleen is seldom enlarged; the urine is albuminous; and the symptoms of fatty degeneration of the heart are usually present to help our diagnosis.

HYDATIDS OF THE LIVER.

The enlargement of the liver due to hydatids may be smooth, uniform, and painless, but not unfrequently the tumour is lobulated so as to simulate cancer of the liver, or it may attain such a size as to fill the abdomen and to be mistaken for an ovarian, renal, or pancreatic cyst. If inflamed, the hydatid cyst may cause both fever and pain; it is then likely to be mistaken for abscess of the liver.

The distinction from ovarian cysts would rest on the continuity of the tumour dulness with the liver above, the existence of resonance between the tumour and the brim of the pelvis, the history of the case, and possibly the existence of the so-called hydatid thrill.

One very marked characteristic of hydatids, is their insidious and painless growth. From pancreatic cysts hydatids of the liver may be distinguished by their descending with inspiration.

Renal cysts are supposed to be differentiated from hydatids and other tumours of the liver by having a band of resonance on their anterior surface, and by springing from a deeper position in the loin. Unfortunately, both these criteria may be absent.

The painful enlargements of the liver are all associated in our minds with a possibility of fever, jaundice, and ascites.

Enlargement of the liver from congestion, from interstitial hepatitis, from inflammation of the bile ducts, and from obstruction of the common bile duct need scarcely detain us, because, although enlargements, they are scarcely to be considered as tumours. Even pyæmic abscesses of the liver seldom cause any one definite tumour; they are usually multiple and small, causing general enlargement of the organ. They are also generally secondary to some septic state likely to cause pyæmia.

Tropical abscess of the liver is usually single, and if sufficiently large, and so situated as to present in the hypochondrium, may be recognised as a smooth, rounded, fluctuating swelling, accompanied by fever, pain and tenderness—any or all of these signs may be absent and the abscess may remain latent. In the cases where abscess of the liver is recognised as an

abdominal tumour it must be distinguished from an abscess of the abdominal wall, from an enlarged gall-bladder, from an inflamed hydatid, and from a soft variety of malignant growth.

An abscess of the abdominal wall will be thrown into prominence when the patient sets the recti into action, while an hepatic abscess, unless adherent to the parietes, would cease to be prominent. The abscess of the wall is not likely to be associated with pain localised in the right shoulder; it does not move with respiration, and the constitutional disturbance is slight.

Cancer of the liver does not always cause enlargement of that organ and is not always recognised during life, but it usually causes much enlargement, and not unfrequently presents tuberos outgrowths of varying size. The cancerous infiltration which causes a smooth uniform enlargement is differentiated from waxy, fatty and congestive enlargements by its great hardness, and frequently by its association with pain, jaundice, ascites and emaciation; a negative mark is the absence of enlargement of the spleen such as is common in waxy, fatty, malarial and specific disease. Cancer of the liver is generally secondary to cancer elsewhere, but the primary growth is not always to be found. The tuberos form, which is even more frequently secondary, has to be diagnosed from multilocular hydatid, from tropical abscess, from gummata, and from distended gall-bladder.

It is very unlikely that hydatids should cause the jaundice and dropsy, which are common in cancer of the liver, although inflamed or suppurating hydatid might be associated with pain, tenderness, loss of flesh, and rapidly advancing illness. The same criteria may be applied to the distinction between cancer of the liver and abscess. Gummata may simulate the multiple small nodules of cancer which are sometimes widely scattered over the liver, but the history and a careful examination should show other indications of specific disease.

In 1899 I saw a lady who had a large, rather soft mass corresponding in position to an enlarged gall-bladder. On opening the abdomen it was found to be a smooth, conical massive outgrowth of cancer; neither jaundice nor dropsy was present.

ENLARGEMENTS OF THE GALL-BLADDER.

The commonest enlargement of the gall-bladder is distension due to the accumulation within it of retained bile, mucus, or pus; less frequently, by its containing gall-stones; and most seldom, enlargement may be caused by malignant new growth, which, however, is rarely primary.

The healthy gall-bladder cannot be felt during life, as it lies under the shelter of the right costal margin, but when it is distended or enlarged becomes evident and may be recognised as a rounded mass appearing opposite the tenth costal cartilage. Usually as it enlarges the direction of growth is towards the central space of the abdomen. Unless adherent, the gall-bladder, like the liver, descends on inspiration.

A moderately enlarged gall-bladder may be mistaken for a localised enlargement of the liver, such as an isolated hydatid, or a tuberos form of new growth. Later, as the gall-bladder enlarges, it is liable to be mistaken for an enlarged right kidney, and when it is enormous, for an ovarian cyst.

TUMOURS OF THE KIDNEY.

A renal tumour must be diagnosed on the right side from tumours of the liver and gall-bladder, also from tumours of the ascending colon—on the left side from tumours of the spleen and colon.

The chief characters of renal enlargements are their peculiar position (deep in the loin), their relation to the colon, which is usually indicated by a band of resonance over the front of the tumour, and by their mobility on respiration. It is also to be remembered that enlargements of the kidney, like other abdominal tumours, tend as they enlarge to press towards the central free space. They do not, therefore, usually appear in the back. Unfortunately, the sign of colonic resonance may be lost either by the impaction of fæces or by the flattening out of the bowel over the surface of the tumour. These conditions may confuse the diagnosis if the patient is seen once only, but if the bowels be well cleared before examination the characteristic resonance is usually obtained.

In addition to definite tumours, whether cystic or solid, perinephritic may need diagnosis. The chief symptom is, of course, pus in the urine and this may be the chief diagnostic mark between abscess of the kidney substance and abscess round it. In a case where there is a suspicion of tubercle it is necessary to be on one's guard, for although tubercle bacilli may be said to be found in the urine, there are other bacilli having much the same characteristics.

Tumours of the kidney may be either cystic or solid, and when cystic, must be diagnosed from the cystic swellings caused by hydronephrosis and pyonephrosis. When moderate in size these swellings and tumours of the kidney can generally be diagnosed from diseases of the liver and gall-bladder by their position behind the colon, but in cases where they are enormous, the whole abdomen is filled and distended by them, so much so, that the colon being stretched tightly over their surface, an unvaried and

universal dullness may result. Such tumours are likely to be mistaken for ovarian cysts, and cystic tumours of other organs in the abdomen.

Malignant tumours of the kidney may, of course, be found at any age but are commonest in very young children and in advanced life. Looking up case-books would strongly suggest that the difficulty with renal tumours does not lie so much in establishing their renal origin as in diagnosing their nature, for repeatedly we find surgeons of experience urging that the kidney should be exposed in order that the nature of the evident tumour should be settled. The difficulty experienced is not only in distinguishing between innocent and malignant new growths, but also between new growths on one hand and abscess and hydro-nephrosis on the other. Some help is to be found from examination of the urine, and occasionally a stone which has caused abscess may be demonstrated by the Röntgen rays, but much uncertainty unfortunately remains.

Enlargements and tumours of the spleen may be due to malaria, lardaceous disease, congestion of the spleen or splenitis, leucocythæmia, and Hodgkin's disease. In all these cases the spleen may be recognised by its growing from below the left costal margin downwards and forwards, its notched or lobulated anterior border being very characteristic.

Primary cancer of the spleen is even more rare than primary cancer of the liver, and secondary cancer is also rare. It would be recognised as a tumour of the spleen by the characteristic position, shape, and direction of growth. The malignant nature would probably be suggested by the symptoms.

Tumours of the pancreas are usually very difficult to diagnose, and are frequently mistaken for cancer of the liver or stomach, or for disease of the omentum. The diagnosis must be attempted on the principle of excluding other conditions, and then by considering whether the symptoms present agree with what we know to be likely in cases of tumour of the pancreas. For instance, we might expect to find deep-seated pain referred to the epigastrium and back, persistent jaundice fatty stools, a sense of deep resistance on palpation, and possibly a hard mass which would have to be differentiated from contracted stomach and from matted omentum.

Cysts of the pancreas have been mistaken for dilated stomach, for cysts of the mesentery, and for ovarian cysts.

I am but too well aware of the sketchy and imperfect nature of my paper. The subject seems endless, and for adequate treatment needs a series of lectures, not one. The by-paths are fascinating, and it has needed much resolution not to wander off into confusing details and minute differences.—*The Polyclinic.*

The Surgery of Exophthalmic Goitre.

BY

J. WARREN LITTLE, M. D.,

*Clinical Professor of Surgery in the Medical Department of the
University of Minnesota, Minneapolis, Minn.*

In considering the surgery of a disease it is not enough to be able to say that such a disease is present in any case, but the various forms typical as well as atypical, must be recognized, and in such cases selected for operation as surgical experience and judgment may dictate.

A good example of this is the old familiar theme of appendicitis; at one time the dictum was "operate as soon as the diagnosis is made." We know now that there are many cases in which this is very bad advice.

This same advice applied to exophthalmic goitre would be more disastrous, because the operation is very much more difficult, and only a few operators have cases enough to make them really expert. Then, too, there are certain inherent dangers that no amount of cleverness can avert.

It is generally considered that in exophthalmic goitre there is a hyperactivity of the thyroid gland, the same symptoms being produced in a normal subject by giving large doses of thyroid extract. Occasionally a case is met with in which the ordinary exophthalmic symptoms are present—and no enlargement of the thyroid exists. Such an atypical case came under my care about two years ago. A woman about twenty-five years of age consulted me on account of marked exophthalmia. She said she had consulted several oculists, who said her vision was perfect, and could give no reason for the condition of her eyes. At the time of my examination she had a normal pulse, no tremor, no enlargement of the thyroid; in fact, her neck seemed smaller than normal. She had no symptoms of cerebral pressure or circulatory disease. I told her she had only one symptom of exophthalmic goitre, but that others might appear later and asked her to report occasionally. This she did. Several months later her pulse had quickened perceptibly and the usual restlessness began to be manifest. About a year from the time I first saw her, she was persuaded by her sister to accompany her to a dance in which she had joined with spirit. Near the close of the dance she was taken with tachycardia and her friends thought she would die before they could get her home, and well may they have been alarmed, for a patient with more tumultuous heart action and difficult breathing I have never seen, and I would not have been surprised to see her expire at any amount. Her neck, however, did not increase in size, and there was no enlargement of the veins. At the

present time she is quite well and has returned to work. Exophthalmia has subsided, her pulse is less than one hundred, and the tremor and restlessness much improved. About the only treatment she received was rest and avoidance of all excitement. Such cases as the above are likely not common, but when they are met they do not require surgical assistance.

Another class of cases in which operation should be avoided is described by Thompson thus: Acute toxic thyroidism in which there is fever, excessive tachycardia, precordial distress, gastric and abdominal pain, vomiting, diarrhoea, sleeplessness, perspiration, sense of suffocation, great restlessness, oedema of the feet, in fact all the symptoms of toxemia due to thyroidism. Such cases, if operated, are likely to prove fatal at the time, or escaping that, within a day or two following. I have a case that will illustrate the one just described.

A young woman about twenty-three years of age had exophthalmic goitre, with most of the symptoms just given. She had a large, soft thyroid—both sides being about equally enlarged. For several months I visited her occasionally at her home, as she was too ill to come to my office. I kept her quiet, had the galvanic current applied faithfully, injected the gland with tincture iodine and did some other foolish things which included giving a good deal of medicine that did no good. Rogers and Beebe had not then given us their serum treatment. She did not grow worse, but I became discouraged and thought she ought to do better and so told her parents. We had several frank talks about operating. This lasted perhaps a month, the patient and parents leaving the time entirely to me. Finally, in an evil hour, I concluded she was in as suitable condition as I could get her and had her taken to a hospital. She was emaciated, weak and nervous, had marked tachycardia and a dilated heart. Being afraid to give a general anesthetic, I used Schlik's infiltration method. The girl died on the table a few minutes after starting the operation. There was some hemorrhage, but it was not excessive. The patient complained of being faint, became unconscious and could not be revived. The excitement and shock proved too great for the dilated heart to withstand. I take this to be a case of bad surgical judgment. To be sure, the patient likely would have died without an operation, but it is far better so than such a termination. Great harm comes in frightening those away who could be saved. Personally, I have never thought well of the kind of reasoning that goes something like this: "There is nothing to lose: the patient will die if you do not operate—medicine will not save him." This is wrong; there is a great deal to lose, unless there is hope of success based upon rational surgical principles. The great wonder is that surgery has so well withstood such abuse. Shepherd says: "I am of the opinion

that early operations are the safest and the class of cases most likely to be benefited are not the most severe ones, but those in which the gland is more enlarged on one side than another, in which, in fact, there is more definite tumor formation in which the gland is so excessively vascular, and in which the enlargement has preceded the symptoms of Graves' disease by months and perhaps years. These might be called cases of enlarged thyroid with a mild form of Graves' disease, in which the gland is soft, vascular and evenly enlarged throughout; here operations are usually most satisfactory, the after results being decidedly good.

The surgery of this affection is comparatively recent, and no concerted action has been taken by surgeons as to what cases shall be accepted and what rejected for operation. Consequently, I do not hesitate to say that statistics as to mortality are of little value. In the milder forms that mortality ought to be slight. In the severer forms on the border line, where it is a question whether the patient can survive an operation, the mortality will be great. Therefore, when an operator reports a number of cases with a death rate of five, ten or twenty per cent, unless the history and details of each case is honestly and carefully given, you have no way of concluding whether that surgeon is superior, ordinary, or really bad. I am convinced that in properly selected cases there is no disease in which the results are more gratifying to both patient and surgeon. It is not uncommon to see a patient who, before the operation, was nervous and anxious, with a pulse of one hundred and forty, become quiet and comfortable with a pulse around eighty, in three or four days following it.

The difficulty in performing the operation depends very largely upon the individual case. In a simple or cystic goitre that is large and firm and has a strong capsule, it is quite easy. In a small, soft gland deeply set with a capsule almost as thin as a veil, as is frequently seen in Graves' disease, it is a most tedious and difficult one. Here the gland must be teased or coaxed out of its bed; every slip must be seen so that you are at all times in command of the field, otherwise you will be confronted with most annoying and dangerous hemorrhage.

A difference of opinion exists among surgeons as to whether general or local anesthesia should be used. Personally, I prefer the former and favor giving a hypodermic injection of morphia preceding ether.

If a patient is in too precarious a condition to be given an anesthetic, the operation should be deferred.

The parathyroid glands and recurrent laryngeal nerve can be as well or better avoided by most operators. We are hearing recently a good deal about parathyroid glands and their functions, and it may not be amiss to

give something of their anatomy, etc., as having great value when the removal of the thyroid gland is considered.

The parathyroid glands (about the size of orange seeds and brownish red in color) are two minute structures, which lie in more or less close relation to each lateral lobe of the thyroid body. They are apt to be mistaken for accessory thyroids, but in structure they are different. One, more constant in position than the other, is situated on the posterior aspect of the esophagus at the level of the lower border of the cricoid cartilage, and in more or less intimate relation to the posterior border of the lateral lobe of the thyroid body.

The second parathyroid body is placed either in close apposition with the lower border of the lateral lobe of the thyroid, or on the trachea, at a varying distance below it. The inferior thyroid artery intervenes between the two parathyroid bodies. The parathyroid bodies are composed of epithelial cells, and in structure bear a close resemblance to the anterior lobe of the pituitary body. It has been shown that the removal of the parathyroids from the cat is followed by very serious symptoms, and in two cases out of three death ensued in the course of a few days.

It is claimed on good authority that if complete thyroidectomy be performed and the parathyroids are left, that myxoedema will not occur; but if they also are removed, myxoedema will occur again, if the thyroid is not removed but the parathyroids are removed, tetany will occur. Capsules of connected tissue completely separate the parathyroid from the thyroids. Considering their size and situation and how I am sure we will use more care than ever before when making incisions in this region.

In preparing a patient for operation, the X-ray is said to reduce the size of the gland, at the same time making it more firm. The operation of sympathectomy has not grown in favor, but has been almost entirely abandoned in favor of thyroidectomy. Sometimes the ligation of the thyroid vessels. Just how much of the gland it is necessary to remove depends upon the individual case, usually at least one-half the gland to the isthmus, and sometimes the lower portion of the remaining side. The anatomy chiefly concerned in the operation, given as briefly as possible, is: the skin and platysma covering the sternohyoid, sternothyroid and omohyoid muscles. The arterial blood supply from the superior thyroid, a branch of the external carotid. The inferior thyroid from the thyroid axis, and occasionally the thyroidea from the innominate, or from the subclavian or the internal mammary.

The superior thyroid vein drains into the upper and the middle into the lower part of the internal jugular, and the inferior thyroid into the innominate veins.

The anterior jugular commences near the hyoid bone from the union of several superficial veins from the submaxillar region. It passes down between the median line and the interior border of the sterno-mastoid muscle and at the lower part of the neck, passes beneath that muscle to open into the termination of the external jugular or into the subclavian vein. The nerve supply of the gland is from the sympathetic and the muscles are supplied from the loop of communication between the descendens and the communicans hypoglossi.

The motor nerve of the larynx, the recurrent laryngeal, lies in the space between the trachea and esophagus, near the inferior thyroid arteries, and can be avoided by leaving the posterior capsule of the gland, or hugging it very closely.

This hasty anatomical review is given merely as a reminder to the busy practitioner who may not care to look it up more in detail. The veins in this region have very thin walls and must be handled with unusual care.

In approaching the gland after the capsule is opened, the lateral veins should be seen and secured, the gland being carefully lifted up so that every point in the field is plainly visible. If the fingers are placed between the gland and its capsule and the gland hastily delivered, the lateral veins may be torn, and because of their close connection to the venous radicals, the bleeding is profuse. Dr. C. H. Mayo has shown that after the collar incision has been made and the skin and platysma in one piece dissected to a point above the gland, if the muscles covering the gland are to be cut, the section must be high, an inch and a half or two inches above the skin incision, to preserve the nerve supply, and to break the suture line so that the platysma and skin will not be fastened by adhesions into the muscle incision; the skin will thus be left free to glide over the neck as before the operation.—*The Medical Brief*.

The Suture of Blood-vessels*.

BY

STEPHEN H. WATTS, M. D., Baltimore, Md.

Assistant Resident Surgeon, Johns Hopkins Hospital.

The lateral suture of veins was carried out for the first time successfully by Schede in 1892. This method was later resorted to in numerous cases and has now come into such general use that most surgeons of experience have had occasion to employ it.

* Remarks made before the Southern Surgical and Gynecological Association, December 12, 1904.

To Jassinowsky, who published the results of his experiments in 1899 in his Inaugural Dissertation, belongs the credit of having proven conclusively that arterial wounds can be sutured with preservation of the lumen of the vessel. Of 26 cases in which he sutured longitudinal and partial transverse wounds of arteries of animals, all were successful except four. As suture materials he used fine curved needles and fine silk, the sutures including only the media and adventitia and avoiding the intima. As the result of his experiments Jassinowsky reached the following conclusions: (1) The arterial wound heals by first intention; (2) bleeding after operation can be surely and completely avoided; (3) secondary hemorrhage and thrombosis are not to be feared; (4) suture should be done in all recent, clean, longitudinal and oblique wounds of large vessels and in transverse wounds not exceeding one-half the circumference of the vessel; (5) the strictest asepsis is necessary; (6) the suture is easily done.

Jassinowsky's results have been confirmed by Burci, Murphy, Dorfler and others. Numerous instances of successful suture of accidental wounds in the arteries of man have demonstrated the practical value of this procedure. In 1902 Schmitz was able to collect 21 cases of lateral suture of arteries in man.

A good deal of experimental work has also been done on the circular suture of blood-vessels. As the result of these experiments various methods have been recommended for uniting divided vessels. In general these may be divided into two classes: (1) Those in which the simple suture is used; (2) those where mechanical aids are employed. Among those who have advocated the simple suture are Brian and Jaboulay, Murphy, Carrel, Jensen, and others. Some have used simple interrupted suture and mattress sutures, others the continuous suture. Some include all the coats of the vessel in the suture, others avoid penetrating the intima. Carrel, who has obtained more brilliant results with blood-vessel suture than any other experimenter, in his original article advised the avoidance of the intima. In 1897 Murphy after numerous experiments on animals recommended uniting completely divided vessels by invaginating one end a short distance into the other, and fixing them thus with sutures. On account of the additional support thus obtained he thought the method particularly applicable to arteries. In the majority of cases of suture of divided arteries in man this method has been used.

The mechanical aids may be divided into the extravascular and endovascular. Among the former may be mentioned various clamps, decalcified bone and ivory rings, sheaths made of sections of other arteries or veins, aluminum rings, magnesium rings, etc. The most important of these are the magnesium rings or prostheses of Payr, by means of which the ends of

the vessel are so invaginated that intima is approximated to intima. Payr and Höpfner claim to have obtained good results with this method. The endovasal aids are of no importance clinically; the glass cylinder method of Abbe is, however, of historical interest.

Arterio-venous anastomoses have been done by San Martín, Carrel, Jaboulay and others. The interesting results obtained by Carrel are doubtless familiar to all of you.

The following experiments were carried out with the strictest aseptic technic, for the most part according to the method suggested by Carrel. The animals were cleansed with soap and water, alcohol, permanganate of potash, oxalic acid and bichloride. After making the skin incision, sterile towels were clamped to the edges of the incision. The vessels were exposed and provisional hemostasis produced by small bulldog clamps covered with rubber. I might say here, that in none of the specimens was there any evidence of injury to the vessel wall produced by these clamps, with the possible exception of one or two of the veins. The vessels were then divided and prepared for suture. Very fine straight needles and fine silk were the suture materials used. The thread was greased with or boiled in vaselin, as suggested by Carrel.

The vessel ends were first united by three interrupted sutures equidistant from each other, the suture penetrating all the coats of the vessel. By traction upon these sutures the edges of the vessel wound were closely approximated and a continuous suture easily applied. The leakage from the stitch-holes was usually slight in amount and easily controlled by a little pressure. The tissues covering the vessel were sutured with fine silk and the skin with a subcuticular suture of the same material.

The carotid artery was thus sutured 13 times. All were successful and in no case was there the slightest evidence of thrombus formation. The jugular vein was also sutured 13 times, 10 of these being successful. The femoral artery and vein were sutured once, thrombosis occurring from infection of the wound.

The carotid artery was sutured to the jugular vein four times, all being successful. Following the suture the vein became dilated and pulsated strongly, a marked thrill could be felt in the vein and a loud murmur could be heard over it. Examination of the veins after one to three months showed a marked dilatation of the vessels, a thickening of the walls, and in some there were interesting plaques in the intima.

The proximal end of the divided femoral artery was sutured into distal end of the divided femoral vein four times. One case was successful;

in the others thrombosis occurred. In the successful case the leg became very much swollen after the operation, and in two days was twice as large as the opposite one. The swelling gradually subsided. The femoral vein became much dilated and marked pulsation could be felt in the saphenous vein as low down as the foot. The specimen examined after three months showed marked dilatation of the vein and thickening of its wall. The distal portion of the femoral artery was small, atrophic, and did not seem to be performing the function of a vein.

In four animals a lateral anastomosis was made between the femoral artery and vein. In all cases the anastomosis was quite satisfactory. On turning on the blood current there was no leakage, the vein became considerably dilated, a thrill could be felt in the vein near the point of anastomosis, and a bruit could be heard at some distance from the animal. The red arterial stream could be seen through the thin walled vein, rushing into it and turning upward with the venous current. In only one of the animals, however, did the anastomosis remain patent, a marked thrill and loud bruit being present five weeks after the operation, when the animal escaped and was thus lost. In the second the murmur and thrill persisted for four weeks and then disappeared; examination a few weeks later showed that the opening had healed, the vessels, however, were patent. In the third animal the thrill and murmur lasted only four days; the wound became infected; examination two months later showed thrombosis of the artery opposite to the anastomosis, the vein being patent. In the fourth the thrill and murmur persisted five or six days; secondary hemorrhage occurred on the eighth day after operation.

Excision and replantation of a section of the femoral artery was tried once. Thrombosis occurred. Transplantation of a portion of a vein into an artery was tried twice. In one instance a portion of the external jugular vein was transplanted into the carotid with perfect success. In the other case a portion of the external jugular was transplanted into the femoral artery. Thrombosis occurred in a few days.

In reviewing these experiments we see that of 31 experiments upon the vessels of the neck 28 were successful, while of 12 experiments upon the femoral vessels only two were entirely successful. This discrepancy is not difficult to explain. The neck can be bandaged, the wounds thus being kept clean and dead space obliterated. In the groin, however, it is very difficult to apply a bandage which will remain in place, obliterate the large dead space which is so apt to be present, and prevent movements of the leg which interfere materially with a successful vessel suture.

These results show conclusively that completely divided vessels can be sutured with almost uniform success when the aseptic technic is good.

The intima can be included in the suture with impunity, the application of the suture being thus greatly facilitated.—*The International Journal of Surgery*.

Treatment of Erysipelas.

A. HECHT (*Therap. Monats.*) recommends a series of remedies for erysipelas. The first is absolute alcohol, which is that one of the older remedies in which most confidence can be placed in cases in which the occlusive bandage can be applied with exactitude, as, for instance, in erysipelas of the extremities. It is more difficult to apply where the face is the part affected, but Hecht was able by its use to bring to a standstill after twenty-four hours erysipelas of the face in an old woman 82 years of age. For erysipelas of the scalp absolute alcohol is especially useful. When the patient objects to alcohol, salocreol and mesotan are recommended. The former was tested by Gnezda at the first medicinal clinic at Berlin; the latter was found by Pautz to unfavourably influence the course of the disease in each of six consecutive cases. More recently the use of phenol camphor has been warmly recommended. This mixture is made up of acidi carbolici liquefacti 30.0, camphorae tritae 60.0, spiritus vini 10.0, and forms a clear fluid, which in recent erysipelas may be painted several times a day over the skin, and in cases of longer duration may be applied on lint. The author saw one case of erysipelas of both sides of the face, which had already lasted four days, which recovered after the application for twenty hours of phenol camphor. Hecht also employs a lotion the prescription for which is ichthyoli, guaiacoli, ol. terebinthinæ aa 10.0, spiritus vini 20.0. He finds this combination useful for its antiphlogistic, antipyretic, and pain-relieving action. The intravenous treatment by collargol has not proved reliable, although in a number of cases it appears to have had a certain influence upon the temperature and the general and local conditions. The treatment by quinine may be mentioned, and has, at any rate, the advantage of being easily combined with other methods of treatment.—*British Medical Journal*.

OBSTETRICS AND GYNÆCOLOGY.

The Induction of Labour in Prolonged Pregnancy.*

BY

R. G. MCKERRON, M.A., M.D.,

Physician to the Aberdeen Maternity Hospital; Senior Physician,
Royal Hospital for Sick Children, Aberdeen.

THE subject to which I propose briefly to direct attention is one which, although of obvious importance to all who are engaged in the

* Read before the Aberdeen Medico-Chirurgical Society, February 21st, 1907.

practice of midwifery, has hitherto received little or no consideration from writers on obstetrics, namely, the management of those cases in which pregnancy is unduly prolonged.

Prolongation of pregnancy beyond the normal duration, or even beyond what is regarded as the physiological limit, is not an uncommon occurrence. All practitioners of experience must have seen cases where, seemingly at any rate, the normal duration has been exceeded. In view of the fact that our methods of estimation are untrustworthy, it is probable that in many of these cases, the supposed protraction was apparent rather than real; but, even after allowance is made for possible errors of calculation, there would seem to be no doubt that the duration of pregnancy exceeds the physiological limit of 285 days in a certain proportion of cases, probably in about 2 to 3 per cent.

When pregnancy is unduly protracted, effects are produced which have an unfavourable influence on the course of labour, and which involve increased risk for both mother and child. Evidence of this will be found in clinical records, and, no doubt, there are many unpublished cases in which delivery was attended with serious difficulty from this cause. My own experience agrees with that of Hirst,¹ who was one of the earliest writers to appreciate the dangers of this condition. He states that some of the worst cases of obstructed labour he had ever seen were due to abnormal prolongation of pregnancy.

My attention was first directed to the dangers which may result from undue protraction of pregnancy by a case which I saw in 1899, a note of which was communicated to the Branch Meeting of the British Medical Association in the following year.

A young married woman, under average size, but with a normal pelvis, expected her first confinement in the beginning of July, her last menstrual period ending on September 27th. Labour did not begin till the afternoon of July 23rd, no foetal movements having been felt for a few days before. Examination at about 3 o'clock on the morning of the 24th showed the os to be more than half dilated, the membranes ruptured, the head in the first position and fairly low in the pelvis. Good progress was made till the head reached the pelvic floor, where it was arrested, and at 9 A.M. the forceps was applied. With little effort the head was advanced till the anterior fontanelle reached the perineal border, but the greatest difficulty was experienced in getting the forehead and face free. Even after they were liberated they tended to slip back, a fact which made me remark to the nurse that the shoulders would give trouble. This

1. Hirst. *Text-book of Obstetrics*, p. 188.

proved to be the case; delivery of the shoulders and trunk was effected with great difficulty, and only after the arms had been brought down by means of the blunt hook, and after first the thorax and then the abdomen had been eviscerated. The child, which had been dead for some days, weighed 12 lbs.

The excessive development of the child, which was the cause of the difficulty in this case, could only be attributed to the abnormal duration of pregnancy. I have since seen other cases—of my own and in consultation—in which difficulty, more or less serious, occurred from the same cause.

Clinical experience thus shows that this occurrence may occasion serious difficulty and danger during labour. A little consideration will explain why this should be so.

When the foetus is retained in utero beyond the physiological time, it undergoes certain developments which necessarily influence the course of labour.

(1) The child is longer and larger than normal, measuring sometimes as much as 22 inches or more, and the whole skeleton is more developed, but there is often a diminution in the amount of fat, so that the actual weight of the child is less than might have been expected. Abnormal weight does not necessarily indicate protraction any more than a normal weight excludes it.

(2) The circumference of the head is usually greater, while the cranial bones are unduly ossified and do not mould so readily as in the normal foetus.

(3) In excessive intra-uterine development the shoulders, as pointed out by Herman, are larger in comparison with the head than is normal. This was certainly so in the case referred to, in which the shoulders occasioned much greater difficulty than the head.

The influence of these changes on the course of labour will be apparent. Owing to the difficulty of extraction the child is liable to be lost. Not only may the child perish during labour, but it not infrequently dies in utero before the onset of labour. A possible explanation of this, as I suggested in a previous paper, is that the thrombotic changes in the placenta, which normally precede labour may become so advanced as seriously to interfere with the foetal circulation and lead to the death of the child.

The effects of prolonged gestation are not, however, limited to the foetus. There are other effects which must be noted. The excessive distension of the abdomen may—more particularly in *primi-gravidæ*—be followed by subsequent atony of the abdominal muscles and persistent

enlargement of the abdomen. Further, Bossi suggests that there may take place a premature fatty degeneration of the uterine muscle, similar to that which normally occurs in the puerperium, and he instances in support of his suggestion a case of Cæsarean section in which he was able to demonstrate well-marked degenerative changes in the uterine muscle. Further evidence on this point is needed; and, meantime, the distension must be regarded as the chief cause of the uterine inertia and tendency to *post partum* hæmorrhage which are so often met with in these cases.

These considerations are sufficient to show that, besides threatening the life of the child, undue prolongation of pregnancy is not without danger to the mother. Hitherto, this has not been sufficiently recognised. Most text-books, it is true, mention the possibility of an abnormal duration of pregnancy, and some refer to the dangers involved, but no author, with the exception of Hirst, proposes any means for their prevention. Even in clinical reports of cases of this kind, though the cause of the difficulty in labour is usually recognised, no suggestion for the management of similar cases is advanced. This is the more surprising as there are few conditions in which the treatment is so obvious, or in which it is more safe or effectual.

The treatment consists in the induction of labour; and this should be carried out in all cases where there is clear evidence that pregnancy has exceeded the physiological limit, and that its further continuance would probably involve a difficult or dangerous labour. For several years I have followed this course, and always with satisfactory results.

It is almost unnecessary to point out that the apparent continuance of pregnancy beyond the normal time is not sufficient evidence of undue protraction, and does not of itself warrant the induction of labour. A careful examination and estimate of the size of the child, particularly of the head in relation to the pelvis, are necessary before deciding to interfere.

The induction of labour is especially advisable in *primi-gravidæ*, in whom there is no history of previous labour to guide us.

Of the importance of this procedure experience has convinced me. No doubt, as Hirst observes, the general adoption of this method of treatment may occasionally lead to unnecessary interference, but, on the other hand, it will often prevent complications and difficulties of the most serious nature. Moreover, it involves no risk, certainly less than in allowing pregnancy to be unduly prolonged. For some time I have made it a rule to allow no *primi-gravida* to exceed the normal duration of pregnancy by more than a week or ten days, provided I was satisfied that there was real

protraction. An examination is made at term. If the pelvis is normal, a fact which should previously have been ascertained, nothing is done for a week. Should labour not have begun, it is induced in the usual way by the introduction of a gum-elastic catheter. This is more quickly effective than in those cases in which labour is induced prematurely. An important advantage of this plan is that it leads more certainly to the detection of those minor contractions of the pelvis which may so easily be overlooked in routine examination, and which are so common a cause of difficult labour in primi-parous women.

Of several cases in which this procedure was followed I shall give the details of two.

(1) A young married woman expected her first confinement about May 20th, 1905. She had a well-developed, roomy pelvis. Examination at term showed the uterus to be over the average size. On the forenoon of May 31st, as there were no signs of approaching labour, the cervix still projecting into the vagina, I introduced a catheter. Early on the following morning labour began; at 12-30 P. M., the membranes were artificially ruptured, and at 2-45 a living child, weighing $9\frac{1}{2}$ lbs., was spontaneously born. Recovery without rise of temperature.

(2) A primi-gravida expected her confinement in the second week of February of this year, her last menstrual period having been from April 30th to May 5th, 1906. Her pelvis was somewhat under average size, but this was not discovered in the usual examination during pregnancy. Examination at term showed the uterus to be of normal size. Finding a week later that the head had not sufficiently descended, and satisfied that pregnancy had exceeded the normal limit, I introduced a catheter on the afternoon of the 17th. Labour began at three o'clock on the following morning and progressed satisfactorily till at 1-45 P. M., with the os dilated to the size of a crown piece, the membranes spontaneously ruptured; further progress was slow, the head which was in the fourth position being insufficiently flexed. At 4-30 the forceps was applied and delivery completed, but with great difficulty owing chiefly to the absence of due flexion. The child, which was alive, weighed $8\frac{1}{4}$ lbs. The woman made a practically apyretic recovery.

The conclusions to which a consideration of these facts lead may be shortly summarized:—

- (1) Pregnancy is unduly protracted [in about three per cent. of cases.
- (2) The condition is associated with danger to the child from (a) placental changes, (b) prolonged or difficult delivery.

(3) It is unfavourable for the mother from (a) excessive distension, which may lead to subsequent atony of the abdominal muscles and permanent enlargement of the abdomen; (b) difficult or obstructed labour; (c) uterine inertia with consequent liability to *post partum* hæmorrhage.

(4) The dangers to mother and child can, and should, be avoided by the induction of labour.

(5) This should not be done as a matter of routine, but only when there is satisfactory evidence that pregnancy is prolonged, and that its further continuance may lead to serious difficulties.—*The Journal of Obstetrics and Gynecology*.

A Case of Paralysis of the Intestines with Regurgitant Peristalsis following Delivery.

BY

ROBERT JARDINE, M.D., etc.

Professor of Midwifery, St. Mungo's College, Glasgow; Senior Physician, Glasgow Maternity Hospital, etc.

MRS. B., æt. 28, iv.-gravida, full time. This patient's first child had been born at full time, macerated; the second one at full time with instruments, but it had only lived a few minutes, and the third one at full time naturally, alive. The present labour had commenced on the afternoon of January 25th, 1907. A nurse from the Hospital had seen the case and, unfortunately, had ruptured the membranes early in the first stage of labour. The labour was very slow, and the os was not fully dilated until the 27th. The outdoor house surgeon then applied Neville's forceps but failed to deliver, so he brought the patient into Hospital.

On admission, the patient was considerably exhausted with a pulse of 120. The retraction ring was apparent, and on palpation the child was found to be of large size. The head was above the brim and overlapping. The foetal heart was quite audible. The diagonal conjugate measured $4\frac{1}{4}$ in.

Neville's forceps was again tried with the patient in the Walcher position, but delivery could not be effected. Milne Murray's instruments were now tried, and the child was delivered after a short but hard pull. The child was still-born and weighed $9\frac{1}{2}$ lbs. The head measurements were as follows:—occipito-mental 6 in., occipito-frontal $5\frac{1}{2}$ in., bi-parietal $3\frac{1}{2}$ in., bi-temporal 3 in., sub-occipito-bregmatic $4\frac{1}{2}$ in. The placenta was adherent and had to be removed by the hand.

After delivery 20 m. of extract of ergot and $\frac{1}{100}$ gr. of strychnine were given to the patient hypodermically, and the strychnine was continued four-hourly in $\frac{1}{100}$ gr. doses.

January 28th. The patient was sick and vomited some dark coloured bilious material. She complained of abdominal pain and there was considerable distension. The stomach and colon were notably distended. The urine was passed involuntarily; the bowels did not act. Linseed meal poultices somewhat relieved the pain, but a large turpentine enema gave no result. The temperature ranged from 92° to 99.8°F., and the pulse from 94 to 110. Small quantities of milk diluted with hot water were given frequently, and $\frac{1}{2}$ fl. oz. of champagne hourly.

January 29th. The vomiting was incessant, of a dark material with a faint faecal odour. The abdomen was much distended, rigid, and painful on pressure, the site of the maximum intensity of the pain being in the epigastrium. No definite sign of an intestinal obstruction could be detected. The temperature was 97.6° to 98.2°F., and the pulse 92 to 116.

It was decided to wash out the stomach, and this was done at 2-30 P. M. with normal saline solution. Several basinfuls of dark pultaceous material with an admixture of bile and altered blood were flushed out. A similar procedure was carried out at 5 P. M., 8 P. M., and 12 P. M. The last washing was comparatively clear. From the commencement of the stomach lavage there was no recurrence of the vomiting, and after each washing-out the patient expressed herself as feeling much less uncomfortable and less nauseated. The urine was still passed involuntarily. A large turpentine enema had no effect, but in the evening flatus was passed freely and a small but well formed motion. The strychnine and champagne were continued, and to relieve the abdominal pain poultices were applied and $\frac{1}{2}$ gr. of morphia was given hypodermically. Nutrient enemata were given alternately with meat enules every six hours.

January 30th. The patient was much improved. There was no sickness, and the abdominal distension had decreased. There was much less pain in the abdomen, but the patient complained of a stabbing pain in the left side of her chest catching her on breathing. An examination revealed nothing beyond a few rhonchi. Spongiopilin sprinkled with a mixture of equal parts of the liniments of aconite, belladonna and chloroform (A. B. C.) was applied, and inhalations of Tr. Benzoini Co. were given. The urine was still passed in bed. Flatus was passed freely and a well formed small motion. The temperature was 97.2° to 99°F., and the pulse from 70 to 88; the respirations were 26. The strychnine,

champagne and nutrient enemata were continued, and in addition 1 fl. oz. peptonized milk was given by the mouth.

After that, the patient steadily improved, and by February 2nd she had regained complete control over the bladder. The rectal feeding was now stopped. The patient was dismissed well on the 13th of February.

The patient stated that throughout her pregnancy she had suffered frequently from nausea and vomiting, but that otherwise her general health had been good.

In two of my Cæsarean sections I have seen this same condition of paralysis of the intestines with vomiting of dark grumous material. Both of these patients died from exhaustion, and the post mortem examination revealed nothing to account for the condition. In neither of them was there the slightest indication of any peritonitis. More or less paralysis and distension of the intestines is common after abdominal operations, but as a rule, it soon passes off. When it persists, it becomes a very serious complication, even when there is no peritonitis present. In this case the pulse and temperature did not indicate the presence of peritonitis, and if it had been present I do not think the patient would have recovered. The careful and thorough washing out of the stomach probably saved the patient and for this I am indebted to my resident, Dr. Grier, who was unremitting in his care of the patient.—*The Journal of Obstetrics and Gynecology*.

A Contribution to the Prophylaxis and Treatment of Mastitis.

STIASSNY (S.) *Gynakologische Rundschau*. Bd. i., Heft 1.—The object of this paper is to bring forward the value of Bier's congestive method in the treatment of mastitis. The frequency, form and mode of origin of puerperal mastitis are briefly given; two chief types are distinguished—(1) obstructive or congestive mastitis, arising in connection with the onset of lactation, associated with retention of the milk, and characterised by diffuse swelling and redness of the whole breast, high pulse and temperature and severe pain. Fissures of the nipple are absent. This is the mild form. (2) Mastitis due to lymphatic infection from a fissure of the nipple, giving rise to isolated areas of inflammation in the breast, superficial or deep. This is the severe form. The older methods of treatment are discussed—compression, suspension, cold and hot applications and incision, and their inadequacy is pointed out. Mastitis is one of the most obstinate cases to treat. The treatment by Bier's congestive method is then described. It is obviously impossible to produce congestion in the breast

by means of bandages. Klapp has devised large glass cups of various sizes for this purpose. These are fitted with an exhaust pump, so that the pressure within can be lowered to any desired degree. Between the cup and the pump is a 3-way tube, so that the pump can be removed when the cup has been applied, and, if desired, air can be let in, and the pressure varied. The cups have a broad flange which it is best to lubricate before application. The use of a manometer is unnecessary. To gauge the proper amount of pressure—experience is necessary—the best indications are the amount of hyperæmia and pain produced. Klapp recommends an application of 20-30 minutes; exhaustion should be made for 5 minutes, and then air let in for 5 minutes, and so on; or a single continuous application for 10 minutes may be made. Details of nine cases belonging to the first type are then given. Some of these were first treated for two or three days by the old method, then Klapp's method was used; others were treated from the first by the latter method. The treatment was uniformly successful, and effected a cure in from 4-5 days. The pain disappeared after the first application, and the temperature fell quickly; both diffuse swelling and localized infiltration disappeared with extraordinary rapidity. The treatment must be persisted with for a few days after acute symptoms have subsided. Many failures by this method have been described. The author quotes one case, but points out that this patient had had her resistance lowered by severe sapræmia. Cases of the second type are then described; these begin with severe pain and temperature and localized areas of swelling, proceeding to abscess formation. If Klapp's method be used early enough spread of inflammation is controlled and abscess formation prevented. If abscesses are present they should be punctured by a small incision, and the pus should be removed daily until the inflammation has completely subsided. This treatment has obvious advantages over the long incision and counter-incision usually employed. Altogether the author speaks very enthusiastically of the treatment of mastitis by this means. True, there are sometimes failures, but the successes more than compensate for these. He lays great stress on the employment of the method in the earlier stages; it then acts as a prophylactic against the severe course of the disease.—*The Journal of Obstetrics and Gynecology*.

The Treatment of Eclampsia.

A USEFUL paper on this subject, based upon 86 cases of eclampsia and 278 of albuminuria occurring in the Maternity of the University of Pennsylvania, is contributed by Dr. John Cooke Hirst to the April number of the *Therapeutic Gazette*. He classifies the different methods of treatment as follows:—

1. *Anæsthetics*.—Chloroform alone can be used as ether irritates the kidneys. Chloroform should be given before the convulsions begin, so as to avert the seizure altogether.

2. *Methods of Reducing Blood-pressure*.—In this condition the blood-pressure is usually high. Two methods may be used for this purpose, viz., venesection and the hypodermic administration of 15 minims of. extr. veratri yiridis.

3. *Morphine*.—Small doses are no use. If used at all, doses of half to three-quarters of a grain should be given hypodermically.

4. *Chloral*.—It should be given in doses of 30 to 60 grs. by enema. It ought not, however, to be used as a routine, as like morphine, chloral tends to antagonise the eliminative treatment.

5. *Pilocarpine*.—This is a very dangerous drug. Its use should be restricted to those cases which cannot be made to sweat by hot vapour baths or hot packs. It is given in a single dose of one-eighth to one-sixth of a grain.

6. *Thyroid Extract*.—This is more valuable in the preventive treatment than when the convulsions have actually appeared. This remedy, however, is really still on trial.

7. *Catharsis*.—Free purgative is the best means of producing elimination. If the patient is conscious and can swallow, croton oil may be given, or sulphate of magnesium. Better still is the method of stomach lavage, introducing through the tube two ounces of castor oil and four drops of croton oil.

8. *Diaphoresis*.—Sweating is best induced by hot vapour bath, or failing this, by a hot wet pack.

9. *Hypodermoclysis*.—This is best given, a pint at a time, under the breasts every eight hours.

10. *Forcible Delivery*.—The writer says under this heading that he considers it wise to defer any interference with labour, except under one of three conditions:—(i.) If the patient is already well advanced in labour with good dilatation, the application of forceps is advisable. (ii.) If the patient is seen shortly after the onset of convulsions it is often advisable to empty her uterus by one of the slower methods of dilatation and delivery. (iii.) If the patient is getting worse under treatment and is losing ground, it is justifiable to take the risk of delivery, in the hope of an improvement when the uterus is empty. Under other circumstances, he says the labour is better left alone.

When eclampsia occurs in the middle of pregnancy or somewhat later a patient may recover from the attack, and her pregnancy continue.

Under such circumstances she should not be allowed to go beyond the eighth month of pregnancy, and should have labour induced at that time. The writer's death-rate was 33.8 per cent. in the case of primiparae, and 14.25 per cent. in multiparae. Of still-born children the number was 40 out of a total of 88, 17 of those deaths occurring before the eighth month of pregnancy. Of his 278 albuminuric cases, forty had had eclampsia in previous pregnancies, but escaped in the present one under treatment.—*The Medical Times and Hospital Gazette.*

Death during Pregnancy ; Undetected Cancer of Kidney.

GAULTIER (*Ann. de Gyn. et d'Obstet.*) reports that a needlewoman aged 35, in the seventh month of her third pregnancy, gained an admission into a hospital on account of distressing fits of coughing which had lasted for two or three months. The symptoms simulated whooping cough. The sputum was tenacious and frothy, sometimes streaked with blood, and at others contained gelatinous masses of blood pigment. Tuberculous disease of the bronchial glands was diagnosed. The urine was absolutely normal, and Gaultier notes that the patient never said a word about lumbar pains, so frequent in pregnant women. There was no abdominal tumor. The patient died during a very violent fit of coughing. The right lung and pleura were infected, with cancerous deposit; the tracheo-bronchial glands were infected, the largest compressing the right bronchus and pneumogastric. The primary seat of cancer was found to be the right kidney, enlarged to the size of a hen's egg, the pelvis and renal vein being invaded. The foetus showed high congestion of the kidney and suprarenal capsule, with numerous hæmorrhagic foci.—*The Buffalo Medical Journal.*

THERAPEUTICS.

Treatment of Bright's Disease.

Albert Robin (*Journ. des Prat.*, Dec. 1st 1906) points out the chief factors to be attended to in the treatment of the various forms of chronic Bright's disease. As regards the dietetic treatment of patients with chronic Bright's disease, he points out that patients do best on a diet which consists partly at least of milk; the amount of albumen in the urine is increased by the use of wine; eggs give rise to less albumen than meats; eggs and milk are better than a purely milk diet. Of meat foods, veal and beef are better than chicken or mutton. Fresh fish is for these patients very good, and of the fresh-water fish those that live in clear water—such as the trout—are better than those

living in muddy. Of vegetables, potatoes and carrots give rise to the least albumen. Bread added to milk does not increase the amount of albumen in the urine. Although, as the author points out, the quantity of albumen in the urine of these patients is not of primary importance, yet an increase in its amount generally indicates an accentuation of the disease. Before placing the patient on a special dietetic regime, it is necessary to know the condition of the heart; if this be dilated, a purely milk diet, in which from 3 to 4 litres would be required per diem would be badly tolerated; in such cases the best form of diet is a mixed milk and vegetarian. If the heart is equal to its work, a milk diet may be ordered and continued until the quantity of albumen in the urine has been reduced to as small a quantity as possible. When this object has been attained, vegetables, eggs, and even a little meat may be added to the diet. If there be œdema, salt should be prohibited. The author points out that in chronic Bright's disease œdema may exist in two forms, for example, cutaneous œdema and œdema of the deep tissues. To estimate the latter form the patient should be weighed every day; if his weight increases the quantity of salt allowed must be reduced. The author points out, however, that the results obtained by weighing the patient every day are not always sufficient to enable one to judge whether the salt in the diet is harmful or not: in chronic Bright's disease, particularly in the interstitial variety, there is frequently a retention of chlorides without any accompanying œdema. This can be shown by a daily estimation of the quantity of chlorides eliminated in the urine. These patients when placed on a diet free from salt continue to eliminate for days or weeks large quantities of urinary chlorides and their general health greatly improves. The treatment by a salt-free diet should not, however, be carried beyond the necessities of the case lest it cause an increase of the albuminuria, impairment of nutrition, or clotting of the blood. As a reasoning for the food in those cases where salt is not allowable, one may employ onions, parsley, or the juice of lemons. Of the other methods of treatment which may be employed the author refers to the use of warm baths after the method of Bartels, in which the patient takes a warm bath (36°C) first twice a week and later every day, gradually raising the temperature of the bath and prolonging the stay in the water. After each bath the patient is covered with a dressing gown, placed in a warm bed, and thoroughly massaged. This method of treatment should be adopted in those cases only in which the heart is healthy. The use of pilocarpin for the purpose of causing abundant sweating the author considers contra-indicated, causing, as it does, great exhaustion of the patient. To act on the kidneys the tincture of cantharides may be used, but only minute doses should be given. A far better and less dangerous drug is theobromine,

which acts not only as an efficient diuretic, but also as a powerful dechloridizing agent. Of drugs and preparations which are supposed to have a special action on the morbid process itself the author refers to lactate of strontium, tannin and soup prepared from pig's kidneys. For the anæmia the perchloride of iron may be given, and for a flagging heart small doses of digitalis. Digestive troubles must be treated on general principles, as most other complications, such as pruritus, bronchial catarrh, &c. A season at Evian and residence in a warm, dry climate may be advised for the well-to-do patients.—*The British Medical Journal*.

Cobra Venom.

After an exhaustive study of the venom of the East Indian Cobra-de-capello (*Naja tripudians*) Edwin S. Faust¹ concludes that the toxic element is not an albuminous substance—one of the so-called toxalbumins—but is intimately related to the vegetable sapotoxins. He finds nitrogen absent and therefore in accordance with the pharmacological nomenclature of non-nitrogenous substances, to which groups picrotoxin, sapotoxin, and sphacelotoxin also belong, he names it *ophiotoxin*. The hæmotoxin isolated by Keyes from the venom of the same snake he declares, from what knowledge we have at present of the toxalbumins, does not belong to them. Likewise the cause of death in cobra poisoning is not due to its hæmolytic action but rather to a substance affecting the nervous system. The poison which he finally succeeded in isolating is a light, slightly yellow, amorphous powder, containing neither nitrogen, phosphorus nor sulphur. After rapid drying it is but very slowly soluble in water. In aqueous solution and by intravenous injection it is very effective in animals. The properties which *ophiotoxin* has in common with the sapotoxins are: (1) Solubility in water (to suds production) and insolubility in ether; (2) the difficulty with which it is absorbed by mucous membrane surfaces in the stomach and the intestines; (3) the local effects after subcutaneous injection are the same in both: swelling, inflammation, extravasation of blood, pain at the point of injection and immediate neighborhood, and sometimes development of aseptic processes; (4) the power of dissolving blood—corpuscles (hæmolysis); (5) the effect upon the central nervous system, especially the respiratory centres; (6) the effects upon the central nervous system are only caused by injection into the blood itself or relatively large subcutaneous injections; (7) neither contains nitrogen; (8) neither dialyses; (9) both are amorphous colloidal substances which either crystalize with difficulty or not at all. *Ophiotoxin* differs from the

¹ *Archiv für experimentelle Pathologie und Pharmakologie*, January 30, 1907.

sapotoxins in that (1) it is insoluble in alcohol; (2) that it is not a glycoside; (3) that it has a curare-like effect on amphibia which the sapotoxins lack.—*Medical Notes and Queries*.

On the Treatment of Diabetes with Secretin (*Bristol Med. Chir. Journ.*, September, 1906).—J. R. Charles has treated three cases of diabetes with secretin on the basis of the discoveries of Bayliss and Starling. These observers have shown that when hydrochloric acid comes into contact with the epithelial cells of the duodenum and upper part of the jejunum a substance is found therein, to which they gave the name of secretin. This substance is carried by the blood-stream to the pancreas, on the external secretion of which gland it acts as a specific stimulant. The idea has been promulgated that it is possible, since secretin acts as a stimulus to the visible external pancreatic secretion, that it may similarly stimulate the assumed internal secretion. Some forms of glycosuria are considered to result from the absence or diminution of this secretion. Moore, Edei, and Abram have recently (*Boi-chemical Journal*) recorded successful results in three—two of these being children—out of five cases of diabetes treated on these lines. The writer employed this method of treatment in three cases of the disease, but, unfortunately, with entirely negative results. At present it is quite uncertain what type of diabetic patient is likely to respond to the treatment, and the writer considers that negative as well as positive cases should be recorded, in the hope that some facts will thus be brought to light which may make this point more clear.—*The British Journal of Children's Diseases*.

Pineapples a Very Valuable Digestive.

The word enzyme does not appear to have any connection with pineapple, yet it is the name of the chemical that gives to the luscious fruit the remarkably digestive property which it possesses, says an exchange. The prevailing notion that pineapple juice is excellent for the digestion is supported by medical testimony. Eat a slice of the fruit after dinner, say the doctors, and you will not suffer with dyspepsia.

If you want to see what pineapple can accomplish in the way of digestion, you can easily test it on a piece of raw steak. The action of pineapple juice on meat is to transform it into jelly and then dissolve it when in the human stomach.

Place a slice of the fruit on the raw meat as it lies on a plate, and the upper surface on the steak where the fruit touches it will soon become gelatinous. Enzyme, the active principle of the juice, can be obtained by throwing salt into the juice, thus producing a precipitate.

A good-sized pineapple contains two pints of juice, a fact that gives an idea of what a slice of the fruit will do for digestion. If cooked the pineapple loses its virtue in this respect. It may be asked whether the consumption of the somewhat woody fruit itself is beneficial or not, for that can scarcely be easily digestible.

Without doubt it is the juice which does the good, not the flesh of the pineapple, but the property of the juice is so effective that the eating of the fruit itself can do no harm and may even be beneficial, inasmuch as it takes some of the strength of the juice to dissolve it and so prevents the stomach suffering from the too violent effects of the juice.—*Bulletin, Vermont State Board of Health.*

Miol.

"Miol" is an iodo-phosphated-oleo-maltose diastase, and is composed of the finest provence olive oil, the active principle from sea weed, in a free and genus form, phosphorus (free), maltose diastase, and the essential properties of Jordan almonds. It is not only a good substitute for cod-liver oil, but it supersedes it by possessing several distinct advantages over it. It causes no gastric irritation, does not give rise to nausea, is palatable and pleasant to the taste, and is economical. Its value as a flesh-forming food, and as a therapeutic remedy, has now been firmly established, and it is specially indicated in cases of wasting, early phthisis, anæmia, malnutrition, and also in cases calling for treatment by iodides, whooping cough, bronchitis, etc. Its especial distinction is that it makes flesh, bone, and muscular but not adipose tissue.—*The Practitioner.*

THE ANTISEPTIC.

JULY, 1907

The Influence of Modern Civilization on Personal Cleanliness.



THE rapid progress made by the science of Hygiene is one of the results of modern civilization. It is the boast of present day sanitarians that by their efforts cleanliness is encouraged and the spread and development of certain kinds of diseases checked. But we must bear in mind that modern sanitarians, when they speak of cleanliness, mean "communal" cleanliness.

The preservation of public health requires the rapid removal of all waste products of human life and industries far away from the neighbourhood of human habitations and resorts. One of the main objects of sanitary improvements is to accomplish this, and now-a-days this important sanitary end is accomplished in most cities with more or less success. In Madras it is accomplished with 'less rather than more' success. But, however, whatever the amount of success may be that modern society has achieved in securing 'communal' cleanliness, it is a regrettable fact that with the large mass of the population, especially in large cities, personal cleanliness is distinctly a fast disappearing virtue. To our mind this is undoubtedly one of the indirect results of modern civilization. The miserable social conditions resulting from the industrial development of modern times with the resulting overcrowding of cities and the keen struggle for existence are to a very large extent responsible for the decadence of personal cleanliness, among other social crimes. The artificialities of modern civilized life—and especially of city life—have afforded ample encouragement for the development and spread of more than one deadly disease. The change of professional opinion with regard to the treatment of Tuberculosis illustrates the importance of natural conditions in combating disease. Medical men of late have practically given up drugs in the treatment of tuberculosis, and are more and more having recourse to natural means of cure. People who are afflicted with tuberculosis and living amidst the unhealthy artificialities of civilized city life are asked to go back to nature and tent life, to imbibe fresh air under the canopy of

heaven, and to lead a free and natural life very much as our forefathers used to live in days gone by when the world was less civilized and people more healthy. Contrast that with the conditions of modern city life where the rich men are afraid of fresh air and closely shut all doors and windows fortified with heavy curtains to prevent possible entrance of fresh air, and where poor people packed in dingy tenements can hardly get any fresh air at all. "Charles Kingsley going about his little parish with an auger, and boring holes in the walls of the cottages for the ingress of fresh air" would be an ideal Health officer for a modern city. It was Kingsley who once said that you can't breed men in a sty. What will he say if he were to visit the slums in a modern up-to-date city? But the modern decadence of personal cleanliness is nowhere more manifest than in the gradual diminution of the use of bath. In an exceedingly interesting article in the June number of the *Canada Lancet*, Dr. Jacobson of Brooklyn says—"In multitudes of tenements the only general ablution that ever takes place is practised once on a newly born child and again on the corpse of any deceased member of the family. * * * A prominent English ecclesiastic is reported to have stated publicly on a recent occasion that there was only one bath tub in a densely populated district of London to which he ministered, and that one tub was his own. One is reminded of the model tenements which were once upon a time constructed in New York city, and in which bath-tubs were installed on the theory that the reason why the masses didn't bathe was because they lacked facilities. Not long afterwards it was found that every tub was being used as a coal-bin." The American doctor's statement above quoted is no exaggeration. We remember, some years ago, Mr. Asquith, when he was Home Secretary, pleading at a public meeting for the establishment of bath-houses all over London for the cleansing of "the great unwashed of London." And it was only last week we read Dr. George Carpenter's excellent address on "The Rearing of Children" delivered before the Institute of Hygiene and published in the May number of the "British Journal of Children's Diseases," in which, in offering advice on the selection of a nurse, he said that the nurse ought "to take a bath at least once a week." Some authorities maintain that Queen Elizabeth never took a bath. Well, if that is true, Dr. Carpenter's minimum of a bath a week for a nurse is a distinct improvement on the habits of Elizabethan times. A certain French professor has enunciated the doctrine that baths are injurious to health, and we are told that he judiciously safeguards his own health by not taking any baths at all. We sincerely hope that we may not have any occasion to approach that professor nearer than at least a couple of miles, and that his

doctrines may not find acceptance outside the Latin quarter in Paris—where most people have been practising the professor's doctrine long before he began preaching it.

This anti-bath tendency of modern civilization is, we are sorry to see, spreading to this benighted Madras as well. To the large majority of the population of this country who are Hindus, bath is not only an accessory to personal cleanliness, but it is enjoined as a religious duty. But such is the perversity of human nature that a large number of Hindus who would most obstinately follow meaningless, and sometimes even injurious practices, simply because they have been taught to follow them as religious observances, would, at the first advance of modern civilization, give up some of the beneficial habits such as the morning bath, which their religion and the practice of their forefathers enjoined on them as a sacred duty. A healthy man in Madras who goes about without his daily bath deserves to be deported to 'Whitechapel' or 'St. George's in the East' and compelled to live there for an indefinite period of time. The personal cleanliness—or rather the want of it—of the masses who live in the civilized cities of Europe and America are simply disgusting. We venture to hope that that particular kind of civilization will become stagnant and not extend to other continents. Our friends—yes we will call them friends, we will not follow Mr. Morley's example and call them enemies—our friends, the Anglo-Indians, are never tired of saying that the natives of India are dirty and that they themselves are clean. The average Englishman has a habit of calling men of every other nationality dirty. He calls a Frenchman or German or Italian or Russian, dirty. He himself, of course, is very clean. He repeats this many times, till by a process of auto-suggestion he begins to believe it to be true. An investigation as to where all these ideally clean self-advertisers have their baths will disclose interesting facts. But, however, that is a digression. The object with which any one takes a bath is to make himself clean and not to make others believe that he is clean. Personal cleanliness, equally well with communal cleanliness, conduces to the preservation of health and happiness. There is, in our opinion, a distinct tendency among the people in Madras to have less and less recourse to baths. This regrettable tendency is mainly due to the development of certain injurious aspects of modern civilized life, and unconscious imitation of certain western civilized methods. The new habit that is being cultivated is bound to produce harmful results. It is never too late to mend.

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Original Articles.

•THE TREATMENT OF ECZEMA.

BY

A. WINKELRIED WILLIAMS, M. B. & C. M. (HONOURS) EDIN.,
D. P. H., LOND.

*Physician to the Skin Department, Royal Alexandra Hospital
for Children, Brighton, and the St. Mary's Home
Dispensary, Brighton.*



It is not an easy task to describe the treatment of a malady such as Eczema when a variable number of diseases are included by different observers under the same name. In fact it is questionable whether Eczema is worthy of being called a malady; rather it should be described as a symptom.

The original definition of Eczema—"a skin disease accompanied by a discharge more or less watery"—is too vague and indefinite to suit our modern pathological ideals. Yet, while we smile somewhat contemptuously at the antiquity of such a definition, we still continue to diagnose, treat and write about *Eczema*. The writer well remembers the *dictum* of one of his most revered clinical teachers who, not many years ago, said: "Gentlemen, ascertain whether the skin disease has ever been wet, if so, diagnose Eczema." One of the best definitions known to the writer is found in DR. NORMAN WALKER'S admirable "Introduction to Dermatology." "*Eczema is the term commonly applied to any wet or scaly inflammation of the skin, of the cause or nature of which the observer is ignorant.*"

On account of this confusion it is necessary to briefly describe well-known symptoms before giving the treatment, in order that the reader may realize the affection the writer is describing.

• Specially contributed to "The Antiseptic."

There are some diseases, sorted and sifted out of this Eczema refuse heap and placed on more or less respectable pathological pedestals, to which the term Eczema still clings, *e. g.*, *Seborrhoic Eczema*, (synonyms—"Eczema," "Seborrhœa," "Seborrhoic Dermatitis," "Pityriasis Capitis," "Dandruff," "Alopecia Seborrhoica," &c.) This, being perhaps the most common of the Eczema group of diseases, and the type of the parasitic forms, will be the first considered. The site of election for its origin and development is the scalp; it may consist merely of a dry scaling from a pale or pinky punctated skin, to which may be added the *more visible* inflammatory reactions of redness or swelling. In other cases it may be manifested by an oily flux; some authorities say that this has in all cases at one time or another preceded the other lesions. In neglected cases the above scalp lesions are followed by changes in the hair papillæ leading to a weak development of the hair and eventual baldness.

The elementary lesions of Seborrhoic Eczema are best studied on the Glabrous skin. They consist of small yellowish red, frequently greasy macules, almost inappreciably raised above the skin level. Scales develop later, at first greasy, but generally become drier as the disease progresses. The patches increase in size, infiltration, &c.; they become confluent, sometimes involute in centre, forming spreading rings.* To these patches other lesions as papules, vesicles and pustules with their sequelæ, lecting, crusting, &c., may be added. In many cases the dry surface remains predominant and the patches become distinguishable from common Psoriasis only by the history of their mode of evolution and the possibility of observing their development from the scalp downwards, *i. e.*, the descending Eczema of PAYNE. Occasionally, but rarely, the disease, as in Psoriasis, develops into the formidable type "General Exfoliative Dermatitis". UNNA has named these cases "Pityriasis Rubra Seborrhoica."

Acne Vulgaris and Rosacea, and impaction of Cerumen in the External Auditory Meatus are common complications of Seborrhoic Eczema, and the writer, for one, has found that his success in the treatment of Acne was much greater since he adopted the routine of vigorously treating the scalp even when the only morbid manifestation is a slight degree of dandruff.

The commoner sites for the lesions after the scalp are the ears, forehead, back of neck, sides of nose, eyebrows, furrows of the cheek, angle of mouth, and occasionally the red surface of lips, edges of eyelids, the chest, back, nipples, umbilicus, scrotum, axillary and inguinal regions, and areas of the limbs where it can be inoculated by the patient's nails infected by scratching. It thus frequently selects regions where the sebaceous follicles are more highly developed.

There is very little doubt that the cause is an organism. Several have been credited with its production; notably, UNNA's morococcus and SABOURAND's microbacillus.

TREATMENT OF SEBORRHOIC ECZEMA.

N.B.—*Local treatment suffices.*

N.B.—*Never neglect the scalp, or recurrences and exacerbations are inevitable.*

A.—Scalp treatment.

I. Clear away debris (scales, crusts, loose hairs).

In Infants.—Commence with a boracic starch poultice (Form I) when there is much hard crusting and acute inflammatory signs and follow on the cleansed scalp by a mild antiseptic oily ointment (Form II) and in a few days' time by a thin application of a paste or powder ointment (Form III); this generally cures. The firmly adherent brownish scales often found in the region of the anterior fontanelle are more easily removed by the application of paraffin oil (*See precautions below.*)

In Older Children and Adults.—Apply freely Form IV, and allow it to soak in for 10 to 20 minutes or until it begins to tingle, or in men with short hair a good plan is to use ordinary lamp paraffin in a similar manner; it should not be rubbed with the hair, or an electric spark may fire the paraffin vapour, and, of course, while it is soaking in, the patient must not go within a yard of a flame or light a cigarette, &c. After soaking with either of the above, the head must be washed with soft soap or spirit of soap (Form VII) and then dried well. *Immediately after drying* apply the pomade ointment or spray.

II. *Treat Scalp Skin Surface* with Ointments, pomades, syrup. Use the most suitable media. Thus Form V is useful to begin with, and after a week or so Form VI—*Unnas Pomade*. They should be applied to parting lines of the scalp every day as much as possible on the skin and as little as possible on the hair shafts. If patient objects to pomades, &c., Form VIII should be used with a paint brush or spray apparatus to parting lines; this formula is generally preferred by women with long hair, and in cases where a fortnight or more goes by without washing the scalp, half the quantity of Ol. Ricini may be used. Occasionally in bad cases a fresh accumulation of debris will be formed; then a second application of Form IV or Paraffin, followed by washing, &c., is required. Re-washing with soap and water, however, is always necessary during treatment, as the hair becomes greasy from the applications and dirty from adherent dust. Men and children with short hair should wash the scalp with soap 2 or 3 times a week for the first 2 or 3 weeks, always using the oily applications

after drying. Women with long hair should use the hair wash (Form IV) followed by friction with a towel twice a week, and wash well with soap and water every week or fortnight for at least a month.

One point of absolute importance in the treatment of Seborrhoea of the Scalp is often neglected, *i.e.*, the cleansing and disinfection of all brushes and combs used before commencing treatment, and a repetition of this washing at weekly intervals during treatment. A brush and comb pick up numerous particles of scurf laden with legions of germs from the seborrhoeic scalp, and if used on the scalp cleansed as above from debris, they inevitably inoculate fresh areas with the disease. The physician should always direct his patient to stand the brushes and combs he has used for $\frac{1}{2}$ an hour in hot soda solution and afterwards wash them in plenty of water. This should be done before or at the time of soaking the scalp with the cleansing application. Neglect of this detail inevitably delays or prevents the cure. Pillow cases, hats, &c., are similarly infected, but are less dangerous than brushes and combs which directly inoculate the epidermis. It is, however, advisable to have them all carefully cleansed or disinfected by heat or Formalin vapour.

B.—Glabrous Skin Treatment.

Dry and scaly forms of adults and children (not infants).—Free washing with superfatted soaps and stimulation with ointments are required. If the scaling and infiltration is moderate Form V, IX, X and XI are suitable ointments. The Psoriasis type requires more active treatment. The following is usually rapidly successful both in Chronic Psoriasis and this type of Seborrhoeic Eczema.

(1) Patient to soak for $\frac{1}{2}$ hour in hot bath containing a powder (Form XIII) and the scales removed, using soap (Form VII) if necessary. (2) Apply a test ointment (Form XII) and, if the skin bears it, follow by Form XIV, using the weaker first, and the stronger in a few days if a good reaction is not obtained. It should be applied twice daily; at first simply smeared over the patches, and later, if skin bears it, rubbed in with a flannel. While using the Chrysarobin ointment the patient should wear a Jaeger flannel combination underclothing. (3) After 4 days' use of the above ointment, or less if an acute inflammatory reaction is set up, the patient should take another bath. *N.B.*—The patient must be seen daily during this treatment. The skin should then be inspected by the physician, and if all areas have lost all infiltration, are whitish in color, surrounded by skin dusky congested with a Chrysarobin Erythema, the Chrysarobin must be stopped and Form V, with $\frac{1}{2}$ the quantity of sulphur, or Form II, used. If, however, the patches are still infiltrated and reaction not marked, and this will

usually be the case on the extremities, the Chrysarobin should be continued on such patches for another 3 or 4 days, followed by a bath, &c.

N. B.—Chrysarobin should not be applied to the head. Form XII, XI and V are convenient applications after scrubbing with Form VII. In bad cases, clip the hair short and use Ungt. Picis. Liquid.

Every spot must be *completely* cured before stopping all treatment in order to prevent relapses.

The *vesicular and lecting types* require the special treatments used in the acute forms of Eczema.

Eczema Seborrhoid of the External Auditory Meatus may cause considerable trouble. Often great irritation is experienced. The meatus is frequently impacted with scales and fatty matter; at times this is quite dry and chippy with particles adherent to the skin, or it may be the soft waxy consistence of ordinary ear cerumen.

Treatment.—Syringe all debris away with warm boric lotion and *per speculum* carefully dry meatus with cotton swabs. Examine carefully, and if, as is often the case, a red or excoriated area is seen, probably about the middle third of the meatus, it should be very carefully swabbed with a solution of Ag. NO₃ (Form XV). Then an ointment of about 30 grains Acid Sannee to an ounce of Vaseline, or Form X applied. Dr. G. ELLIOT recommends a spray (Form XVI) and in cases where patient cannot come to the doctor for Ag. NO₃ application, this is a good treatment. *N. B.*—*Always examine the scalp when treating impacted cerumen of the ear, and if any signs of dandruff exist, treat it carefully.*

THE PROPHYLAXIS OF SEBORRHOIC ECZEMA must be considered. It is one of the preventible diseases.

A function of the sebaceous and other oily secretions of the skin is to cause an elastic cementing of the upper layers of the horny epidermis. A variety of organism constantly infect the skin surface. The horny layers of the epidermis, their constant surface removal and renewal from below, prevent the invasion of the living retecells by organisms which would act as irritants. If, however, microscopic cracking, tilting and derangements of the surface cell layers is allowed, it affords the organisms an opportunity to penetrate the deeper layers. Such cracking, &c., is liable to happen round points where the intrinsic muscles of the skin are inserted to the epidermis, and where the residuals of the *panniculus carnosus* and extrinsic muscles throw the skin in and out of folds and furrows. In such places sebaceous glands are numerous or the coil of glands have a large oil secreting function (palms).

The removal of fat secreted by these glands is a source of danger, but if left on too long it may become a nidus and nursery for injurious

organisms. A predisposing cause of parasitic forms of Eczema may thus be too frequent or excessively vigorous ablutions, whereas, on the other hand, uncleanness may be a cause. Among the cleansed classes of civilized mankind there is rather too much washing done at the present time. This evil is more marked among men than among women. The scalp with its numerous hair follicles and intrinsic muscles is especially liable to suffer from excessive washing, especially when no pomade is used. As a matter of routine adults ought not to wash the scalp more than once a week and after drying should use some pomade, especially if there is any tendency to dandruff. Of course one does not advocate the barbarous and filthy ways of 50 years ago, *viz.*, smearing a handful of hogs' fat over the hair shafts and trusting Providence to guide it to the skin surface. Pomade should be carefully applied in minute quantities to parting lines made along 3 or 4 zones of the scalp. Form VI is suitable; it readily diffuses over the scalp; without or with only one-fourth the quantity of sulphur and Resorcin it is an excellent pomade. A Brilliantine (Form VIII) without or with one-fourth the quantity of Resorcin and a little more Castor oil may be used in a similar manner as the pomade.

The deeper layers of the epidermis are often inoculated with disease by hair brushes and combs. Attempts are made to remove scurf by vigorous brushing or tooth comb scratching. Organisms on particles of scurf, &c, are inoculated all over the scalp, and a fresh outbreak of seborrhoid is the inevitable result. One may almost say the less the hair is brushed and combed the better, but in this as in other good and bad things there is a medium. Hair brushes should be soft; comb teeth widely separated and well rounded (not sharp). Hair dressers' brushes, especially the abominable machine brush, must be avoided; when going to a hair dresser, one's own brush and comb should always be taken.

Head clothing is a common predisposing factor of Seborrhoeic Eczema. Seborrhoeic organisms, like many bacteria, flourish under conditions of darkness, warmth and moisture. Many head dresses supply these conditions. A hat should be light, in temperate climates permeable to light rays, and should allow currents of air to flow in and out. Moreover, it should be worn as little as possible. The old-fashioned chignon of 40 years ago, a poultice for fomenting the growth of germs, is the cause of many old ladies wearing wigs at the present day.

Brushes and combs should be frequently washed in hot soda and water. The first sign of dandruff, however slight, should be promptly treated (Form VIII).

Prescriptions.

FORM.

- I. *Boric Starch Poultice.* 1 teaspoonful boric acid and 4 tablespoonfuls starch. Mix with water. Pour on 1 pint of boiling water. Spread the jelly on linen or calico $\frac{1}{8}$ inch thick, and, when cool, cover with muslin and apply to part. Cover with jaconet and leave on for a few hours. Remove and reapply if crusts do not come off.
- II. Acid. Boric, gr. xx to xl, Lanolin $\mathfrak{z}$ v. Ol. Oliv. $\mathfrak{z}$ iii.
- III. Acid. Salicyl. gr. x to xx. Zinc Oxid. ; Amyli ; Lanolin ; Ol. Oliv. $\mathfrak{A}$ $\mathfrak{z}$ ii.
- IV. Ammon. Carb $\mathfrak{z}$ ii. Sod. Biborat $\mathfrak{z}$ ss. Aq ad $\mathfrak{z}$ xii solve diende adde Glycerin. $\mathfrak{z}$ i to $\mathfrak{z}$ ii, Spirit vini Meth. $\mathfrak{z}$ vii.
- V. Sulph. Præcip. $\mathfrak{z}$ ss. to $\mathfrak{z}$ i, Acid Sannic gr. xx to xxx, Lanolin $\mathfrak{z}$ vi, Ol. Oliv. $\mathfrak{z}$ ii.
- VI. Ol. Theobromat 200. Ol. Amydal 400. Sulphur Precip, 24. Resorcin 12.
- VII. Sapo Mollis $\mathfrak{z}$ ii. Spirit Vini. Rect. $\mathfrak{z}$ i.
- VIII. Resorcin. gr. 70 to 100. Ol. Ricin. $\mathfrak{z}$ iii. Spirit 80 p.c. ad $\mathfrak{z}$ iii. Ess. Viola. q.s.
- IX. Hydrarg. Am. Chl. gr. x. Liq. Carb. Detergen. $\mathfrak{z}$ ss. Vaseline $\mathfrak{z}$ i.
- X. Hydrarg. Am. Chl. gr. x. Vaseline $\mathfrak{z}$ i.
- XI. Resorcin., Sulph Præcip. aa. $\mathfrak{z}$ ss, Lanolin $\mathfrak{z}$ vi; Ol. Oliv. $\mathfrak{z}$ ii.
- XII. Acid Salicylic. Gr. xxx., Liq. Carb. Detergen, $\mathfrak{z}$ i, Vaseline $\mathfrak{z}$ i.
- XIII. Acid Sannic., Sod. Biborat aa. $\mathfrak{z}$ iv. to 20 or 30 Gallon bath.
- XIV. Ichtyol 4 to 6 p.c., Chrysarobin 3 to 6 p.c., Acid Salicylic 2.5 p.c., Adeps ad. 100 p.c.
- XV. Argent. Nitrat. gr. xv., Spt. Aeth. Nit. $\mathfrak{z}$ i
- XVI. Resorcin I. Benzoinol 99.
- XVII. Acid Boric $\mathfrak{z}$ ii., Zinc Oxid. $\mathfrak{z}$ iv. Amyli $\mathfrak{z}$ ii.
- XVIII. Acid Boric $\mathfrak{z}$ i., Zinc Stearat $\mathfrak{z}$ ii., Talc $\mathfrak{z}$ v.
- XIX. Acid Salicylic 2 p.c. Powdered Talc. 98 p.c.
- XX. Pulv. Amyli $\mathfrak{z}$ vi., Zinc Oxid $\mathfrak{z}$ ii., Pulv. Camphor. gr. x to xx.
- XXI. Calamen Praep. $\mathfrak{z}$ ii ; Zinc Oxid $\mathfrak{z}$ iss ; Glycerin $\mathfrak{z}$ i to $\mathfrak{z}$ iv ; Aq. Rosae. $\mathfrak{z}$ ii.
- XXII. Acid Carbolic m. xx ; Zinc Oxid $\mathfrak{z}$ i ; Glycerin m. X. Aq. Calcis, Aq. Rosae-aa. $\mathfrak{z}$ ii.
- XXIII. Acid Boric $\mathfrak{z}$ i, Sol. Calamin $\mathfrak{z}$ vi.
- XXIV. Acid Hydrocyan. Dil. $\mathfrak{z}$ i. or $\mathfrak{z}$ ii. Calamin $\mathfrak{z}$ i. Cret. Praep. $\mathfrak{z}$ i Glycerin $\mathfrak{z}$ ii. Aq. Calcis $\mathfrak{z}$ iii, ss. Aq. Sambuc. $\mathfrak{z}$ iv.
- XXV. Pot. Carb. $\mathfrak{z}$ ii ; Aq. $\mathfrak{z}$ viii.
- XXVI. Emplast. Plumbi $\mathfrak{z}$ i. Vaseline $\mathfrak{z}$ i.
- XXVII. Zinc Oxide 6. Serra Silic. (Kieselguhr) 2. Adeps Benzoat. 28.
- XXVIII. Form XXVII, with 4 parts Precipitated Sulphur.
- XXIX. Ol. Oliv. 100, Zinc Oxid 5p.c., Liq. Plumbi Subacet 2.5p.c. Water 8p.c., Hydrarg. Oxid Flav. 1p.c., Amyli 50p.c., Lanolin Anhydr. 22p.c.
- XXX. Zinc Oxid. 30. Gelatin 30. Water 80. Glycerin 50. (less water and Glycerine in hot climate). To be melted in water bath and painted over the area and when nearly set dabbed over with fluffed out cotton wool.
- XXXI. Lanolin 48. Zinc Gelatin (Form XXX) 120.
- XXXII. Ichtyol. gr. x. to xx. Ol. Oliv. $\mathfrak{z}$ i
- XXXIII. Hydrarg Am. Chl. gr. x., Lanolin., Ol. Oliv., Zinc Oxid., Amyli aa. $\mathfrak{z}$ ii.
- XXXIV. Zinc Oxid. gr. xx Tragacanth gr. xxv., Glycerin gr. x., Aqua Gr. 500. Paint over the parts and allow to dry.

FORM.

- XXXV. Ol. Cadem i. Targacanth 5., Glycerin2, Aqua 100.
Paint over the parts and allow to dry.
- XXXVI. Camphor gr. xxxv., Emplast. Plumbi 3iij, Parolein 3iij, Ol. Oliv. 3i.
- XXXVII. Acid Salicylic., Sulph Præcip. aa gr. xx., Vaseline 3i.
- XXXVIII. Ext. Bellad. Fol. gr. $\frac{1}{2}$, Aloine gr. $\frac{1}{2}$, Strychnin gr. $\frac{1}{80}$, ft. pil. 1 pill at 6 p.m.
- XXXIX. Bala. Sulphur 3i., Vaseline 3i.
- XL. Picis Liquid 3i. Camphor gr. x Adep. Benz. 3i.
- XLI. Hydrarg. Subchlor 3i., Amyli 3iv.
- XLII. Acid Salicylic xv. to xxx., Empl. Plumb., Vaseline aa 3ss.

(To be Continued.)

* SOME OBSERVATIONS ON THE FEEDING OF INFANTS.

BY

EDWARD CECIL WILLIAMS, M. B., CANTAB.

Physician to the Royal Hospital for Sick Children and Women, Bristol;
District Medical Referee to the National Hospital
for Consumption, Ventnor.

In these days the difficulties of the Medical man are vastly increased, when called upon to advise in a case of infant feeding, by the fact that the vendors of divers prepared foods and milks have flooded the country with laudatory advertisements of their own special article. These advertisements have appealed in a very remarkable way to the public mind, so that anything but milk is regarded as the proper food for infants. In this matter the profession itself cannot be held entirely without blame, as it is no uncommon thing in outpatient practice to find a wasted infant, who has been taken to several practitioners, each of whom has recommended his own favourite brand of infants' food, totally regardless of its constituents or adaptability to the digestive capabilities of the infant. To point out some of the errors entailed in the routine use of these foods, and as a protest against medical men allowing their functions to be usurped wholesale by the patent food vendor, will be the aims of my remarks in this paper.

It is not only necessary to take, as the food standard, the average chemical, physical, and percentage composition of human milk, but also to adapt the individual constituents of the milk to the digestive capabilities of the child. The ordering of the milk mixture is therefore quite as much the peculiar province of the medical man as prescribing the ingredients of a bottle of medicine.

* Specially contributed to "The Antiseptic."

Human milk consists of proteids, fat, milk sugar, salts and water, in fairly fixed proportions. It also possesses antiscorbutic properties. The percentage composition of human milk is:—Proteids 1.82. Fat 3.94 Lactose 6.28. Salts. 31. Water 87.3.

Analysis of a large number of samples of human milk shows that the milk sugar is a fairly fixed quantity, whereas the proteids and fats may vary considerably, according to the state of the mother's health. When breast-fed children do not thrive owing to poverty of the mother's milk in proteids or fats, cow's milk is by far the most commonly used substitute, as it is only in rare cases that a wet nurse is possible or even desirable. The percentage composition of cow's milk is as follows:—Proteids 3.54. Fat 3.94. Lactose 4.8. Salts .7. Water 87.7. Human milk is usually sterile, alkaline, and has a specific gravity of 1031; whereas cow's milk, as sold in towns, contains micro-organisms, is acid, and has a specific gravity of 1029.

It is, however, in the proteids that the most marked differences between the two milks occur, and on these differences hang some rather important practical points. According to PERMAIN and MOOR the proteids contained in milk are *Caseinogen Lactalbumin* with very small quantities of globulins, to which must be added the newly discovered proteid opalisin.² The caseinogen is supposed to exist in solution with the calcium salts and other phosphates. In cow's milk caseinogen is the principal proteid, its ratio to lactalbumin being as 4:1;³ on addition of an acid or rennet it forms a large coarse acid, which is very difficult of digestion by the infant's gastric juice. Caseinogen is not easily coagulated by heat. On the other hand, in human milk lactalbumin is the principal proteid; it exists in the proportion of 2:1 of caseinogen and is coagulated by heat. The caseinogen of human milk forms a soft flocculent curd. Excess of proteid is shewn by presence of curds in the motions, which are often constipated, or there may be colic and diarrhoea. Paucity of proteids may give rise to cases of wasting and rickets, and it is fairly certain that an infant does not thrive so well on a vegetable as on an animal proteid. But as regards nutrition, fat, whose percentage in human milk is double that of the proteid, plays an extremely important part. The young child requires for its weight a larger percentage of fat than the adult to keep up the body heat, as it is unable to take exercise. It has been suggested that an extra quantity of carbohydrate in the food might replace the fat as a calorificant, but it is a matter of experience that a young animal deprived of a proper quantity of fat develops rickets.⁴ This fact has been well exemplified in the case

1. Analysis of Foods and Drugs.

2. *Lancet*, 28th January 1899.

3. Analysis by Leeds Stall's Text book of Diseases of Children.

4. Allbutt: System of Medicine: Vol. III., Art. "Rickets."

of the young lions at the London Zoological gardens. The fats of the two milks are nearly equal in percentage composition and when freshly drawn exists as an emulsion. The absence of sufficient fat in a diet otherwise suitable, is a frequent cause of constipation. Cow's milk contains less sugar than human milk, although in the case of cows artificially fed, the difference is much reduced. Sugar has a very high nutritive value and is found in all parts of the body as glycogen. If the food be poor in sugar, the child's weight increase will be too small; whereas, when the sugar is in excess, there may be diarrhoea, with green and acid motions. Cane sugar is the best substitute; it does not undergo the lactic acid fermentation as easily as milk sugar does, but sometimes it undergoes alcoholic fermentation. Sugar, especially maltose, is very useful in preventing constipation. Starch is not easily digested, the diastatic action of the saliva is not at all well marked until the eruption of the first teeth at the sixth or seventh month. The pancreas develops its diastatic action from the fourth to the seventh month. Unconverted starch undergoes the lactic, acetic and butyric acid fermentation, and owing to the loss of tone of the intestinal muscular fibres, resulting from the tympanites, may cause constipation. It is not wise to give starchy food before six or seven months. When children, who have been fed on starch, suffer from diarrhoea, a change of diet to white of egg mixture or raw meat juice will usually be of service, as the particular micro-organisms involved will probably not flourish so well on another medium. The urine of children fed on too starchy a diet is rich in pigments, gives a dark red ring with Nitric Acid, and is rich in lithates.

The Salts play an important part in the process of digestion and also in the structure of the bones and teeth. The calcium salts present in cow's milk are about four times as great as those present in human milk. In order to render cow's milk neutral or slightly alkaline the writer prefers to add two or three grains of sodium bicarbonate instead of lime water. Sodium salts tend to delay the formation of curds.

Water is a very important constituent as it assists digestion and increases the quantity of Pepsin and HCl. (Jacobi). It is of great value as a solvent and diluent of peptones and sugars, and thus assists in absorption from the intestinal canal. It also assists in the process of elimination and helps to prevent uric acid infarcts in the kidney. An occasional drink of water should be given to children during the day, as they are apt to suffer from thirst; it also helps to prevent constipation.

Cleanliness is as essential in the case of the breast-fed as in the bottle-fed infant. It is the duty of the medical man to impress on the mother the necessity of washing the nipples with some warm boracic lotion, both

before and after nursing. The nipple should be dried with some clean cotton wool before the infant is put to the breast. Regularity as to the times of feeding are also most important, both as regards the infants' digestion and also to insure the continuance of a plentiful supply of milk. During the first six weeks of life, the infant should be fed every two hours from 5 A.M. till 11 P.M., and should be removed when it shows any inclination to stop sucking. During the second month the intervals should be every three hours, and afterwards every three or four hours.

When the mother's milk deteriorates in quality and ceases to nourish the infant, it becomes necessary to resort to artificial methods of feeding. In vigorous infants mere dilution of cow's milk with water or barley water is sufficient to render the curd of the milk easy of digestion, but in cases where the child is unable to digest the coarse acid formed from the caseinogen, the addition of a few grains of the citrate of soda, will, by delaying the process of curdling, enable the gastric juice of the child to act on the unaltered caseinogen. It must always be remembered that cow's milk was primarily intended for the stomach of the calf and not for the stomach of an infant. No milk mixture, however exactly prepared, will ever be a success, unless the milk is perfectly clean. Infant's milk is best supplied in sealed bottles, and the bottles, when opened should be kept in a clean and cool place free from any source of contamination by dust or flies. The feeding bottle should be without a tube; it should be well washed in warm water directly after each feeding; the teeth should also be washed and turned inside out, and both should be kept in a bowl of cold water. The bottle-fed child has to run the extra risk the milk is exposed to, during its passage from the cow to the infant; whereas in the breast-fed child the milk goes direct into the child's stomach. In large towns it is better to get your milk supply from a well known dairy company which may be supposed to have a better control over the sources of its milk supply than is possible with the smaller milk vendor. In towns, the milk should be subjected to some process of cleansing and, at the same time be raised to a sufficiently high temperature (pasteurisation) to render it free from germs. It is only in times of epidemics that it is necessary to resort to sterilisation. Sterilisation has many drawbacks, as it tends to change the physical properties of the milk and also diminishes its nutritive value, by destroying its antiscorbutic properties and caramelising the milk sugar. When neither dilution nor citration of the milk cause it to suit the infant's digestive capabilities, the difficulties of the medical man are much increased, and the course he intends to pursue must be to some extent determined by the intelligence of the mother. Whey, which is spoken of by ASHBY in very laudatory terms, requires a considerable amount

of skill in its preparation; the curd should be thoroughly well broken up before straining, so as to let loose any fat that may have been caught in its meshes. To bring whey up to the proper fat standard, cream should be added. With less intelligent people peptonizing seems to be the most easily acquired method. Partial peptonization is usually sufficient, as the gastric juice is usually quite able to deal with the albumoses. Feeding a child for a prolonged period on peptonized milk is apt to permanently impair his digestive capabilities, as the necessity for the gastric secretion is done away with. In extreme cases unsweetened condensed milk will be found of great value; a dilution of 1 in 10 can be tried at first; cane sugar must be added, and gradually cream. Condensed milk must always be regarded as merely a temporary expedient, to be discarded at the earliest possible opportunity. The tins of condensed milk should be opened according to direction, and kept in a basin of cold water in a cool place. White of egg mixture is another excellent temporary expedient, to which cream and cane sugar can be likewise added gradually. In all these cases a little grape or orange juice should be given once or twice daily to combat any tendency to scurvy.

PLAGUE: RECENT ADVANCE OF OUR KNOWLEDGE THEREOF.

BY

P. S. RAMACHANDRIER.

[Read before the Members of the Profession at the Victoria Hospital, Bangalore.]

(Surg.-Major W. E. Drake-Brockman, I. M. S., presided.)

MR. CHAIRMAN AND GENTLEMEN,—

Before I proceed into the subject proper, please allow me to say a few words about the Association under whose auspices I have the pleasure to meet you here this night. The Association was founded in Bombay on the 8th July, 1907, viz., the All India Hospital Assistants' Association. I claim nothing in the organization, as it was the inception of a few broad-minded men of our class in that city, which I should say is the foremost in all progressive movements. The spirit of progressiveness was then waived into this town, and Bangalore claims the credit as being the first place which came forward to join in the movement by establishing a branch of it here. Be it said to the full credit of Col. Smyth that he became a patron of it as soon as it was opened, and even today he is watching its progress keenly as he has testified to the same by his letters to me. This Association aims at the scientific progress of its members, and it is, therefore, the earnest wish of the Associate members that the members

who are now present here will lend a fostering hand to the welfare of the same. Now coming to the subject-matter, I wish it to be understood that I state here only a few results which the Plague Commission arrived at. I should say that I had the good fortune to serve as a member of the Commission. Had it not been for it, my presence here before you with the subject-matter of this paper would not have occurred.

Plague was considered in the closing days of the last century to be infectious from man to man and to be also soil borne. Recent investigations tend to modify this view.

In fact until the disclosures of the recent investigations¹ the missing link between the Epizootic and the Epidemic was a matter of surmise, and shrouded in many theories. The method of conveyance has now been crystallized into a scientific truth. The link is now hinged on fleas which infest rats.

I now narrate to you how we arrived at this conclusion.

Cultures of *Bacillus Pestis* were made on Agar tubes. The tubes were emulsified with normal saline; generally with 5 c. c. 1—5th of this emulsion was injected intra-muscularly into the thighs of Bombay rats. On the 2nd day of inoculation a rat with 20 fleas was put on one side of a cage, figured in plate IV of the Journal of Hygiene, Vol. 6, No. 4, with 20 fleas. We called for purposes of description the X and Y sides. The X side contained infected rat with a fixed number of fleas. You see another wire cage on the Y side. In this we put in a healthy rat as soon as the inoculated rat in X side died. The dead rat was left in the cage for some hours, say 8 to 12 hours, for the fleas to jump into the Y side. After the lapse of these hours, the rat was examined and if found to have died of septicaemia, the experiment was continued. To examine for septicaemia, film preparations of hearts' blood were made, fixed in Alcohol, stained with Carbolthionin and examined. In the course of three to eight days, the rat on the Y side died. Then *post-mortem* was made and if died of plague, several ways were adopted to confirm the *post-mortem* appearances—1stly by pathological appearances; 2ndly by microscopic examination; 3rdly by cultural methods; 4thly by inoculating the cultures into fresh rats; and 5thly by rubbing the spleen, bubo or liver into healthy guinea-pigs. By these several methods, what appeared as plague infected was confirmed.

Now, as you see, the wire cages in the diagram shown to you are placed in a glass case side by side. At the bottom of the glass

1. Reports on Plague Investigations in India; Journal of Hygiene, Vol. 6, No. 4—pp. 435—467.

case two trays of tins are put with sand for the fleas to rest on and for receiving the urine and fœces of the rats or guinea-pigs experimented upon. There was no possibility of contamination of urine from these two sources as the trays were apart from one another. Yet there was a possibility of aerial infection. To disprove this fact, we undertook another set of experiments.

We recovered fleas from infected rats as described above, and put them on a healthy rat or guinea-pig into a fresh cage. Even by so doing the result was conclusive of fleas transference of plague. In this way 55% of experiments was successful.

We did not stop short here. We conducted what we called tube feeding experiments. A test tube was cut at the bottom side, and a very thin muslin was used as a cover. In this tube a number of infected fleas were put from the top. A guinea-pig or rat was shaven on some part of its body. The fleas were made to feed twice a day for 10 to 20 minutes, through the muslin cover. In this way, we found that we could infect guinea-pigs with plague.

This is an important experiment, as it excludes all possibility of other sources of infection.

By all possible human ingenuity an important conclusion has been arrived at, that plague transferred from rat to rat or rat to guinea-pig through the agency of fleas.

I may, in passing, state that it has been found that a single flea can infect an animal and that there was no difference in the infecting capability between male and female fleas, unlike *Anopheles* in the propagation of Malaria.

As you all know, there are three sets of fleas in India, viz., Rat flea, (*Pulex cheopis*) Cat or Dog fleas, (*Pulex felis*) and Human fleas (*Pulex irritans*.) I have shown that the rat flea has the power of spreading plague, but we failed to attain similar success with cat or dog fleas. Human fleas have been found to transfer plague from rat to guinea-pigs in a very small proportion. Our failure in the case of cat fleas may be due to the fact that cat fleas do not thrive well on rats or guinea-pigs. We also rarely see in natural infection cats and dogs dying of plague. From that we may conclude that cat or dog fleas are not important in conveying plague. So far we are now certain that rat fleas play an important rôle in the spread of plague. The next question we have to consider is how a rat flea conveys the infection. Is it by its bite or by fœces?

To find this out, we conducted experiments in the following manner. We took a long glass case with 8 wire cages inside, and put a large

number of infected fleas with two guinea-pigs each day. Each day, the fleas on the guinea-pigs were kept in tubes for three to four hours. Then the fleas were returned to the glass case on a fresh set of guinea-pigs. Then what fœcal matter was deposited in the test tubes was emulsified by normal saline and injected into guinea-pigs intra-muscularly. So side by side we were observing the effects of flea-bite and fœcal injection. In flea-bite experiment the infection was carried up to the 11th day while in the fœcal up to 21st day. So it can be said that fœcal infection is greater, but yet no conclusion can be drawn as to through what medium the transference of plague by fleas is made.

We have found that fleas remain infective to guinea-pigs for 15 days. We have also found abundant plague bacilli in the stomach of a flea on the 20th day. We have tried several experiments as to the longevity of fleas. We are safe in saying that they live not less than 40 days on rats, but without feeding they do not live for more than six days. These observations go to a great extent in our preventive methods on which subject I hope to read a paper later on before you.

Now one fact having been settled, namely, that of rat flea spreading plague from rat to rat and rat to guinea-pig, a very important question arises whether rat fleas play the same part in human infection. No direct method of proving this fact could be adduced as it is not possible to do so without coming into the clutches of the Indian Penal Code. We have therefore to elicit this fact by indirect means. I mean to say that we cannot make infected fleas to infect man. That rat fleas can thrive well on human blood is one important factor. In order to see how long these can thrive on human blood, we conducted the following experiment. We put a certain number of fleas in a wide-mouthed glass jar with a little sand at the bottom. A man's hand was introduced into the bottle every day and kept therein for 20 minutes. The fleas had their food through this source. Thus feeding on human blood, they continued to live for 20 days. Thus it will be seen that rat fleas can thrive, though not as well as on rats, yet in a way as to keep them alive for a long time.

Again in a certain locality in Bombay, a house was full of fleas. A servant used to go there every day and stand in the room for one hour. The fleas would come on his legs. He used to pick them up, put them into test tubes and bring them for our experimental purposes. This I have actually seen with my own eyes. Therefore to say or to think that rat fleas will not go on man is an assumption not founded on observation.

Now we can also prove that rat fleas are the cause of infection to human beings by a set of experiments carried out by the Commission, the

details of which are given in the Plague Number of the Journal of Hygiene, pages 467-483. But I only place before you a few of the facts elicited therein.

The method followed was to allow one or two guinea-pigs to run about a house where plague patients or plague infected rats were found. The guinea-pigs were recovered after 18 to 40 hours, searched for fleas, and observed. In 29 p. c. of such experiments it was found that fleas were found infective to guinea-pigs.

The fleas thus recovered on running guinea-pigs were transferred in the Laboratory to fresh guinea-pigs, in flea proof cages. The pigs died of plague as well, thus proving that the fleas were the only source of infection to the running guinea-pigs and not soil or aerial infection.

Thus, on one hand, it has been shown that rat fleas jump on human beings when no other rats are found to feed upon and infected rat fleas which are infective to animals have been found in human infected houses. The only link which we must connect is that of directly infecting human beings by infected fleas, but that is not possible. From circumstantial evidences it may be concluded that rat fleas play the important part in conveying the disease from rat to man.

Disinfection : A Failure.

The disinfection in Bombay was being done mostly by an acid solution of Perchloride of Mercury of a strength of 1 in 750. In a few instances it was done with the fumes of burning sulphur, while in a still fewer cases by both.¹

In 29% of cases where disinfection was carried by perchloride method it was found that fleas would be recovered which were infective to guinea-pigs. Even in houses which were disinfected with the fumes of sulphur, infective fleas were found, and, still more disheartening to find, that where disinfection by both methods was used, it has failed to kill fleas.

Infectivity.

We have been impressed with an idea that plague is highly infectious from man to man. Excepting in certain cases, I think the Laboratory experiments conducted by the Commission point to the non-infectivity of the contacts with plague patients. Permit me, Gentlemen, to tell you in brief terms how these experiments were conducted.

Guinea-pigs were inoculated with plague and 25 to 50 healthy pigs were huddled in a room made flea proof. All the inoculated pigs died of plague in due time; but the contacts remained healthy even though the room was made as dirty as possible by the faeces and urine of the inoculated pigs.

1. Reports on Plague Investigations in India; Journal of Hygiene, Vol. 6, No. 4, p. 470.

Repeating the same experiment with the presence of the fleas, the pigs were swamped out by plague. Even young guinea-pigs suckling the mothers did not contract the disease. We are thus enabled to say that contacts with plague animals do not contract the disease.

Let us now see if we can get support to the view that the same is the case with human beings. Captain Niblock² reports that in the hospital at Malir (perhaps the most important plague camp ever established) no evidence of direct infection from man to man could be had amongst the attendants.

ERNEST HILL² says man to man infection is unimportant.

ASHBURTON THOMSON³ reports that there is no infection from man to man either directly or indirectly.

NATHAN⁴ states that friends and attendants on plague patients did not contract the disease.

Our experience in this very city leads us to conclude that the disease is not spread from man to man as we had no instances of incidence of plague amongst Ward Boys, Nurses and Doctors.

Alimentary Infection.

I now propose to deal with this question. Many authorities such as WILM,⁵ HUNTER⁶ and SIMPSON⁷ have attached much importance to this source of infection, while PEARS,⁸ KLEIN,⁹ and CHOKSI¹⁰ and a few others differ in this opinion.

The Commission fed more than 500 rats on plague-infected material. The spleen, liver, lungs, heart, bubo, and muscles were separately mixed with the food of rats. They were not allowed any other kind of food for 24 hours, thus bringing on indirect force on them to eat the infected material.

About 15 to 200 of thus infected rats died. Careful *post mortems* were made and situation of buboes noted, which were generally mesenteric.

About 4,000 naturally infected rats were also examined with the view of finding out the pathological appearances, but none of them showed the appearances of artificially fed rats. In my opinion, this source of infection in nature has received under-importance at some hands.

1. Report of Plague administration of the Madras Presidency by J. P. Bedford, p. 13.
2. Report on Plague in Natal 1902-03, p. 2, 3, 30, 58.
3. Sydney Report by Ashburton Thomson, 1904, p. 14.
4. Plague in India, Nathan, Vol. I, p. 44.
5. Hyg. Reonschan, Wilm, 1897, p. 217-283.
6. Research into Epidemic and Epizootic Plague in Hong-Kong, Hunter, p. 6, 9, 23, 24, 26, 76.
7. A Treatise on Plague by W. J. Simpson.
8. Report of Plague in Hong-kong, Pears, 1904, page 21.
9. Report of Local Government Board, 1902-03, Klein, p. 408.
10. Report of Plague in Bombay by Choksi, 1905.

Soil Infection.

Now I pass on to a question in which opinions are so varied that no definite line of action in preventive measures could be adopted with certainty.

The Indian Plague Commission¹ came to the conclusion that plague was essentially a disease of locality.

GLADRIE and MARSH, working with sterilised materials, came to the conclusion that soil was a source of infection, but we who are disposed to view the question practically should not forget that we are dealing with unsterilised ground of inhabited houses. The question now, therefore, is whether the soils of infected houses are a source of danger to the other inmates of the houses.

The experiments conducted by the Commission and by CAPT. MACKIE and DR. WINTER throw a side-light on this question. In the Commission, two rooms were grossly contaminated. In simple words, I might say that several flasks of broth cultures of plague were, as it were, pooled in a limited area and guinea pigs were allowed to run about while still quite wet and also after drying for 12, 24 and 48 hours.

Conducting a series of experiments in this manner, it was found that when dried, no infection could be carried to guinea-pigs.

I am disposed to think that there is little to be feared in soil infection, but I will be able, in a short period, to place before you a more authentic statement, as I am, by the kind permission of the Senior Surgeon, carrying out some experiments in plague infected houses in this city.

Infectivity of Clothes.

It is reported that LADY FRANCIS HOWARD in Cumberland caught and died of plague in 1625 from a new gown in London; that Cheshire became infected in 1641 by clothes from London, and that in Ejam (Derbyshire) epidemic apparently started in the same way.² In the use of beds in which plague patients are reported to be infectious the Indian Plague Commission is of opinion that infection was carried through clothes.

ASHBURTON THOMSON was of opinion that clothes were infective. Our experiments in the Commission point to the same direction.

As I said in the preamble, I have given out only a few of the points drawn from the experiments conducted by the Commission. Several others, there are, which if they should interest you, as they will, I am sure, I hope to place before you on future occasions. Permit me to thank you all for the patient hearing you have accorded.

1. The Indian Plague Commission, Vol. V., p. 101.
2. Crichton, History of Epidemics, Vol. I., p. 526, 546; 683.

Our Contemporaries.**MEDICINE.****Goitre and its Treatment.***

By

GEO. A. BINGHAM, M.B.,

Associate-Professor of Clinical Surgery, University of Toronto.

Four years ago at the request of the Committee on Papers I made a report to this Association based upon my experience with thirty-three cases of goitre operated upon. This year in casting about for a subject upon which to address you, I thought it might be useful to omit those questions of medical politics which have been so thoroughly threshed out by my predecessors in this chair, and to detail very briefly a second report on goitre and its treatment founded on a series of eight-two operations in all.

As pointed out by C. H. Mayo,¹ the rapidly increasing number of cases operated upon during quite recent years does not mean that goitre is on the increase, but that nowadays, it is recognized that a comparatively early operation for goitre is, as a rule, followed by results most gratifying to both surgeon and patient, and is accompanied by an extremely small mortality rate. Indeed, I would now go so far as to say that in cases where as yet no pressure symptoms have developed, the patient, in view of future development, and even for æsthetic reasons, has a perfect right to claim the benefits of an operation which, in careful hands, should be as free from danger as appendicectomy.

THE PARATHYROIDS.

The anatomy and functions of the parathyroids and their relations to the thyroid gland have been matters of keen interest to the surgeon of late years, and much experimentation has been carried out. But much remains still to be done before the riddle of these curious bodies shall be interpreted aright. First noted by Sandstrom in 1880 and described by Horsley in 1884, many experimenters have since laboured to ascertain their functions. They found that the thyroid and parathyroids were separate and distinct entities; that while complete removal of the thyroid interfered with assimilation and metabolism producing a chronic condition known as myxœdema, on the other hand complete removal of the parathyroids induced a very acute state of tetany, somewhat resembling Graves' disease, and from which the patient usually succumbed. Roswell

*The President's Address, Ontario Medical Association.

1. Jour. Am. Med. Assocn., Jan. 26, 1907.

Park¹ thus sums up the knowledge so far conveyed to us by the experimenters:

"1. There are two quite different sets of tissues involved in the thyroid and parathyroids.

"2. They are not completely independent of each other, for the removal of either one caused changes in the others.

"3. There is reason to believe that myxoedema follows removal of the thyroid, and tremors and nervous symptoms, including tachycardia, result from extirpation of the parathyroids.

"4. It would appear, further, that failure of the parathyroids is followed by enlargement of the thyroid. If this be true, Graves' disease seems to be explained, since the former would account for the enlargement of the thyroid sometimes so conspicuous, while the increased secretion afforded by this enlargement will account for the exophthalmos."

This relation of the parathyroids to Graves' disease, however, would appear to be pretty thoroughly disproven by the careful dissections of Benjamens, MacCallum and others who found that the parathyroids were, perfectly normal in cases of exophthalmic goitre examined and, therefore, could have nothing to do with the production of the disease. These little ductless glands which have received so much attention of late (and to the study of which I beg to direct the efforts of my younger scientific friends in the profession) are usually four in number—two upper and two lower—and, as a rule, lie behind the thyroid, often in the neighbourhood of the entrance to the gland of the superior and inferior thyroid arteries, from which vessels they receive their blood supply. They have been found most frequently in the areolar tissue behind the gland, sometimes in contact with the gland capsule and rarely within the capsule embedded in the thyroid tissue itself. They are elliptical in shape and homogeneous in appearance, and they are much softer in consistence than either thyroid or lymphatic tissue.²

Let us now ask ourselves the question: Of what value to the operating surgeon is this somewhat vague and indefinite knowledge of the situation and function of the parathyroids? Here, I think, we must all agree that in operations upon the thyroid, we should endeavour to leave intact a part, and, if possible, all of the parathyroids, as it has been shown that the severity and danger of the tetanic condition resulting from their extirpation is in direct proportion to the amount of parathyroid tissue removed. The only difference of opinion will be as to how, during an operation, the safety of the parathyroids may be best conserved.

1. Med. Review of Reviews, July, Aug., 1906.

2. MacCallum, B. M. J., Nov. 10, 1906.

It has been suggested by Park¹ that this end might be most effectually attained by opening up the thyroid of capsule and enucleating the gland, thus leaving behind the capsule and, of course, the parathyroids in contact with it. To this method I must object for several reasons, some positive and others negative:

1. The hemorrhage resulting is always severe and makes the operation an unsatisfactory one.

2. In thyroidectomy I almost invariably leave one lobe intact and, consequently, at least two of the parathyroids are preserved, and in man it seems fairly certain that two normal parathyroids are sufficient.

3. While the parathyroids in dogs are quite often found within the thyroid capsule, I have never found it so in man, nor, so far as I know, have others of much greater experience and opportunity of observation.

4. It would seem that by exercising care during an operation upon the thyroid, the parathyroids may often be distinguished, avoided, and their blood supply preserved.

5. Finally, by working very close to the outer surface of the thyroid capsule, and by ligating the vessels at a point as close as possible to the gland, it would appear very probable that the parathyroids would be preserved even though not recognized during the operation.

GRAVES' DISEASE.

As has been pointed out by Kocher² the term exophthalmic goitre is misleading, inasmuch as the exophthalmos is not as a rule present at the beginning of the disease, and, indeed, may not develop until the very life of the patient is threatened. Now, as the cure of the patient depends very largely upon an early diagnosis by the physician, it would seem wise to discard the term "exophthalmic," at all events in connection with the earlier symptomatology of the disease. Every surgeon interested in this class of work has encountered cases differing greatly in severity. Kocher² classifies these types of varying degrees of intensity as follows:

Class A.—Vascular Goitre. This type develops rather suddenly as a soft and uniform enlargement of the gland. Exophthalmos is absent but Grafe's sign is probably present. Tachycardia, tremor, enlargement of the vessels of the gland with bruit and thrill are nearly always symptoms of this variety of goitre from the beginning.

Class B.—Struma Gravesiana Colloides. Here an ordinary colloid goitre has existed perhaps for years when, suddenly or slowly, symptoms of Graves' disease make their appearance. Exophthalmos is often absent until the disease is well developed. All the other symptoms are present, but are not so severe as in a typical case of Graves' disease. It is sug-

1. Med. Review of Reviews, July, Aug., 1906.

2. Brit. Med. Jour., May 26, 1906.

gested that in these cases the colloid material present may, in some way, counteract the toxic effect of the hypersecretion of the gland upon the sympathetic nervous system.

Class A.—Typical Graves' Disease. In this class the symptoms of the disease develop slowly or sometimes suddenly, frequently with a history of previous long-continued nerve strain or a severe mental shock. Exophthalmos is present, and all the other symptoms are well marked and severe. If this type of the disease be not early recognized and treated, it runs a rapid course, and secondary changes soon appear in heart muscle and vessel walls which render impossible an operation, which if undertaken at an earlier date, would almost certainly have effected a cure.

Including these three classes of Graves' disease, I have operated upon 13 cases, 4 males and 9 females. Ten of these cases improved steadily after operation and to-day consider themselves cured. In regard to the three deaths, all belonged to the typical class of Graves' disease. The first was a male in good mental condition prior to operation. He died in a severe maniacal condition 72 hours afterwards. In this case the operation was an easy one, the tumor was not large, though deeply placed, and there was but little manipulation of the gland, the smaller lobe being left *in situ* as has been my custom. I confess that this case has been a complete puzzle to me. The other two cases were females with the disease altogether too far advanced for operation. On neither of them, with my present experience, would I now operate. One of them died in an asylum three and a half months after the operation. There was a rapid recrudescence of the growth in the remaining lobe, and she died of exhaustion. The other case died six hours after the operation, of heart failure. Now, although 13 cases of Graves' disease is but a small number from which to make deductions, yet the fact that 77 per cent. of them were cured has quite decided for me the question of the advisability of operation in these cases. The all important points are for the physician to make his diagnosis early, put the patient to bed, and make his surroundings such as that he will be in a condition of absolute rest, physical and mental. As for medicines, in addition to maintaining strictly the nutrition and functions of the body, I have used phosphate of sodium grs. V., t. i. d. with apparent benefit. Theoretically phosphorus in some form is indicated. Under such treatment some will be cured, others will improve up to a certain point, and the wise physician will soon see when his patient has reached that point and will hand him over to the surgeon long before the disease had advanced to such a stage as will render an operation useless. I believe that every case of Graves' disease, when seen early enough, should be submitted to this rest treatment for two or three weeks before operation.

The operation carried out on my cases, as a rule, has been the removal of the larger lobe and the isthmus, though in two cases, when both lobes were equally enlarged, I removed the whole gland with the exception of a small portion of one lobe.

I have had no experience in other methods of operating for Graves' disease, such as ligating the thyroid vessels or sympathectomy. As to the former—if the thyroid veins were included in the ligature, one would expect an immediate increased absorption of the glandular secretion through the lymphatics and a consequent exaggeration of the symptoms. Again, ligature of the vessels would expose the patient to the dangers of gangrene and, besides, the deliberate exposure and ligaturing of the thyroid vessels would be quite as serious an operation as thyroidectomy itself. As for sympathectomy, I cannot see how the removal of the sympathetic ganglia can possibly cure a condition which (if my experience of 77 per cent. of cures by operation is of any value) must be caused by some abnormal activity of the gland itself.

Whether the disease be due to the secreting by the enlarged gland of some toxic substance other than the normal secretion, as was long ago argued by Horsley, or whether Graves' disease be merely an expression of toxic poisoning by a hyperactivity of the gland and an overproduction of its normal secretion is still a debated point. In favor of the latter theory I would point out a fact that is very generally known, viz., that by feeding a healthy subject upon thyroid extract one can produce most of the symptoms of Graves' disease.

MALIGNANT GOITRE.

In this condition complete and early operation offers the only chance for the patient. Unfortunately, a sufficiently early diagnosis is not usually made, the neighbouring glands being already involved. Even in such advanced cases the patient may be made fairly comfortable by partial removal, thus relieving pressure and making possible a future tracheotomy.

I have done a thyroidectomy in only three cases of malignant goitre—all females. One, who was also suffering from Bright's disease, died a week later from uræmia. It was at her own earnest solicitation that I operated in this case. The second case, an old lady of seventy, died two weeks after operation, of exhaustion following a long journey to her home. The third died of recurrence six months after operation.

SIMPLE GOITRE.

In a series of sixty-six cases of simple parenchymatous goitre operated on, I have had three deaths. The causes of these deaths are of interest.

Case 1.—A huge goitre in a girl, aged seventeen, which was causing very severe pressure symptoms, was easily removed. Twenty-four hours later, when I visited her, I found her extremely lively and clamouring for food. The nurse reported that the patient had been feeling so well all morning that it had been difficult to keep her in bed and impossible to keep her quiet. Six hours after my visit she suddenly sat up in bed, screamed once and fell back dead. No autopsy was allowed. The cause of death was probably pulmonary embolus. This result impressed me with the wisdom of insisting in all cases, and especially where the operation field has been very large, that the patient shall remain perfectly quiet, so far as the head and neck are concerned, during the first forty-eight hours after operation.

Case 2.—An aged woman from whom the largest goitre I ever saw weighing six and three-quarter pounds, was removed. The anatomical relations behind the gland were much disturbed, and the adhesions were dense. In breaking down some adhesions, the much displaced and attenuated œsophagus was, unfortunately, torn across, and she died three weeks later of inanition. Here, again, the lesson was learned that in all such extreme cases, a stomach tube should be passed and the œsophagus carefully outlined before the final steps of the operation are undertaken. Had this been done in case 2, the accident would not have happened.

Case 3.—A man, aged forty-five, from whom the right lobe and isthmus had been removed two and a half years ago for Graves' disease, the remaining lobe had been injured some months ago and increased in size quite rapidly, so that he now returned to have it removed owing to severe pressure symptoms. The operation was difficult, owing to the cicatricial contractions and adhesions, and the extremely vascular nature of the tumor. He did fairly well for thirty hours with the exception of some difficulty in breathing. At that time he suddenly became cyanosed, respiration quickly failed, and he died shortly afterwards. It looked like failure of the respiratory centre, but no autopsy was allowed.

I am aware that this mortality of 4.54 per cent. is too large, but I feel sure that at least two of such deaths would never occur in one's practice a second time.

100 pounds. This man's history dated back for about a year since when he has lost flesh rapidly and all the symptoms of Graves' disease have developed. His mental condition was bad. There has been a complete change of temperament. He has threatened his wife's life and his own, and was noisy, flighty, and at times vicious in temper. I removed the right lobe and isthmus and he returned home within two weeks of operation. He returned to me in April, 1907. His weight was 160 pounds, and he had worked steadily since his recovery from the operation. Instead of the wild excited picture which he had formerly presented, he was now quiet, self-controlled and mentally quite normal. The pulse rate was 82, the exophthalmos and tremor were gone, and he declared that he was in excellent health. Unfortunately during the previous winter the left lobe, which had become much reduced in size, had been injured in an accident since which it had grown rather rapidly and he returned to have it removed, because it was kinking the trachea and thus interfering with his breathing.

Illustrating the class of cases described by Kocher as *Thyroidea Gravesiana Colloides* is the following: Miss B., aged 44, has had a goitre for fifteen years, but paid no attention to it until one and a half years ago when tachycardia and tremor began to trouble her. Steady loss of flesh ensued, and now exophthalmos is quite marked. All the symptoms are more moderate than in the case of Mr. W. just quoted. Left lobe and isthmus were removed. She went home in three weeks and a steady improvement has resulted. Though she had been unable to work for a year previous to operation, she is now, three months after operation, doing light house-work and enjoying life.

The next case quoted clearly belongs to the class of vascular goitre, W. J., aged 27, an Englishman, has been troubled with goitre for eight months. It interferes with his breathing, especially when he stoops. As he is a farmer, this prevents him from working. Thrill and bruit present, and pulse rate 102 to 110. Slight tremor and muscular twitching. Exophthalmos is absent, but Kocher's sign is distinct, viz., sudden retraction of the upper eyelid when the patient is made to look steadily at his examiner. Right lobe and isthmus removed. Patient left hospital on ninth day. Four months after operation, his physician writes to say that the man is quite well and working every day.

THE TECHNIQUE.

The distinguished gentleman who is to open the discussion on Surgery to-day (Dr. Crile, of Cleveland) has done much to aid the surgeon in the carrying out of this operation by his teaching as to blood pressure and the use of adrenalin, while the elevation of the head and shoulders of the patient, especially in operations for Graves' disease, materially reduces the amount of blood in the field and the resulting hemorrhage.

The transverse incision is the one chosen in most cases, and the technique has changed but little during the last four years. There is one change which perhaps should be noted. Instead of transfixing and tying off the pedicle (which is usually the junction of the isthmus and the lobe to be left behind, I now tear through this pedicle with a blunt dissector and seize and tie any small vessels which may bleed. This is practically the only operation in which I use silk in ligating the vessels. The possibility of cat-gut ligatures slipping or untying in a very restless patient and resulting secondary hemorrhage has so far deterred me from using it.

I am thoroughly impressed with the importance of another feature in the technique of thyroidectomy, viz., the avoidance of excessive manipulation of the gland during the removal. In some of the earlier cases, where this rule was not carefully observed, the convalescence was quite stormy. I am now convinced that this was largely due to hypersecretion caused by unnecessary manipulation, this, of course, being followed by undue absorption and the production of a toxic tetany. The manipulations must be gentle, and the various steps of the operation carried out in a precise and clean-cut manner.

In cases of cystic goitre, affecting both lobes, my experience has shown me that it is not enough to remove one lobe and the isthmus, as cystic degeneration will continue in the remaining lobe. It would seem to be safer, after having removed the lobe most affected with the isthmus, to incise the capsule of the remaining lobe and enucleate every cyst to be found.—*The Canadian Practitioner and Review*.

The Diagnosis and Treatment of some of the forms of so-called Rheumatism.

GENTLEMEN,—I propose to deal in this lecture with the more or less chronic affections which are generally labelled "rheumatic," but which undoubtedly are not the sequelæ of acute rheumatism, and which are in no sense connected with that disease. By acute rheumatism I take it

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that we all mean an infective disease affecting the system generally, and in which joints, heart, pleura, skin, subcutaneous tissues, nervous system, and other structures of the body may all be implicated. This infective rheumatic condition may linger on for many months and years, as is shown by the recurrences of outbursts during periods of imperfect recovery by successive crops of subcutaneous rheumatic nodules, and by the development of rheumatic pleurisy. Chronic joint affections may also be left as sequelæ of acute or subacute rheumatism. In such cases the joints are painful, stiff, and frequently distorted. The distortions, however, are not due to bony or cartilaginous changes, such as occur in rheumatoid arthritis, but are dependent upon alterations in the ligaments, tendons, and muscles. Such cases may certainly and correctly be called true "chronic rheumatism." It is not, however, with these cases that I propose to deal in this lecture, but with those cases so commonly met with in practice, which are called "rheumatic," but which are not connected at all with what we know as true rheumatism, and to which Stockman has recently drawn attention in a very valuable paper.

PATHOLOGY.

In the great majority of the cases of so-called chronic rheumatism that I am about to deal with, the essential pathological change is an inflammatory hyperplasia of the white fibrous tissue in various parts of the body, to which the term "fibrositis" has been very aptly applied. The articular structures proper—synovial membrane, cartilage and bone—are not primarily affected, but the parts implicated are the fibrous tissues of the joints, muscles, and bones, especially the aponeuroses and insertions of the muscles, fasciæ, the fibrous ligaments of the joints, and the periosteum. Such affections cause pain and stiffness in these structures, are especially apt to recur, and are commonly referred to as rheumatic or even gouty in their origin. This inflammatory hyperplasia of the fibrous tissues occurs in patches, and is started by exposure to wet or cold, by injury, or by some irritant, microbic or toxic, conveyed in the blood. The inflamed and swollen fibrous tissue is tender, painful on pressure or on movement, and can frequently be felt on palpation, or is evident by the consequent elevation of the skin. This fibrositis may completely disappear, but recurrences are common, and if not suitably treated the thickened fibrous tissue remains as indurations at various parts.

The indurations may be widespread, but generally are well defined, and vary in size from an eighth of an inch to one inch in diameter. They may be situated in the subcutaneous tissue, the muscles, tendons, aponeuroses, and periosteum. The pain is especially aggravated by any sudden movement of the muscles which compresses or stretches the affected

fibrous tissues and the sensory nerve filaments. The muscle-spindles, which lie between the bundles of muscular fibres and in the fibrous tissue of the muscle, and each one of which receives one or more narrow muscular fibres, and two or more nerve-fibres, are the only sensory structures in muscle, and it is through them that the pain of so-called muscular rheumatism is felt. Owing to direct pressure of a fibrous nodule on a nerve, or to the involvement of the nerve in the nodule, the pain may be felt over an extensive area, or even be referred to a part of the body which is not the seat of the fibrositis.

ETIOLOGY.

Local fibrositis may result from several causes of which the following are the commonest:

(1) *Cold, damp, and wet.*—In a very large number of cases the only assignable cause of the fibrositis is a history of exposure to cold and wet. Sometimes the attack comes on acutely a few hours after the exposure, as in many cases of lumbago, stiff neck, intercostal "rheumatism," and other forms of so-called muscular "rheumatism." At other times stiffness gradually develops after the exposure, and passes on to the condition of chronic fibrositis generally known as chronic rheumatism.

The exposure may be due to draughts, remaining in wet clothes, lying or sitting on damp ground or some cold substance, or the simple advent of damp or cold weather. Many persons are readily affected by the approach of rain, and by a lowering of the barometric pressure. Longstreth states that the painful symptoms do not correspond to rain, but to the fall of barometric pressure, and Stockman suggests that possibly the atmospheric changes may increase or lessen the lymph-pressure in the body, and so increase or lessen the tension in the affected fibrous tissues. A very common cause of lumbago from exposure to a local draught is sitting on a draughty privy or water-closet; this, no doubt, accounts for the prevalence of that affection in rural districts, combined with the constant strain of the lumbar muscles, amongst so many agricultural labourers.

(2) *Extremes of heat and cold.*—Sudden and considerable variations in temperature constitute by no means an uncommon cause of a generalised fibrositis which takes the form of so-called "muscular rheumatism," following on the resulting chill. One of the severest cases of fibrositis (muscular rheumatism) that I have ever seen was the case of a stoker who, after working during very hot weather in the engine-room of a steamer in the Red Sea, went straight to the refrigerating chamber of the steamer in order to cool himself. The result was a very severe attack of inflammation

of the fibrous tissues over practically the whole of the body, which absolutely prostrated him, and from which he made a very tedious recovery.

(3) *Local injuries.*—These are responsible for a large number of cases of local fibrositis, so-called "local rheumatism." The injury is generally caused by over muscular exertion, such as the strain of lifting a heavy weight, the strain exerted in certain muscles in order to save a sudden fall, and the excessive muscular strain that an athlete may put forth. Golf produces a number of such injuries, the fibrous tissue of the muscles and their attachments of the arms and back being specially affected in this game.

If the individual has previously suffered from fibrositis which has not been completely cured, or which has left some fibrous nodules, a comparatively slight wrench may be sufficient to start the aching in the affected part.

(4) *Absorption of irritating toxins from the gastro-intestinal tract.*—It has long been recognised that disorders of the stomach or bowels may give rise to "rheumatic" pains. The aching in the joints and the lumbar region that occasionally occurs the day after a lengthy dinner, especially if several wines have been indulged in, is due to irritation of the fibrous tissues by the toxins absorbed from the intestinal tract, and which have been produced there by abnormal fermentation.

This pain, whether in the joints or the lumbar region, which follows excessive indulgence at the table is generally attributed to gout, and, as a rule, the champagne, claret, or port, is blamed for it. I am convinced, however, that this articular or muscular pain has, in the great majority of cases, no relation whatever to gout, and that it is simply an indication of an inability of the gastro-intestinal tract to properly deal with the various articles introduced into it.

(5) *Tonsillitis and Pharyngitis.*—The aching pains that occur in various parts of the body in connection with these affections are well known, and are, doubtless, due to toxic absorption and consequent irritation of the fibrous tissues.

(6) *Influenza.*—The majority of us are probably personally acquainted with the aches and even severe pains in the muscles, joints, and bones which accompany this disease. These are, in all probability, due to the fibrositis set up by the specific microbe or its toxin. It is not uncommon to find fibrous nodules and thickenings left as sequelæ of this disease.

(7) *Febricula.*—A "feverish cold" is generally accompanied by aching pains in the muscles, joints, and bones. The attack, which is sometimes

described as a "rheumatic cold" or an "influenzal cold," is probably microbic in its origin, and the pains are, no doubt, due to irritation of the fibrous tissues by the microbe or its toxin.

VARIOUS FORMS OF FIBROSITIS.

Muscular Rheumatism.—This affection is always a fibrositis. Any of the muscles may be affected. Affection of the muscles of the lumbar region constitutes one of the forms of lumbago; affection of the muscles of the neck constitutes stiff neck; affection of the deltoid muscle constitutes "deltoid rheumatism"; affection of the intercostal muscles constitutes "intercostal rheumatism." The pain at first is generally dull, but in anything like severe cases soon becomes sharp and shooting, and is aggravated by damp weather. It is usually worse when the patient becomes warm in bed, and is generally felt severely on waking in the morning and on rising from bed. Brachial fibrositis is especially apt to be of long duration, and interferes with sleep on account of the difficulty of getting the arm into an easy position. To some extent it wears off with exercise or on rubbing the affected parts. It is always accompanied by a feeling of stiffness.

Lumbago.—This is a very typical form of fibrositis. As just mentioned, it may be an affection of the fibrous elements of the lumbar muscles, but more commonly it starts as a localised affection of the insertions of the muscles in the vicinity of one or both of the sacro-iliac joints. It spreads by continuity of the fibrous tissue, as is manifested by its affecting the tendinous attachments of the neighbouring muscles, by its affecting the sacro-iliac joint itself, and by its often spreading through the joint and reaching the sheath of the sciatic nerve. This explains the very frequent association of some degree of sciatica with an attack of lumbago. It is astonishing to find in a very large number of cases of lumbago that a careful examination of the back reveals no pain or tenderness on pressure over the various muscles, but that as soon as one or both sacro-iliac joints are pressed upon, acute pain is complained of, and the patient refers his appreciation of the pain to that region. I am convinced that in the majority of cases of lumbago the affection is not in the quadratus lumborum, nor even in the deeper muscles of the back, but is in the fibrous tissues directly over the sacro-iliac joint, and in the joint itself. The production of the pain of lumbago is usually sudden, the patient frequently ascribing it to a sudden strain or rick, especially on rising in the morning, but although the production of the pain is generally sudden, yet the condition on which it depends has been gradually developed.

Rheumatic Neuralgia.—This is a fibrositis of the nerve-sheaths, and is a common cause of sciatica, especially accompanying lumbago of the sacro-iliac joints. The affected nerve is painful on pressure or when

stretched. The symptoms are numbness, tingling, "pins and needles," and pain, all of which are due to slight compression of the nerve.

Dupuytren's Contraction.—This is a localised fibrositis caused by habitual postural use of the hand. It is frequently ascribed to gout, but, according to my experience, the condition has no connection with that disease. Certainly I have never seen any gouty deposits in the thickened tissues, nor is the affection commoner amongst gouty subjects.

OTHER AFFECTIONS COMMONLY CALLED RHEUMATIC, BUT NOT OF THAT NATURE.

Chronic Villous Synovitis.—This is a purely local condition, and not a manifestation of a general disease. It usually occurs in the knee, and is characterised by crepitus or creaking on movement and by pain and tenderness on use. The crepitus during movement of the joint is frequently unpleasantly audible to the patient, and is especially caused by going up or down stairs. The capsule and the ligaments of the joint are more or less relaxed, and the synovial membrane is passively congested and loose. The crepitation on movement is due to the folds of the flabby congested membrane rubbing together. If further relaxation of the synovial membrane results, hernial-like projections of the synovial fringe may be produced, which are apt to cause a catching or locking of the joint when it is moved. In this class of cases the fluid in the joint is generally quite normal, although, if there be great irritation, some excess of it may form.

Quiet effusion into knee-joints.—This affection was first described by Sir William H. Bennett, and was stated by him to occur only in girls and women, and to be always associated with menstrual irregularity or uterine trouble. It occurs mainly at the time of puberty and at the climacteric. A similar condition has, however, been observed in males. The affection consists of a passive effusion into the joint, and rarely occurs in any other joint than the knee. It is unattended by pain, is in no sense rheumatic, and a large number of patients are unaware of its existence unless attention is called to it accidentally. It is best recognised when the patient is standing in the upright position, when the fluid sinks to a lower part of the joint cavity, and sometimes forms a pouch-like overhanging of the synovial membrane at its lower anterior aspect. Attention is generally called to the condition by a slight injury, such as a twist or fall. The joints of the two sides are usually involved at the same time, but the effusion is, as a rule, much more marked on one side than on the other, that on the right side being generally the greater.

Relaxation of joints.—This is a fairly common form of pseudo-rheumatism. It occurs especially in the ankle, tarsal, and tarso-metatarsal joints, and leads to the condition known as flat-foot. Changes occur in the fibrous tissues of the joints which cause the patients to be very susceptible to changes in the weather.

TREATMENT.

I will first deal with the various means of treating the different forms of fibrositis—muscular rheumatism, lumbago, and rheumatic neuralgia.

Drugs.—In these affections salicylates are of little curative value, as they do not exercise the same specific action as in acute rheumatism. Aspirin is of decided use for the relief of pain in severe cases, but it should only be given with that object. It acts better than the salicylate of soda owing to the fact that it is not decomposed and absorption does not commence until it reaches the intestinal tract, where a slow liberation of its salicylic acid moiety takes place. It probably also exercises a beneficial effect in cases of abnormal intestinal fermentation. Iodide of potassium is a most valuable drug in the treatment of fibrositis. It seems to exercise a direct effect in removing the hyperplasia and serous exudation in the fibrous tissues. It should always, if possible, be given in full doses of ten or twelve grains, and should be combined with tonics, such as nux vomica or the compound of glycerophosphate syrup. In cases in which rheumatic neuralgia or neuritis is present arsenic should be administered as well. If the gastro-intestinal tract is disordered the initial treatment should consist in the administration of a dose of calomel or blue-pill, followed by a saline purge.

External applications.—One of the most useful external applications in my experience is a mixture of equal parts of chloral hydrate, camphor, and menthol. These three substances form a liquid when well rubbed together. This liquid should be painted over the painful area, and then be gently rubbed in with the fingers. Some patients find the cold sensation produced by the menthol objectionable; in such cases the menthol may be omitted, and equal parts of chloral hydrate and camphor employed, which also form a liquid when rubbed together. Another useful external application is to paint the painful area with tincture of iodine and then to apply a hot linseed poultice or a very hot fomentation. The heat converts the iodine into vapour, which exercises an anodyne effect, and, probably by absorption, directly acts on the affected fibrous tissues. Methyl salicylate and mesotan are also very valuable external applications.

The former is objectionable to many people on account of its peculiar and penetrating smell. Mesotan, which exercises a very beneficial effect,

especially in cases of muscular fibrositis, sometimes produces a most troublesome and painful skin eruption. This, however, is generally caused by its being improperly employed. It should never be used alone, but should always be diluted with an equal quantity of olive oil. This mixture is then to be painted over the painful area with a camel's hair brush; it should never be rubbed in. It should only be painted over any given area once in twenty-four hours, and the painting should not be renewed if any definite redness of the skin persists at the end of that time. Another important point to bear in mind is that moisture decomposes mesotan, and therefore favours the production of a skin eruption. The mixture of mesotan and olive oil should therefore be kept in a perfectly dry bottle, and the skin should be thoroughly dried by rubbing with a little rectified spirit or brandy before the paint is applied. After the application the painted area should not be covered up, as it is most necessary to prevent the accumulation of sweat over the affected part.

Heat.—This agent is of the greatest use in the treatment of these cases, and if employed early will frequently abort an attack. Heat dilates the peripheral vessels, lowers blood-pressure, causes diaphoresis, and relieves pain. If heat is to be applied to the entire body, the electric light cabinet bath is the most convenient and most useful form. I regard the combination of the heat and light rays as most useful, and as being far superior in their effects to the employment of dark heat. The radiant heat produces very rapid and free diaphoresis, stimulates the skin, and improves metabolism, so that the patient feels refreshed instead of exhausted after such a bath. For the entire body electric light bath at a temperature of 170° F. is well borne.

If heat is to be applied locally, such as to one limb, the best method is to place the limb in a cylinder in which the air is superheated by some means or other. The "Fango" treatment is also of use for local purposes; this consists in packing the affected limb in hot volcanic mud. The treatment of lumbago by means of ice-bags applied over the lower part of the spine has been recommended as a means of cutting short an acute attack, but I have no experience of such treatment.

Massage.—In very acute cases rest of the affected part may be necessary, but this is not incompatible with baths and properly regulated massage. Local massage is of the greatest use in most cases of fibrositis, provided the very acute stage has passed. The manipulations should be very gentle at first, so as to promote removal of exudation, and to relieve the tension. Afterwards more vigorous massage is most efficacious in dispersing the indurations and fibrous thickenings, and in removing the stiffness of the affected part.

Electricity.—In most cases of severe fibrositis I advise the use of electricity in combination with the electric light bath and massage. In cases where neuritis is present the continuous current is best, but the faradic current is most useful in helping to disperse fibrous indurations.

Exercises.—When most of the pain has passed away the patient should be taught exercises which are suited to exercise and stretch the affected muscles and aponeuroses. These should be carried on daily for half an hour, and are best effected by means of light dumb-bells or some form of exercise.

Spa Treatment.—The general treatment at Spa is useful in many cases. Many forms of hot baths are there obtainable, and the patient is enabled to give ample time to the massage, electrical, and other forms of treatment.

Diet.—Unlike gout, no special dieting is required in these affections. Moderation should be the keynote of all prone to the various forms of fibrositis, and especially should they avoid foods which their experience has taught them to be apt to produce gastro-intestinal fermentation. I am, however, absolutely opposed to the indiscriminate prohibition of such articles as red meats, sugar, jams, bread, fruit, &c., in the cases of sufferers from the various forms of fibrositis. All these articles of food, if they do not produce indigestion, are perfectly wholesome. It has become of late year a fashionable craze to attribute many of these forms of "chronic rheumatism" to uric acid. I most emphatically declare that it has no part or parcel in the production of any of the morbid conditions dealt with in this lecture. Uric acid is a harmless by-product of the human economy which has been most shamefully exploited as a dangerous poison.

Climate.—Sufferers from any of the forms of fibrositis should avoid the seaside and damp climates generally. In such climates the affected parts ache, and relapses are apt to occur. A dry, bracing, inland climate is the one best suited for these affections.

TREATMENT OF CHRONIC VILLOUS SYNOVITIS.

This condition requires local treatment only; no medicines, excepting perhaps general tonics, are necessary. The local treatment may consist of hot air and massage, or iodine and heat as previously described, or cataphoresis with iodine and carbonate of lithia, or the successive applications of Scott's dressings. When the patient is walking about a bandage should be kept on the joint to steady it and to limit the movement.

TREATMENT OF QUIET EFFUSION INTO KNEE-JOINTS.

In the treatment of this affection splinting and rest of the joint must be avoided. On the contrary, massage should be employed, and exercise in the open air encouraged. Attention should also be paid to the menstrual

irregularity or uterine troubles that are generally associated with this affection.

TREATMENT OF RELAXATION OF JOINTS.

The various physical methods for the treatment of fibrositis (chronic rheumatism) that have already been described should be employed. In addition it is most important to provide mechanical support for the relaxed joints, and also, in cases of flat-feet, to teach those exercises which tend to remove the condition or relaxation.—*The Clinical Journal*.

Angina Pectoris.

Angina Pectoris is not a disease *per se*, but a symptom. Its appearance is said to depend upon causes due to organic changes in the coronary arteries. As a rule it occurs in middle and advanced age, although not infrequently also in the second half of the thirties, and sometimes at an even earlier age. Ætiological factors are syphilis, obesity, diabetes, gout, aortic valvular disease, influenza and heredity. The ætiological significance of alcohol in the affection has been much overrated. Prognosis should always be attended with reserve. An attack may occur at any time, and each attack is liable to a fatal termination. Only very exceptionally is full compensation observed, although the affection may remain stationary for years. As a rule death occurs suddenly, and it is only in those cases which are complicated by aortic disease that death is due to the effects of the progressive incompetence.

For the attack itself, we have in the injection of Morphia a trustworthy remedy, and one which at the same time is free from danger. Stimulation of the skin in the form of hot applications to the feet and hands help to shorten the attack. Inhalation of Nitrite of Amyl and large doses of nitro-glycerine are of service in mild cases, and Diuretin and Iodine are also recommended. Repeated bleedings, abdominal massage, purging and carefully regulated Nauheim or other baths may all be productive of good for the patient. Residence by the sea may unhesitatingly be prescribed, and during the severe months the patient should be advised to seek a milder climate. During the period of freedom from attack, everything should be avoided which tends to excite the heart's action and raises the blood pressure. Attention should also be paid to such points as bodily and mental rest, abstinence from sexual intercourse and a light diet rather inclining to a vegetarian nature.—*Folia Therapeutica*.

Acute Dilatation of Stomach.

Conner (*Amer. Journ. of Med. Sci.* March '07) considers that the sudden incarceration of the lower end of the duodenum between the root

of the mesentery in front and the vertebral column behind is a very important cause of acute dilatation of the stomach. He records a case arising suddenly, without vomiting, with enormous dilatation of the stomach and complete obstruction of the duodenum which latter was relieved *post mortem* by raising the band of mesentery crossing it. A finger introduced into the duodenum felt the superior mesenteric artery as a tense firm cord in this constricting band. By far the largest number of cases followed operation with general anaesthesia. A few occurred during convalescence from severe and wasting diseases, while some were due to errors in diet and others to disease and deformity of the spine. Of symptoms, vomiting is the most constant, being present in 90 per cent. of the cases, while the next most striking feature is the rapid development of collapse. Pain, abdominal distension and tenderness, with constipation, thirst, and scanty urine, are the other principal symptoms. The dilatation is not confined to the stomach, but involves a part or the whole of the duodenum as far as the point where this passes behind the root of the mesentery, and here it is that definite obstruction occurs, the gut being pinched between the tense mesentery, with its contained superior mesenteric artery in front and the aorta and vertebral column behind. Below the obstruction the intestines are usually empty and collapsed. Even in some normal individuals a pull upon the mesentery, approximating that which might be exerted by the empty small intestines hanging in the true pelvis, might produce a complete temporary obstruction of this portion of the duodenum; and the added presence of an enormously dilated stomach would render the condition permanent by tending to crowd the intestines more into the pelvis and at the same time diminishing any muscular efforts to overcome the obstruction. Intestinal obstruction and perforative peritonitis are the conditions most likely to simulate it, but the sudden onset of severe vomiting of large amounts of bilious non-faecal fluid is suggestive of acute gastric dilatation. Prompt and complete emptying of the stomach with the stomach tube is the first indication in treatment, and this should be repeated several times a day. All food or drink by the mouth must be stopped and everything must be given rectally, while the excessive loss of fluid may be met by saline enemata or by hypodermoclysis. In addition, the patient should lie face downwards, or assume the knee-elbow position for short intervals, in order to displace the intestine from the pelvis and thus relieve the pull upon the mesentery and consequent constriction of the duodenum.—*The British Medical Journal*.

SURGERY.

Congress of German Surgical Society : April 1907.

SURGERY OF THE HEART.

Dr. Rehn states that in injuries of the heart the diagnosis can sometimes be aided by Roentgen examination. Arrest of heart action has never been produced by surgical intervention. Death usually occurs from the pressure of accumulations of blood in the pericardium, the heart being crowded forward against the sternum. As regards foreign bodies, needles may be extracted at once, while knives or daggers should not be removed until the cardiac wound has been exposed, since they act as a temporary plug and prevent hæmorrhage. Bleeding from the coronary arteries may be arrested by ligature, but it is questionable whether this is advisable if the main trunk has been wounded. There is no routine surgical treatment of wounds of the heart, the procedure adopted depending upon the size of the wound. In the operation the pleura should be left intact, if possible. If death threatens, it may be advisable to open up track of the wound; otherwise the initial incision is made in an intercostal space, a rib being divided at the sternum or, if necessary, resected. If this does not afford sufficient access several ribs may be resected with the formation of a flap. If on opening the pericardium the blood spurts in a stream, traction may be made upon the heart, and the left hand passed backward so as to compress the inferior vena cava or even the auricles. Experiments on animals show that such compression may be kept up for one and one-half minutes without any injury. In suture of the cardiac wound, fine silk should be used, and not catgut or wire. Of the fatal cases, 44 per cent. have died of hæmorrhage and 40 of infection.

Dr. Gluck, of Berlin, stated that in pericardial effusion he has seen a cure result after resection of the fifth rib. Even when the pleura is injured the wound heals without any trouble. Dr. Thiemann presented a case of recovery from a punctured wound of the right auricle and ventricle, with injury of the pleura, by a needle. Dr. Goebel had determined experimentally that following suture there may be formation of infarcts and even aneurism in the heart muscle, and therefore recommends that the suture should not be inserted too deeply. While the experiments of Kummel and Riedel have shown that by cardiac massage applied either directly to the exposed heart or from below through the abdomen there may be a temporary return of heart action in cases of cardiac failure during anaesthesia, death has always occurred later.

TREATMENT OF ANEURISM.

Dr. Lexer considers the ideal operation to be one in which the aneurismal sac is extirpated and the circulation through the vessel preserved, as is

done, for instance, in the Garré method of lateral suture. In a case of arterio-venous aneurism of the popliteal resulting from a stab wound he resected both vessels and then united the ends by means of magnesium cylinders. The operation was successful in spite of the fact that there was a space of five c. m. between the vessel ends. Immediately after its performance the pulse could be felt in the posterior tibial, but nine months later it was less distinct. owing to the compression of cicatricial masses, although there were no circulatory disturbances. In a case of traumatic aneurism of the subclavian a gap of seven c. m. remained after resection of the vessel. As this prevented coaptation he transplanted a portion of the saphenous vein of the same individual, suturing it with fine silk. To enable the thin walled section of vein to better withstand the increased tension, he implanted it in the deltoid muscle. Circulation at once returned, but the patient died five days later in delirium. The autopsy showed that the transplanted section had not become thrombosed even around the line of sutures. At the proximal end of the artery there was a thrombus at the point where the clamp had been applied.

Stich has made some interesting experiments in transplantation of portions of vessels in Garré's clinic. The transplanted pieces, whether taken from the same or other animals, healed readily without circulatory disturbances. In a dog he divided the renal vessels, ligated them proximally, and then sutured the distal ends to the ileocecal vessels. Recovery took place promptly, the kidney continuing to secrete urine. The animal was killed some months later and no marked changes were found in the transplanted part.

HIRSCHSPRUNGS' DISEASE.

In a case of this condition (congenital hypertrophic dilatation of the colon) Dr. Lengemann twice made an anastomosis between the colon and rectum, and also found it necessary to do a colostomy, because the distended gut, after gradual evacuation of its contents, contracted to such an extent that the anastomotic opening scarcely admitted a lead pencil. Five months later he established an anastomosis between the rectum and ileum, but as most of the feces continued to pass through the colostomy opening, the patient requested another operation. He therefore divided the ileum behind the anastomosis, this being followed by death from perforation peritonitis.

SURGERY OF PULMONARY DISEASES.

According to Dr. Friederich, the chief field of surgery of the lungs is in pulmonary abscess and gangrene, which in the acute stage gives a favorable prognosis. In chronic cases, however, the

prognosis is much worse, especially if it is necessary to resort to several resections of the ribs or to excision of large areas of lung. Early operation is indicated in localized lesions. After the lung has been drawn into the resection wound the operative field is shut off by a circle of sutures, hemorrhage is arrested by ligation and transfixion, and it is better to expose the site of disease by incision rather than by the thermocautery. If it is difficult to find the lesion, persistent attempts at exploration should not be made, but the pulmonary wound tamponed in the hope that the pus will discharge into it, or a metallic sound may be introduced into the wound and its position with reference to the abscess determined by an x-ray examination. According to statistics, 70 per cent. of cures result in cases of pulmonary abscess. Bronchiectatic abscesses give a much less favorable prognosis, because the patients are apt to be reduced in strength, the foci multiply, and bronchial fistulæ commonly result. Such fistulæ often require extensive resections of the lung. As regards pulmonary neoplasms, the results have not been very satisfactory owing to the fact that the diagnosis is made too late. Of 78 cases of tumors of the thoracic wall on record in which extensive resection of the ribs had to be done, 27 were fatal. Operative intervention is also indicated in injuries of the lungs with marked hemorrhage, increasing pneumothorax, and rapidly progressive emphysema. Operation in the pneumatic cabinet is often of value because it permits of a rapid inspection of the entire lung through the interthoracic incision without the development of pneumothorax. Its disadvantages are the intolerable heat in the chamber, the restricted space, impairing free movement of the operator and assistant, and the difficulty of carrying out asepsis. Friederich has constructed a table which permits the patient to be placed in various positions to facilitate diagnosis. As to the sensitiveness of the tissues operated upon, the costal pleura is most sensitive, the pulmonary least. The pulmonary parenchyma is entirely insensitive. Some of the operations performed in the chamber have lasted up to 1½ hours. Friederich cautions against mass ligatures in excisions of large portions of lung, and advises that the different vessels and bronchial tubes should be tied singly.

PNEUMOTOMY.

Dr. Lenhartz reported 85 operations for pulmonary gangrene, 5 for pulmonary abscess, 22 for bronchiectasis, and 4 for carcinoma of the lung. Of the first group 53 were cured and 32 died; of the second, 4 were cured. Early operation is indicated in bronchiectatic conditions, because resection of several ribs is then usually sufficient. On the other hand, in chronic cases much more extensive resection is required. After the chest has been opened and the

adhesions separated, Lephartz slits open the affected bronchi, and in case this does not effect a cure, performs a more or less extensive excision of the pulmonary structures. In a case of bronchorrhoea he applied a mass ligature to two-thirds of the lower lobe, and several days later removed the section of lung. The patient made an uneventful recovery. In another case, that of a young woman, 18 years old, with very offensive bronchorrhoea of many years' duration, he performed a pulmonary resection in several sittings and obtained an almost complete cure, only a slightly discharging fistula being left. It is advisable to caution these patients. In the early diagnosis of pulmonary tumors there are four auxiliaries: (1) Accurate examination of the sputum for granular fat globules, which appear to be pathognomonic; (2) x-ray examination; (3) physical examination of the chest; (4) exploratory puncture. Of 23 cases he has operated in four, all of them being cancer of the upper lobe. After resection of the ribs and removal of the tumour mass, the cavity was tamponed. Later under Roentgen therapy a diminution of the cavity occurred with a considerable improvement in the patient's condition. None of these operations was performed in the pneumatic cabinet. Lephartz favors operation in two sittings, the first consisting of resection. Attention was called to the occurrence of sudden, profound collapse, going on even to death, from application of the cautery to the pulmonary pleura, chiefly in greatly exhausted patients. The same experience has been made by Koerte, who regards this as due to a peculiar irritation of the vagus. This surgeon has done 41 pneumotomies, always when possible under local anesthesia and free exposure of the operative field.

ACTINOMYCOSIS OF THE LUNG.

Dr. Karewski considers operation indicated only in the primary form of the disease, not in cases of metastasis—and then only during the latent stage. Hence diagnosis must be made as early as possible. Of his four cases, three died.

OPERATIVE TREATMENT OF FRACTURE OF THE THIGH.

Dr. F. Koenig recommends suture of the fragments in fractures of the femoral neck, and calls attention to the fact that this accident may, and not infrequently, occur in middle age or even in children. In operating, the joint is exposed through an anterior excision, and for suture material aluminum bronze wire is employed. Rest in bed is maintained for 10 to 12 weeks. In isolated fracture of the greater trochanter fixation by suture is the most reliable procedure, as it best prevents the considerable disturbances arising from the numerous muscles inserted at this point. As regards subtrochanteric fractures, the transverse

require only extention treatment, while the markedly oblique are advantageously treated by Lambotte's agraffe or Depage's splints. Supra-condyloid fracture only requires extention while in traumatic separation of the epiphysis at the knee operation is indicated in order to prevent pressure upon the popliteal vessels, with resulting gangrene. No infection has occurred in his operative work. Post-mortem examinations have shown that even in cases of impacted fracture of the femoral neck only fibrous union has occurred.

RESECTION OF THE LIVER.

To control bleeding in this operation Dr. Anschutz recommends that the liver tissue be rapidly severed with long strokes of the knife, and the cut surfaces at once covered with large compresses, with which pressure is made by the assistant. After being left on for a time these are slowly removed, and then all visible blood vessels seized and tied. Another way of preventing hemorrhage is to apply a ligature in sections according to Deschamps's method, gently tightening the loop, thus dividing the liver tissue slowly, so that finally only the vessels remain included in the ligature. According to Anschutz temporary resection of the curvature of the ribs is preferable to the transpleural method. Below the seventh rib no pleura is encountered if only the cartilage be divided, and below the tenth rib even the bone may be cut as far back as desirable. It is very important in wedge-shaped resections to accurately approximate the cut surfaces. The abdominal wound is completely closed.

EXTIRPATION OF THE PROSTATE.

Dr. Kummel does not believe in partial extirpations, but enucleates the entire prostate. The operation is contraindicated in cases of extensive arteriosclerosis, renal insufficiency and ascending or parenchymatous inflammation of the kidney, or complete atony of the bladder. The mortality of prostatectomy is about 10 per cent. The supra-pubic method is generally preferable, as it permits of a better view of the parts, especially disclosing the presence of diverticula and encapsulated calculi. Ordinarily it leaves behind no fistulæ, no insufficiency or impotency; while these are much more apt to arise after the perineal operation. The latter, however, is indicated in very obese persons. Among 41 prostatectomies cancer was found in 9 cases. His operations are now done under lumbar anesthesia. In enucleation every care is taken to preserve the prostatic urethra. If the bladder is not infected the mucous membrane is sutured and the vesical and abdominal wounds closed.

Dr. Rydygier favours early operation before daily catheterization becomes necessary. The prostate is enucleated through a perineal incision

without opening the urethra, the capsule being incised on both sides and two long strips of prostate being left on the sides of the urethra. By proceeding in this way he avoids fistula and the occurrence of sexual disturbances, while the patients are able to get up on the second or third day.

Dr. Israel only operates when catheterization is no longer effective, and always resorts to the supra-pubic method. The cavity left after enucleation is drained and the bladder wound left open, so as to prevent hemorrhage, which in one case occurred 14 days after operation.

Dr. Rovsing is still more conservative, and only operates in cases of uncontrollable hemorrhage or calculi, or when catheterization is no longer possible. He does the supra-pubic operation, and removes only the obstructing portions of the prostate, considering more extensive procedures as unnecessary and as liable to be attended with severe psychical disturbances, which in some cases have led to suicide. Vasectomy has afforded improvement in 60 per cent. of his cases. If severe cystitis is present he establishes a small vesical fistula under cocaine anesthesia, and then inserts a retention catheter through which the bladder is thoroughly flushed out with nitrate of silver solution.

TOTAL EXTIRPATION OF THE BLADDER.

Dr. Rovsing has extirpated the bladder in several cases for multiple malignant tumours or extensive cancerous infiltration of the bladder walls. The main points in his technique are a curved incision through the abdominal wall; careful separation of the bladder, which is filled with about 8 ounces of fluid, from the surrounding parts, without injury of the peritoneum if possible; ligation and division of the ureters about 2 cm. above their vesical termination; two lumbar incisions, through which the proximal ends of the ureters are drawn without fixation by sutures, as the superfluous portions become detached by necrosis.—*The International Journal of Surgery*.

Treatment of Writers' Cramp.

The following plan was successfully used by Hartenberg to cure a case of writers' cramp. The patient, who had suffered from the condition for about fifteen years, was instructed to apply a rubber tube firmly around the biceps for twenty minutes at a time every morning and evening. At the end of a few weeks the patient had almost entirely recovered.—*Archives de Neurologie*.

OBSTETRICS AND GYNÆCOLOGY.

A Successful Case of Cæsarean Section.

BY

HUGH C. McLEAN, M.B., GUELPH, ONT.

I have recently had in my care a patient who for the past six years and a half has been an invalid, and quite unfitted to attend to her ordinary household duties.

On the approach of the termination of her period of gestation she was brought to the general hospital here and placed under my care. Following is the history of her case:

History.—Mrs. A. A—, aged 29; born in Wales; multipara; last menstruation June 13th, 1906. Had a child born six and a half years ago after an extremely difficult, tedious labor lasting some sixty hours and completed by instrumental delivery. Following the confinement she necessarily remained in bed some twelve weeks, suffering from prostration, sub-involution, and a certain degree of prolapsus uteri. Her baby was born alive. Some eighteen months later she aborted at about three months. A few months later another abortion occurred at about the same period. Her trouble was then diagnosed as endometritis, and she was sent into the Cardiff Infirmary, where she underwent an operation, the particulars of which I was unable to get, but a ventral fixation was certainly done. Since that time she has been quite incapacitated and suffered a considerable degree of abdominal pain and "dragging sensations" along the lower portion of the abdominal wall.

Examination.—18th February. Fundus, 27.50 cms. above pubis. Intercristal, 29 cms. Interspinoous, 28.25. Obliques, r and l, 20.50 cms. External conjugate, 18 cms. Vaginal, 7.50 cms. In the right vaginal fornix a large, firm, irregular mass protruded on the canal, reducing its diameter to 7.50 cms., as above. The cervix could not be reached. Presentation, vertex, L. O. A. Fetal heart sounds 132 to the left of and below the umbilicus.

The case was seen and examined with me later by Dr. F. Walsh, of this city, and it was decided to await the commencement of labor and if no descent occurred to do a Cæsarean operation.

After fourteen days in the hospital, during the last two or three of which vague feelings of pressure across the back in the lumbar region became somewhat rhythmical and the patient suffered severely from upward and outward pressure on the ribs, we determined to operate, which we did on Sunday afternoon, March 3rd.

Operation.—An incision, 12.50 cms. in length, was made in the median line of the abdomen, from the umbilicus towards the ensiform cartilage, a few bleeding points being caught with pressure forceps. The abdominal wall was very thin, and it was only by careful watching that the peritoneum could be distinguished from the fascia.

A special gauze sponge, a yard long and five inches wide, was now packed in between the everted lips of the abdominal incision and the fundus uteri. The fundus was now crowded up by an assistant, who grasped firmly the lower uterine segment with both hands (through the abdominal wall), and a vertical incision was made over the fundus, about the same length as the one above mentioned.

Blunt dissection carried this incision down through the uterine tissues till the membrane was reached. A hand was now passed between the uterine mucosa and the membranes, to free the membranes and the placenta. By this time the liquor amnii escaped; the left hand was passed into the cavity of the uterus, the left foot of the infant was grasped, and a quick delivery followed, the head being extracted by the Veit-Smellie method. The infant was at once handed to an assistant with its head hanging downwards.

The placenta and membranes were quickly "twisted" out, the uterus swabbed out with dry gauze compresses, the cervix dilated to admit two fingers, and the closing of the uterine incision was carried out as follows: Five "deep sutures" of No. 2 chromic gut were placed at intervals of one and a half centimetres, extending through all the uterine tissues except the mucosa. These had their points of entrance and exit about one half centimetre from the margins of the wound.

The hemorrhage was practically controlled by these sutures. Between these were six similar sutures, "half deep," and a row of Lemberts of No. 1 chromic gut completely buried the other—the "deep" and the "half-deep" sutures. The gauze sponge was now removed, and the abdominal cavity flooded with normal saline solution, after which the Fallopian tubes were double ligated and sectioned. The abdominal incision was closed with continuous cat-gut sutures in peritoneum, interrupted sutures of the same material in the fascia, while the subcutaneous tissues and skin were coapted with sub-cuticular silkworm gut, a few horsehair sutures being used in the skin. The operation lasted about forty minutes.

The child, a boy, was readily resuscitated. He weighed 3,528 gms. (8 lbs.) and has done well ever since birth.

After-History.—There was a continuous elevation of temperature, 99 deg. to 102 deg., until the eleventh day following operation, when I gave

an intra-uterine douche, removing some particles of debris. The temperature then dropped to normal and remained there. Sutures were all removed on the ninth day, the wound being perfectly healed, and on the sixteenth day the mother was up out of bed, and has been up daily ever since.

On the nineteenth day the history was discontinued, and at this date mother and baby are both well.

I am indebted to Drs. Walsh, K. MacKinnon, Suiner and Kilgour, who gave such splendid assistance at the operation, and to the nurses, for their excellent after-care of the patients.

NOTE.—The operation done is the one described and performed by Drs. Marcœ and Davis, Surgeons to the Lying-in-Hospital, 2nd Avenue, New York, while the tube sectioning is the idea of Dr. Murdoch Cameron of Glasgow.—*The Canadian Practitioner and Review.*

Obituary : Robert Barnes, M.D.

Dr. Robert Barnes was born at Norwich in September, 1817. His father was Philip Barnes, who founded the Royal Botanical Gardens in Regent's Park. Dr. Barnes's early schooldays were spent at Bruges, where he learned to speak French fluently. He was apprenticed to Mr. Griffin, Surgeon, of Norwich. One of his boyhood's friends was the late Dr. George Roper. He studied medicine at University College, London, and at St. George's Hospital. He learnt chemistry at the Royal Institution, where he took the first prize. Having become a member of the Royal College of Surgeons, he went to Paris in 1842, and there remained, supporting himself by his pen, living on £1 a week, and studying medicine, surgery and obstetrics (the latter under Paul Dubois) for a year. He became M.D. of London in 1848. He started in general practice at Notting Hill. He was determined to be a teacher; and after some disappointments and much hard work he was appointed Lecturer, first on Forensic Medicine and then on Obstetrics, at Dermott's School (one of the private medical schools of London). In 1850 he was appointed Physician to the Western General Dispensary, Marylebone, and removed from Notting Hill to Gloucester Terrace, Hyde Park. He obtained an appointment on the staff of the *Dreadnought* hospital ship. In 1857 he joined the Metropolitan Free Hospital. These were, however, only temporary steps in his life. The opportunity which determined his life's chief work came in April, 1859, when he was appointed Assistant Obstetric Physician to the London Hospital, and went to live in Devonshire Square and then in Finsbury Square. He became full Physician in 1863. Dr. F. H. Ramsbotham was

Lecturer on Midwifery in the London Hospital Medical School during Barnes's connection with it, and at the time the slender emoluments associated with the teaching of midwifery all went to the lecturer. Moreover, the London Hospital was then a very small school. In 1865 the post of Obstetric Physician to St. Thomas's Hospital and Lecturer in Midwifery, became vacant by the death of Dr. Waller. The Assistant Obstetric Physician, Dr. Gervis, was then a very junior man, had held office but a short time, and had therefore but little clinical experience. The St. Thomas's Hospital Medical School was then a larger one than the London, and there was some direct remuneration attaching to the senior post. These were among the considerations which induced Barnes to accept it, for consulting practice was slow in coming to him. About this time he removed to Grosvenor Street. He held office at St. Thomas's till 1875. He felt strongly that those who were responsible for the treatment of diseases of women ought to be allowed fully to carry out such treatment, and therefore to be untrammelled in their judgment; in other words, that obstetric physicians ought to be allowed to operate. At St. Thomas's, liberty in operating was denied to the obstetric physician; and therefore Barnes transferred his services to St. George's Hospital, where he was given a free hand in this respect. He became Consulting Obstetric Physician in 1885. Dr. Barnes became a member of the Royal College of Physicians in 1853, and the esteem in which he was held is indicated by the fact that he was elected a Fellow as early as 1859, and that in 1877-78 he served as Censor. Only three Fellows senior to him remain. He died at Eastbourne (where he had been for some years living in retirement) on the 12th of May, in his 90th year.

Dr. Barnes first became widely known to the profession by the publication in 1869 of his "Lectures on Obstetric Operations." In this great work the author described not only operations, but the conditions which call for operations. If for nothing else, this book would have a permanent value from the fulness with which the history and literature of the subject are given. But it is much more than a bibliographical compilation. Barnes brought original thought to bear on each subject, and expressed himself in a clear, vigorous, and yet graceful, style. The book attracted, nay charmed, its readers at once. It was translated into nearly every European language, and brought Barnes a world-wide reputation. The weakness of this brilliant book was that the author sometimes theorized in his arm-chair without testing his thoughts by actual experiment. He described a method of delivery by cutting the foetal head into slices with an *écraeur*, which neither he nor anybody else had ever done in an actual case of obstructed delivery. Barnes wrote easily and sometimes

hastily, as when he said: "Surely no one can doubt that the traction power, and therefore the compressive power, acquired by pulling on the legs and trunks, is greater than can be exerted by the strongest forceps." Matthews Duncan had, before this was written, found by experiment that a traction power of about 120 lb. would sever the neck of any child, but the force that can be applied by a properly applied forceps is unlimited. But notwithstanding occasional slips like these, the work as a whole was a great one.

In 1874 appeared Barnes's greater, perhaps less popular work, that on "Diseases of Women." The subject of this work was more extensive and less simple than that of "Obstetric Operations." This book, no less than the former one, showed the author's wide acquaintance with the work of those who had preceded him in the field. There were books by other authors of which the same thing could be said. But Barnes did more than quote books. He ransacked the shelves of museums, and interrogated the specimens. Where he found a specimen that answered a question he drew it (for he was a good draughtsman) and put the drawing in his book. At the time the book was written operative gynaecology was in its infancy. Barnes himself had not begun to operate. The practice of gynaecology then consisted too much in the use of the speculum and caustic and of pessaries; and this feature was reflected in Barnes's book. But, whilst recognizing this, the book must be acknowledged to be a great one; it involved enormous labour, and was richer in pathological and clinical information than any book on the subject that had previously appeared.

On these two books his fame rests, and it rests on a firm and solid foundation.

Dr. Barnes was a facile and prolific writer. He delivered the Lettsomian Lectures on Placenta Prævia, the Lumleian Lectures on the Convulsive Diseases of Women, and many other papers, lectures and addresses. He was for many years on the staff of the *Lancet*. He was always interesting, for his style was clear and vigorous, and he theorized easily and ingeniously. His best work is incorporated in the two great works mentioned above. He published, in conjunction with his son, a work on "Obstetric Medicine and Surgery," but this, mainly from deficient proof correcting, was not a success.

Robert Barnes was one of the founders of the Obstetrical Society of London, and was its fourth President. For many years his masterful individuality dominated the Council and the debates of that Society. He took the leading part in the proceedings which purged the Society of Mr. Baker Brown. In the early eighties influences arose which weakened the sway of Barnes at the Council. He therefore in 1885 founded the British

Gynæcological Society, of which he became the Honorary President, and practically ceased to attend the meetings of the Obstetrical Society of London.

At the time when the Royal College of Surgeons gave a diploma of "Licentiate in Midwifery" to those who could pass an examination in midwifery, Barnes, Arthur Farre and Priestley were the examiners. Some women, not qualified to practise, proposed to present themselves for this examination, and the College was willing if they passed it to let them have the diploma, thus creating an order of persons qualified to practise midwifery alone. As soon as this came to Barnes's knowledge, he at once resigned his examinership, and his colleagues, Arthur Farre and Priestley, when they heard what he had done, followed his example. The President of the Obstetrical Society, to whom fell the melancholy duty of delivering an obituary notice of Arthur Farre, in dealing with the above-mentioned episode, only stated that Arthur Farre had resigned, and did not say that his resignation followed that of Dr. Barnes. This omission so wounded Dr. Barnes that a few years before his death he resigned his Fellowship of the Obstetrical Society, because the Council of the Society could not discover a way of rectifying what Barnes chose to consider a mis-statement, although it was perfectly accurate so far as it went.

Barnes was a big man, physically and mentally. He had a strong will, great power of work, large knowledge, independent judgment, fluent and vigorous speech. He had a great belief in himself. He was frank and outspoken, indeed a little brusque in manner. He was not remarkable for manual dexterity, and for these reasons his practice was never so large as from his great reputation might have been supposed. He was a man of much public spirit, and this led him to take a prominent part in many matters of controversy not specially relating to his own line of practice such as hospital administration, vivisection and the constitution of the University of London. For several years he was Medical Officer of Health for Shoreditch, and during this time he threw himself with zeal into the study of sanitation. He was an honour to his profession, and his profession honoured him.

He was twice married, and children of each marriage survive him.—
G. E. H.—*The Journal of Obstetrics and Gynæcology*.

Rises of Temperature during the Puerperium.

RYDER (GEORGE H.). *Surgery, Gynæcology and Obstetrics*, January, 1907.—The author discusses some of the commoner conditions which cause rises of temperature in the puerperium:—

1. *The reactionary temperature.* This corresponds to the reactionary temperature after an operation, and is probably due to lowered resistance of the body. The temperature may rise to 101° — 102° or even to 103° F., but it drops almost immediately to normal.

2. *Temperature from distended breasts.* This occurs on the third or fourth day, when the milk suddenly comes into the breasts. Many authors deny that there is any so-called "milk-fever," but the author says that a rise of temperature is so often seen with the sudden distension of the breasts where there is no indication of sepsis, that the breast condition is undoubtedly the cause of the rise.

3. *Temperature due to mastitis.* This usually occurs on the eighth day or later, and is often preceded by a chill. Previous distension of the breast or a cracked nipple will usually be found to have existed as a predisposing cause.

4. *Temperature due to pyelitis.* Occasionally the temperature is irregular, from 101° to 104° , and yet the lochia, breasts and uterus are normal, but the patient complains of pain over the kidney, usually the right one. The urine will be found to be acid, and to contain the bacillus coli communis and some pus cells.

5. *Temperature due to puerperal toxæmia.* By this the author does not mean toxæmia from defective liver or kidney action, as in eclampsia or albuminuria, but the absorption of toxins from the uterus. Some of these toxins are of pyogenic origin, and some are of putrefactive or saprophytic origin. The condition is a local one. The bacteria are confined to the uterus, and the trouble is caused by absorption of the toxins. This condition is usually spoken of as one of sapræmia. Under this heading he speaks of (a) temperature from simple retention. The uterus is large and flabby, the lochia are scanty and foul. Some placental tissue or membrane may be found in the uterus. [We fail to see that simple retention is the cause of the rise of temperature in such cases. The real cause is absorption of toxins. So long as a retained piece of membrane or placenta remains aseptic the temperature will not rise]. (b) Temperature from ante- and retroflexion of the uterus. He says that during the latter part of the puerperium temperatures may occur from lack of drainage due to ante- or retro-flexions of the uterus. [We doubt if this ever occurs without sepsis being present. It is quite true that in such cases the temperature falls when the uterus is douched out, because the infecting material is washed out.] (c) Temperatures from excitement. He says that mental excitement is apt to cause a rise of temperature, and after the excitement passes off the temperature persists.

The excitement seems to cause a relaxation of the uterus without affecting the cervix, and there is a retention of lochia. Mental excitement undoubtedly causes sudden rises of temperature, but in the majority of cases the temperature quickly falls again. If it persists we believe there is a septic element present. The resisting power of the tissues has been lowered by the fever, and septic invasion has been rendered easy.

6. *Temperatures due to bacteriæmia.* Under this heading he deals with cases where the bacteria themselves have escaped from the uterus, and are found in the tissues outside of the uterus or in the general circulation. He considers cases of septicæmia, localized infections outside of the uterus, salpingo-oophoritis, pelvic cellulitis and phlegmasia alba dolens.

[There is another cause of a rise of temperature which he has not mentioned, *viz.*, intestinal absorption.]

He says: "Careful asepsis, a uterus empty at the end of labour, and conscientious repair of recent lacerations (avenues of infection) will make sepsis rare. Hæmorrhages can be stopped, lacerations may be sewn up, but sepsis must be prevented."—*The Journal of Obstetrics & Gynecology.*

The Urine in Pregnancy.

Sondern (*Bull. Lying-in Hospital, New York, December, 1906*) considers that the recent advances in the chemical investigation of urine in pregnancy are of high value to the obstetrician in his work. It is now a recognised fact that intestinal auto-intoxication, intestinal toxæmia, or faulty intestinal metabolism, is the cause of a distinct train of symptoms and often explains other obscure manifestations. When it is recalled with what facility gastro-intestinal disturbances are occasioned in pregnancy and that intestinal auto-intoxication frequently seems to be the forerunner of the toxæmia in pregnancy, if not more closely allied in the etiology, the necessity for early diagnosis of the condition is apparent. The diagnosis is assisted by the recognition in the laboratory of a relative excess of ethereal sulphates in the urine. Every examination of urine in pregnancy should include a test for indoxyl sulphate and skatoxyl sulphate. A quantitative estimation of the mineral and ethereal sulphates is more accurate, but too laborious for the clinician. A depression in the ratio of mineral and ethereal sulphates, or an excess of indoxyl sulphates in the urine, being accompanying factors only, and not directly concerned in the causative element of the symptoms, may be brought about by other causes, and do not necessarily indicate a specific pathological process. Their corroborative value in the diagnosis of intestinal auto-intoxication is

undeniable. It is now admitted that the appearance of albumen and casts in the urine does not necessarily indicate an inflammatory lesion of the kidney. A normal kidney with normal circulation, innervation, and blood, does not excrete albumen, but slight disturbances of the circulation, or innervation, or in the quality of the blood may cause the kidney to pass albumen with or without casts, thus indicating disturbed function, not necessarily an inflammation of the parenchyma. Faulty body chemistry, chemical changes or toxins in the blood may result in albuminuria with casts; about 50 p.c. of pregnant women show it at some time during their pregnancy. The special causes are to be found in circulatory disturbance, faulty innervation, irritating excretory products, and increased functional activity. The numerous possible causes complicate diagnosis and the apparent physiological retention of nitrogen towards the end of pregnancy adds another difficulty. The pyelitis of pregnancy resembles typical pyelitis generally; there is almost invariably a bacteriuria, generally due to bacilli of the colon group. Transitory glycosuria is not uncommon, and accompanies other faulty metabolism. Diabetes Mellitus takes the same course in the pregnant as in the non-pregnant, and exacerbations are as liable to occur in the one as in the other; when parturition is approaching, the attention should be directed towards avoiding an acidosis. Discussion on this part of the subject centres on which element of the faulty metabolism is most constantly found in the urine, and if the degree of its presence is a true indicator of the degree of toxæmia it accompanies. One observer laid stress upon the relative amount of amido-acids, another upon the relative amount of ammonia, while others consider the degree of acidosis a guide to the severity. When the toxæmia of pregnancy occasions symptoms other than hyperemesis, there may be neither starvation nor inanition, but there is invariably acidosis. Partial starvation, inanition and many other causes may occasion the same changes in metabolism noted in the toxæmia of pregnancy; these changes must therefore be considered an aid in diagnosis and a positive indicator. Proof is lacking that the degree of fault in the nitrogen partition or the type and degree of acidosis is always in the direct ratio to the degree of toxic infection, and the patients vary in susceptibility to this as to other toxins. The routine examination of the urine of pregnant women should include a search for evidences of faulty metabolism; on the occurrence of any of the clinical signs of toxæmia the degree of acidosis should be determined, and should this increase, then a repeated nitrogen partition will help to determine the point beyond which it is not safe to allow the patient to go.—*The British Medical Journal.*

When to get up after Delivery.

PIERRA (*Prov. Med.*, March, 1907) discusses the important subject of how many days after her confinement a woman may begin to get up. Most of the authorities have advised that the rest in bed be as prolonged as possible, giving as a reason that the involution of the uterus is not complete until eighteen or twenty days after delivery. In the leisured class it is not unusual to find that twenty-five to thirty days is the period prescribed. It is, however, conclusively shown that involution is complete by the fourteenth day after the confinement at the very latest. Pichevin has pointed out the disadvantages of prolonging the dorsal decubitus; it favours congestion and blood stasis in the pelvis, and a large uterus which is weighty, and of which the ligaments are relaxed, may undergo a more or less serious retrodeviation; also it exposes the patient to the inconvenience of sub-involution. The dorsal position will induce a hypostatic congestion of the uterus, especially if it be retroflexed, which is analogous to the hypostasis of the pulmonary parenchyma, and which may be termed uterine hypostatic œdema. Women of the more leisured class suffered specially from neuro-arthritic affections, and the tendency to congestion is met with only too frequently. It is possible to exaggerate the length of time in bed necessary after parturition; and, unless contra-indicated, it is the author's custom to allow patients to get up towards the end of the second week with beneficial results.—*The British Medical Journal*.

OPHTHALMOLOGY.**On the Rupture of the Membrana Descemetii due to High Intraocular Pressure.**

By

ADOLF ALT, M.D.,*

ST. LOUIS, MO.

Within the last twelve or fifteen years a number of papers have been published dealing with fissures and ruptures of Descemet's and Bowman's membrane due to high pressure and consequent stretching. Such fissures have been found especially in cases of buphthalmos, in high-grade myopia and in cases of glioma retinae.

As with other observations it is strange that some observers have been able to see so many of these fissures and others so few. Ever since Wintersteiner described and pictured the fissures which he found in cases of glioma I have carefully examined every one of my cases without result.

* Read before the St. Louis Ophthalmological Society; May, 1907.

It is, also, strange that in cases of glaucoma in the adult with enormous pressure I have never been able to find any such fissures in Descemet's membrane, nor in a large series of eyes containing an intraocular tumor.

It is, therefore, plain, it seems, that high pressure cannot alone be responsible for such an occurrence; other conditions must favour it, such as the softer tissue of the child, and probably some disturbance in the nutrition of the corneal tissue.

It is only recently that it has been my good fortune to find such fissures in a case of glioma in the eye of a child 15 months old.

The child was brought to me on account of an enormous kerectasia. There were two double contoured gray lines visible in the back of the cornea which ran almost concentrically with the corneal periphery, the one about 2 millimeters inward from the temporal and the other about 3 millimeters inward from the nasal margin. The temporal one was longer and better visible than the nasal one. I suspected from this picture that I had before me a case of rupture of Descemet's membrane from high intraocular pressure.

While the cornea was hazy throughout I felt certain that I could see a growth in the depth of the vitreous chamber. Tension was decidedly increased. I advised enucleation.

After the enucleation of the eye I found that I was not mistaken, as to the tumor. There was a good sized glioma of the retina which in one part reached forward to the posterior surface of the lens periphery.

A large number of sections of the anterior half of the eyeball showed the characteristic results of ruptures of Descemet's membrane.

The ruptured ends of this membrane were either rolled up spirally towards the cornea or simply projected straight into the anterior chamber. It seems evident from the closeness with which the overlying corneal lamellæ are packed and their stretched out, I may say, straight appearance that at the time the ruptures occurred, the cornea was to some depth, also, torn. That these ruptures must have occurred a considerable time before I removed the eye is evidenced by the fact that not only are the ruptured ends covered with endothelium, but a new Descemet's membrane covers the whole gap between these ends, which in turn is also covered by a layer of endothelium. The newly found membrane and the endothelial lining do not differ from the pre-existing normal ones.

Just opposite these ruptures in Descemet's membrane the layer of Bowman is also wanting for some distance and the corneal tissue is simply covered with epithelium. There is no longer a possibility to engage

in the controversy whether in such ruptures the posterior margins of Bowman's layer are closer together than the anterior ones, thus forming a funnel with base outward, or the reverse. The ends are simply covered over with epithelium and show nothing characteristic.—*The American Journal of Ophthalmology*.

Yellow Glasses.

MOTAIS (*L. Ophtalmologie Provinciale*) declares yellow glasses are indicated in cases of retinal hyperæsthesia and in all cases of internal disease of the eye in which blue or smoked glasses have been heretofore prescribed. He also advocates their use in motoring and mountaineering, where snow glare is to be encountered. The yellow should be of such a tint that it appears slightly orange by transmitted light and brownish by reflected light. Such glasses increase the apparent illumination of the objects seen by the eyes, and yet feel soft on use. Analyses of the spectra of various tints of colored glasses show that the violet end of the spectrum is shortened by all tints while the red end is unaltered. The rays which irritate the retina seem to be the chemical ones, and these are largely cut off by the yellow tints of glasses.—*The Medical Review of Reviews*.

Treatment of Trachoma.

SMITH has had excellent results in the treatment of trachoma from the use of boric acid and protargol, the former for its mechanical effects, the latter for its chemical. After instilling cocaine, a probe or match is mounted with absorbent wool twisted into a firm olivary knob. This is soaked in a 25 per cent. solution of protargol and then dipped in boric acid, which coats it over. The eyelids are everted and then swab is rubbed over the whole surface of the palpebral conjunctiva until bleeding is produced. This causes a uniform scarification of sufficient intensity and little likely to cause scarring. The treatment is repeated daily. As the condition improves and the lids get smoother, the use of the boric acid is abandoned. SMITH condemns the use of copper sulphate and silver nitrate.—*Australasian Medical Gazette*.

OTOLOGY.

Some Remarks on the Drainage Method in the treatment of Acute Middle Ear Disease.

BY

ALFRED WIENER, M.D., NEW YORK.

The interest that is always manifest in the consideration of matters pertaining to this important subject, has led me to record more fully than heretofore, some observations made in regard to the treatment of this important class of cases. There is still an honest difference of opinion in regard to whether we should use what is termed the irrigation system of treatment, or what I shall designate as the simple drainage plan. My own preference is decidedly in favor of the second method, viz., the drainage plan. About three years ago I suggested a form of treatment in which this method was the sole object. Since that time I have had further experience with such a plan of treatment, and the satisfaction which has been derived therefrom has persuaded me to emphasize its practicability.

It is to a certain extent possible by means of such a plan, based as it is upon sound and strict surgical principles, to avoid at times not only the persistence of suppuration in the middle ear, but also to reduce to a minimum the chances of more serious complications. The causes which most frequently contribute to the persistence of such suppuration within the middle ear, have long been recognized by otologists. BARR has stated them most completely in his manual on diseases of the ear. They are: (1) the smallness and unfavorable position of the perforation, if present, preventing the escape of the purulent secretion; (2) the formation of exuberant granulations and polypi; (3) retention and decomposition of the purulent secretion; (4) the formation of adhesions and septa which may partition the ear into several spaces, retaining or enclosing part of the secretion and thus increasing or aggravating the disease; (5) bad hygienic conditions, together with neglect of treatment. All these causes can to a certain extent be properly dealt with or avoided if we try to assist the tympanic cavity in getting rid of its purulent contents.

Assuming that the diagnosis of acute otitis media has been confirmed, if the local and constitutional symptoms are of a mild character, relief or even an abatement of the inflammatory process can be obtained at times by the simple instillation of a ten per cent. solution of carbolic acid in glycerin into the external canal. About ten drops of this solution are dropped into the canal and allowed to remain there for about five minutes, and the canal is then sealed with absorbent cotton. This procedure is

repeated about every four hours. A two per cent. solution of menthol in albolin often answers the same purpose.

When neither of these procedures gives relief, an occlusive wet dressing of a ten per cent. solution of liquor Burowii (aluminum acetate), including a strip of gauze moistened with this same solution and placed within the canal and bandaged over the ear, should be tried. Such a dressing usually quiets the patient, and at the same time exerts an antiphlogistic action upon the inflamed surfaces. It will not obscure the clinical picture of the tympanic membrane, nor will it disguise any important symptom which may call for further interference. If within a period of twenty-four hours there is no improvement, and the pain, temperature and bulging of the tympanic membrane assures us that the condition has become aggravated, then the time for a paracentesis is at hand, and we should not delay. If, on the other hand, the wet dressing does afford relief, and the appearance of the tympanic membrane shows an abatement of the inflammatory process, then the wet dressing should be continued for twenty-four hours. Thereafter the outer dressing should be replaced by a plug of cotton and the gauze within the canal kept moist with the ten per cent. solution of aluminum acetate for thirty-six hours more, as is deemed necessary. The patient should be cautioned about exposing himself for about one week, after which the Politzer bag should be employed to establish a normal relation of the parts.

Let us suppose that the case is of such a nature that a paracentesis is indicated. We should then proceed in the following manner: First, in order that the operation may be properly performed, there must be a proper fixation of the head with good illumination. We should, therefore, whenever it is possible, place such patients under the influence of a general anesthetic. The operation is extremely painful, and it is almost an impossibility to fix the head and hold it firmly without the assistance of such an agent. In young infants and children, where it is difficult at times to obtain a proper view of the membrane, and where the insertion of a fair sized speculum is painful, these children will squirm and twist so that it is quite impossible to place the incision accurately. Occasionally one will meet with a case where a general anesthetic is contraindicated. Here the subcutaneous injection of cocaine and adrenalin, as practiced by NEUMAN in operations upon the middle ear, will often answer the purpose. The injection is preceded by spraying the canal with chlorid of ethyl. I have used this method in private and in clinical practice, but cannot recommend it as a routine procedure, as it too often fails to produce complete anesthesia.

For cleansing the external canal, a weak solution of lysol or a 1-500 solution of bichlorid of mercury in alcohol will answer the purpose. It is

well to remember that a thoroughly aseptic field in this region is an impossibility. After the cleansing process is completed, one should introduce under good illumination the largest size speculum that can be inserted without injury to the canal. One is now ready for the incision in the tympanic membrane. The instrument which I prefer for this purpose is the sickle-shaped knife, mounted preferably in the straight handle. This permits of more delicate and direct manipulation than the knife mounted in the bayonet handle. The incision is made in the lower quadrants of the tympanic membrane, first of all because this region is practically the lowest point for drainage, and secondly, no harm can be done to the promontorial wall if it is abraded. On the other hand, an incision made too deeply in the upper quadrant posteriorly, might disturb the ambo-stapes articulation, or, in the hurry in which this operation is done by one with insecure and unskilful hand, it may even do more serious damage. It may happen that the bulb of the jugular vein projects so far within the tympanic cavity that it may be wounded when the incision is made in the lower quadrants. Such an occurrence is so rare that the mere mention of such an accident is sufficient. The hemorrhage which may ensue can easily be controlled by tamponing the canal. If any one portion of the tympanic membrane bulges considerably forward that portion should be incised. If it is not possible to make the incision as described above, one should make a good-sized curved incision extending downward through the posterior quadrants. It is always better to make the incision curvilinear. In this way the edges of the wound are made to gape, due to contraction of the radiating fibers of the tympanic membrane, and thus the perforation remains open. After the incision, the canal should be carefully cleansed of blood and secretion. A piece of gauze, rolled in the form of lead pencil, varying in thickness according to the size of the canal should now be used as a drain. These drains are dipped into a ten per cent. solution of liquor Burowii and then introduced by means of a delicate forceps into the canal close up to the incision. The projecting end is coiled up within the concha. Over the entire ear and mastoid process, a dressing wet with the same solution is placed and covered with rubber tissue, and a bandage is applied. This is allowed to remain for twenty-four hours. Such a dressing accomplishes two things. First, it acts as a drain, and second, it serves as an antiphlogistic measure.

In addition to the local treatment, the internal medication resorted to consists in a proper elimination of the contents of the bowels by means of ~~of~~ ^{of} ~~the~~ ^{the} ~~bowel~~ ^{bowel} followed by a saline cathartic. After twenty-four hours the outer dressing is moved together with the drain, the canal carefully wiped with a cotton applicator, which at first is used dry and then

moistened with peroxid of hydrogen. In order to remove the secretion from behind the tympanic membrane, I resort to aspiration. I employ for this purpose an instrument which I recommended some time ago, but now use with some modifications which enable one to thoroughly sterilize it. It is practically a Siegel's speculum, but is manufactured after the pattern made by Windler of Berlin. Messrs. Tiemann & Co. have so constructed it, that it can be taken apart and boiled, while the lens within is dipped into any reliable antiseptic solution. With this method of aspiration, *one can control the manipulation*. One should not try to accomplish this delicate procedure by means of a suction syringe which, it is not necessary to explain, might do harm to the delicate structures of the middle ear. I continue the aspiration until the secretion has ceased to appear within the canal or assumes a pinkish hue. Should a drop of blood appear, no harm is done, but to continue beyond this point only causes unnecessary pain, and nothing is gained except to close the perforation with a clot which defeats the purpose of drainage.

After the aspiration is finished and the canal has been cleansed, the same dressing is applied to the ear and repeated daily three or four times, as is found necessary, until the very acute symptoms have disappeared. The outer dressing is then discontinued and replaced by the drain within the canal, and a piece of absorbent cotton within the concha. This cotton is changed by the patient during the following twenty-four hours, whenever it becomes soiled. The canal is then cleansed thoroughly, and aspiration is resorted to once daily by the physician in charge. The strip of gauze within the canal is kept moist with a two per cent. solution of boric acid, dropped thereon about every two or three hours by the patient or attendant. This serves the purpose of assisting the drainage and keeping the pus in more fluid condition.

As soon as the acute symptoms have subsided, I resort to inflation with the Politzer bag. The benefit of this is soon apparent by the rapid restoration of the diseased parts to their normal condition. When the secretion has almost ceased, the gauze is discontinued and a very small amount of boric acid is blown into the canal. Almost within forty-eight hours thereafter one will find the canal dry.

Are any of the features of this method of treatment objectionable? First of all, in regard to the placing of a strip of gauze within the canal for the purpose of drainage, the argument offered against this procedure is that one should not tampon the external auditory meatus. This criticism would be perfectly fair if one placed the gauze strip in such a manner as to tampon the canal. If one places the gauze strip as directed he will very soon recognize if he observes the outside dressing stained

with the discharge, whether or not there is any stagnation within the canal. I have convinced myself over and over again that this does not occur. In young children such a method of drainage has an especial advantage over irrigation of the canal. Irrigation is painful. The amount of persuasion necessary before it can be properly accomplished in young children, and even in adults at times, is sufficient to tax one's patience. In the majority of cases where irrigation is used just what is sought for is not accomplished. Such canals are always found filled with secretion when the time for the next irrigation is due, and soon an eczematous infiltration presents itself at the external orifice. Furthermore, no matter how bland the fluid is, if one will take the pains to observe carefully he will notice that instead of diminishing the edema within the canal, irrigation encourages it. Furthermore, it stimulates the growth of granulation tissue.

In regard to the use of the Politzer bag for inflation after the acute symptoms have subsided, I have yet to observe the case where this procedure has caused the slightest aggravation of symptoms. On the contrary, the patients will express themselves as feeling more comfortable. The rapidity with which the discharge lessens, as soon as one is able to resort to this procedure, convinces one of the rationale of this method. It is the only method which assists the eustachian tube in getting rid of its secretion, and also that which remains in the tympanic cavity after aspiration. Such a tube, filled with a stagnating secretion, will often exert a baneful effect upon the tympanic cavity, unless properly cleansed. When there is a sufficiently large perforation in the tympanic membrane and the Politzer bag is used, such statements as have been made that pus will be blown into the mastoid and thus cause mastoiditis need hardly be considered. Experiments which have been made upon the cadaver, and the daily experience of those who are constantly treating subacute and chronic conditions of the ear with the Politzer bag, and even the catheter, speak entirely against such an occurrence. I have treated over 500 cases with this method, and I have up to the present time not observed a single case in which I can attribute a mastoiditis to this procedure.

One word in regard to this method of treatment in our clinical practice, where the patients are seen on an average only three times a week. Imagine for a moment these people, ignorant as they are for the most part, being told to practice irrigation of the ear! They certainly cannot be taught how to regulate the pressure. They will use unclean vessels and, probably, an unclean syringe and unclean water, either too hot or too cold; and they will return with ears that are foul with secretion. In the majority of cases a bad eczema at the orifice of the

canal, extending at times over the auricle, will be found. Last, but not least, these are the patients that furnish us with our serious complications following acute middle ear disease. On the other hand, however, how simple a matter it is to tell them that after the outside dressings are left aside, to simply wash their hands, and every time the cotton within the concha becomes soiled to replace it with a fresh wad of cotton, and twice a day to drop within the canal the boric acid solution. I have followed this routine in my clinical practice and have every reason to feel that it is superior to the irrigation method.

I do not wish to claim any originality in regard to the methods of treatment offered in this paper. The plan is original, but the methods are such as have been and still are employed in many of our clinics. They particularly suggested themselves to me because I believe they are based upon true surgical principles. One word I wish to add, and that is, that the treatment is not supposed to be so ideal that every case will respond. There is no such ideal treatment. I do believe, however, that it offers greater chances of success than other forms that I have employed, but that there is still room for improvement.—*The American Journal of Surgery.*

THE ANTISEPTIC.

AUGUST, 1907.

The Etiology of Diabetes.

A Recent Theory.



DIABETES ever has been, and will always be, interesting to medical men in this country. Plague may claim a larger number of victims; Piroplasmiasis may attract by its novelty. But there is something inscrutable about Diabetes that sustains our scientific interest in this relentless malady. The fact that Diabetes Mellitus was known to medical men both in Europe and Asia from the time of Celsus and Susruta, and that up to the present moment its true etiology and pathology remain unexplained, and its satisfactory treatment undiscovered, is likely to enhance the interest which its complex nature and disastrous course are certain to arouse in the minds of physiologists, pathologists and clinicians alike. That Diabetes has absorbed, and is absorbing, the attention of medical men all over the world is proved by the fact that within the last 60 years no less than five different theories have been advanced to account for its etiology. The first of these theories was advanced by Claude Bernard. Bernard discovered sugar in the liver after death, and he proved that during life this sugar existed in the liver in the form of glycogen. He believed that glycogen was constantly being converted into sugar during life. And when the liver was unable to convert glucose into glycogen or to convert glycogen freely into glucose again, too much sugar found its way into the blood, and the phenomenon of Glycosuria was the result. That is the famous Glycogenic theory of Claude Bernard. Then came Dr. Pavy who disputed the conclusions of Claude Bernard, and denied the conversion of glycogen into sugar as a physiological process.

According to Dr. Pavy no sugar can circulate through the renal vessels without being eliminated, and if there is no sugar—or, at all events, no appreciable quantity of sugar—eliminated in the urine in a healthy person, it is because there is no appreciable quantity of sugar in the blood to eliminate. Dr. Pavy divided the stages of carbohydrate assimilation roughly into four. First, the ferments in the alimentary canal hydrolyse

the carbohydrates and convert the insoluble into the soluble form and prepare them for absorption. After absorption the carbohydrates are brought within the protoplasmic action of the active cells of the villi and are transmuted into a lower form of hydration, transformed into fat and synthesised into proteids. Thus the carbohydrates are completely disposed off in health, and no sugar, as such, gets into the general circulation, and no sugar is eliminated in the urine. The carbohydrates that escape without undergoing this process in the villi of the intestines get into the liver and are then converted into glycogen, which in its turn is formed into fat and synthesised into proteids. If, on the other hand, the protoplasmic action of the cells on the carbohydrates is imperfectly accomplished, there is faulty assimilation of the carbohydrates, and sugar will appear in the general circulation and be eliminated in the urine, giving rise to Diabetes. That is Dr. Pavy's theory, according to which the faulty protoplasmic action of the active cells of the villi is the real cause that leads to Glycosuria. Then came the experiment of puncture of the floor of the fourth ventricle, which gave rise to Glycosuria and the theory of the nervous origin of Diabetes based on that and similar experiments on the central nervous system of various animals.

Then followed the Pancreatic theory of Diabetes. The researches of Von Mering and Minnkowski demonstrated the fact that complete removal of the pancreas is always followed by Glycosuria. But they also proved that a small part of the pancreas left behind, even though the duct be removed, prevents the appearance of Glycosuria. It was Lepine who suggested that the pancreas secreted a sugar-destroying ferment which was absorbed by the veins and carried to the liver. Opie has noticed that it is only diseases of pancreas which involve destruction of the islands of Langerhans that produce Diabetes. These islands of Langerhans were supposed to secrete an internal pancreatic secretion which was distributed through the blood to the tissues where it influenced carbohydrate metabolism in some way. But according to Dr. Halliburton "these islets are only phases in the life history of the ordinary secreting acini," and, as such, their share in the production of a special internal secretion cannot be accepted without further and more convincing evidence. But now comes a new theory advanced by Dr. Arnold Lorand of Carlsbad. According to Dr. Lorand: "There are two important pathogenic factors in Diabetes—(1) degeneration of the pancreas; (2) Hyperactivity of the thyroid. If the pancreas alone is degenerated and there is no hyperactivity of the thyroid, the diabetes will be a light one. This is the case of the diabetes of old persons If, in addition to the pancreatic degeneration, the thyroid is overactive, the diabetes will be

severe. This is the case in young persons whose thyroid is in good working order." So says Dr. Lorand. Dr. Lorand gives the results of many experimental and clinical observations in support of his theory. According to him, and to several other observers: (1) Diabetes was produced by treatment with large doses of thyroid extract. (2) Diabetes is common in all conditions of hyperthyroidea, and rare in the opposite condition of athyroidea. (3) The increase of glycosuria during menstruation, lactation, and occasionally during pregnancy, is due to the increased thyroid function accompanying these functions. (4) Glycosuria occurs often during biliary colic on account of the fact that stagnation of the bile causes an increased secretion of thyroid colloid. (5) After thyroidectomy in a goat, the milk gets poor in sugar but rich in fat. And so on, and so forth. But Dr. Lorand's statement that "Diabetes will more readily occur in persons who take much meat, especially if they take large quantities of carbohydrates" will be read with much interest in Madras. Having come to the conclusion that overactivity of the thyroid is one of the main causes of Diabetes, Dr. Lorand has employed the antithyroidin serum of Moebius in the treatment of Diabetes. The preparation is made out of the milk of goats after thyroidectomy, we are told. As the result of treatment by this method "the nervous symptoms have been ameliorated, especially the insomnia, and the Glycosuria has diminished or has disappeared." And so that is the latest about Diabetes. The liver, the intestinal villi, the floor of the fourth ventricle of the brain; the pancreas, and the thyroid gland have all been accused in turn of being concerned in the production of Diabetes. So far as the latest recruit to this gang of accused, namely the thyroid gland, is concerned, for the present it is impossible to return any other verdict except that safe Scottish verdict of 'not proven.' Probably all the theories are correct and there may be more than one variety of diabetes. As Dr. J. R. Bradford says "Diabetes is not an entity, but a clinical label, attached to a number of different conditions, with probably varied origins, different morbid anatomy, and liable to follow different courses." We have all along felt that Tropical Diabetes, as observed in India, differs in several important respects from Diabetes occurring in Europe. Probably their origins are different.

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Original Articles.

• THE DIAGNOSIS OF SMALL-POX.

BY

J. D. ROLLESTON, M. A., M. D., OXON.

*Assistant Medical Officer at the Grove Fever Hospital of the
Metropolitan Asylums Board, London.*



THE freedom from smallpox enjoyed by a well vaccinated community accounts for the lack of familiarity that many medical men have with the disease. Consequently on the outbreak of an epidemic many cases escape observation or are diagnosed as influenza, chickenpox, or measles, while the hæmorrhagic forms may be regarded as purpura or septicæmia. Mistakes of this kind are of danger to the community and are the causes of the dissemination of the disease. The alarming rapidity with which smallpox spreads was well exemplified in the London epidemic of 1901-1902. During the first five months of the year London was practically free from the disease, but in the autumn cases were notified daily, rapidly increasing in number, till by the end of the year 714 patients were under treatment. The increase continued during the beginning of 1902, reaching its climax in March, when there was a daily average of 62 admissions. * The highest number of cases under treatment at one time was 1604. A marked decline took place in the summer, and was maintained in the autumn and winter, till in December the admissions hardly exceeded one patient weekly, and on December 31, only 15 patients remained under treatment. During the two years 9,659 cases were admitted of whom 1,594 died, a mortality of 16.5 per cent. The present paper is based on the experience of smallpox which I obtained while acting as medical officer in this epidemic. On their removal from their houses in London

* Specially contributed to *The Antiseptic*.

the patients were not taken directly to the smallpox hospital, but were sent in an ambulance to the receiving station at South Wharf, Rotherhithe. There the patient was examined by one of the Metropolitan Asylums Board's medical staff. If the diagnosis of smallpox was not confirmed, the patient was sent home either at once in the same ambulance or after detention for a longer or shorter period. Every case in which the diagnosis of smallpox was not confirmed on admission was at once vaccinated. Protection was thus afforded to the patient and help was given in diagnosis. The cases in which the diagnosis of smallpox was confirmed either at once or after detention were sent down the Thames by steamer to the smallpox hospitals, on reaching which the patient was again examined by another medical officer before admission to the ward. It will thus be seen that every precaution was taken to prevent a patient who was not suffering from smallpox from being exposed to the dangers connected with admission to a smallpox hospital. During the epidemic there were 844 cases of mistaken diagnosis, the percentage error of diagnosis being 13.3 for 1901, and 7.17 for 1902. The diseases most frequently mistaken for smallpox were in order of frequency chickenpox (280 cases), acne (67), measles (52) and syphilis (47), but every one of the commoner skin diseases furnished their tribute, as well as a few general diseases associated with fever, such as acute rheumatism, pneumonia and influenza. Before discussing the differential diagnosis of the particular diseases most frequently mistaken for smallpox it will be well to make a few general remarks. During the height of the epidemic when 80 cases or more were being admitted daily and a rapid diagnosis was essential, it was far more important to determine that the disease was not smallpox than to give it an exact dermatological label. It is not, therefore, surprising that there were as many as 92 cases of unclassified dermatitis to which under the circumstances it was impossible to give a more accurate denomination.

In the diagnosis of smallpox as in that of other skin diseases, four principal points are to be borne in mind:—

(1) *The history.* Was the onset sudden or gradual? Were any special symptoms, e.g., headache or backache, noted? Was there any amelioration of the symptoms after a few days? Did the patient come from an infected house or neighbourhood?

(2) *The character of the lesions.* Are the lesions of the same age and shape or are they of different size, shape, and character (polymorphism)? In the examination of a nervous disease it is not enough to say that the condition is hysteria, but one must also decide whether there is not an organic disease present as well. In like manner in a case of suspected

smallpox one must also determine whether in addition to the skin lesions that are obviously not variolous, smallpox is present as well.

(3) *The distribution of the lesions.* Is there any special area of predilection? The characteristic eruption of smallpox is most marked on the face and extremities, while the prodromal rashes are mainly found in the abdomino-femoral regions, the sides of the thorax, and axilla.

(4) *The evolution of the disease.* Many diseases can be excluded by their progress. Compared with other pustular lesions such as acne, or pustular syphilis, smallpox evolves with comparative rapidity, the pustules which succeed the papules and vesicles being soon replaced by scales. The scales in time separate, leaving pigmented marks which in course of time become pale and, unless the dermis has been involved, entirely disappear.

Let us now discuss the diagnosis of those eruptions most commonly mistaken for smallpox. In the case of chickenpox the prodromal symptoms are as a rule slight, or may be indeed entirely lacking, the eruption being the first thing to attract attention. However, this is by no means always the case. In adults the initial symptoms are frequently severe and many closely simulate smallpox. It is a remarkable fact that in this epidemic as many as 16.7 per. cent. of the chickenpox cases sent in as variola were over 18 years of age. (*Wanklyn. Brit. Med. Jour.*, July 6, 1902).

There is no doubt that the occurrence of a febrile papulo-vesicular eruption in an adult, especially during the time of a smallpox epidemic, seemed positive proof to some practitioners that the case must necessarily be smallpox. As recently as 1905 ROMBERG stated that there are no well authenticated cases of chickenpox occurring in adults.

The character of the lesions in Chickenpox. The lesions are more superficial than those of smallpox, become completely vesicular within a few hours of their first appearance, and show a crenated outline which is most marked during the desiccation stage. Further there is much greater uniformity as regards age, size and shape in the eruption of smallpox than in that of chickenpox. It is important to realise that the most characteristic lesions of chickenpox are to be found on the face, scalp and trunk. On the extremities the lesions are slower in evolution than those on the trunk, and in their appearance resemble, and are even sometimes undistinguishable from those of modified smallpox. The distribution of chickenpox is, perhaps, the most important diagnostic feature. The lesions are most abundant on the trunk, and as a rule become sparse, or are entirely wanting on the limbs, especially on the distal extremities. It is important to bear in mind,

however, that the lesions may be occasionally very abundant not only on the scalp but also on the face, causing an oedema of the features which is more frequently met with in smallpox. In rare instances the distribution of the lesions on the face and extremities may be as marked as or even more plentiful than on the trunk. The diagnosis will then have to be settled by other considerations, especially the character of the individual lesions. A few pocks on the palate or buccal mucosa are more often found than not in chickenpox, a buccal or faucial exanthem being by no means peculiar to smallpox. The evolution of chickenpox in a typical case differs considerably from that of smallpox. The life of an individual lesion in varicella is much shorter as a rule, but in severe attacks of chickenpox the evolution of the lesions may be somewhat delayed so as to resemble that of smallpox. This was strikingly exemplified in a case of confluent varicella which I have reported elsewhere. (*Brit. Jour. Child. Dis.*, Jan. 1906.)

Measles. Measles in some cases is perhaps the most difficult disease to diagnose from smallpox. On their first appearance the papules of smallpox are not always shotty, but may even have the velvety feel of measles. The injected conjunctiva and slight cough due to pharyngeal irritation produced by the developing eruption make the resemblance closer still. KOPLIK'S spots will aid in the diagnosis, but even in undoubted measles these may be occasionally wanting, or may have disappeared by the time the eruption is out. The evolution of the disease will solve the problem, but one may have to wait 24 hours.

Syphilis. Some cases of syphilis were probably sent in not only on account of the eruption but also owing to their general condition. Prostration might be a prominent symptom and the temperature might be raised. The presence of fever in syphilis, though known to the earliest syphilographers, does not even yet appear to be generally recognised. The papular syphilide most frequently, and less often the pustular syphilide, led to errors in diagnosis. The distribution of the syphilitic eruption might resemble that of smallpox, but the diagnosis was, as a rule, rendered comparatively easy by the colour of the papules, and still more so by the peripheral scaly collerette which is never present in smallpox. The characteristic polymorphism of syphilis and possibly a chancre on the genitals or primary lesion elsewhere would be of much help. The diagnosis would of course be settled by the progress of the lesions. If the case was syphilis the papules would remain *in statu quo*. In the case of smallpox they would within a short time become vesicles and pustules. The possibility of the coexistence of smallpox and syphilis must be borne in mind. The epidemic furnished many instances of this kind.

One patient whose trunk and limbs were thickly set with psoriasiform syphilides was admitted at the onset of his disease with the high fever and the marked prostration so characteristic of the onset of smallpox. It was not till a few days after his admission that the eruption of smallpox appeared. The papules first developed at the site of the syphilitic eruption.

Acne. The presence of comedones and characteristic scars, the distribution on the face and shoulders and the slow progress of the lesions point to acne. As a rule there is no constitutional disturbance, but some cases of acne were erroneously certified as small pox probably on account of some digestive disturbance manifested by headache, nausea, and pain in the back. The possibility of the coexistence of acne and smallpox must, however, always be borne in mind.

*THE TREATMENT OF ECZEMA.

BY

* A. WINKELRIED WILLIAMS, M. B. & C. M. (HONOURS) EDIN.,
D. P. H., LOND.

*Physician to the Skin Department, Royal Alexandra Hospital
for Children, Brighton, and the St. Mary's Home
Dispensary, Brighton.*

[Continued from p. 430, "The Antiseptic," Vol. IV, August 1907.]

THE OTHER FORMS OF ECZEMA, vague or varied in their etiology, are more protean in their types. Thus cases pass through one or more of the following stages:—

- I. A subjective sensation of heat and irritation.
- II. Redness and slight swelling with itching and burning. Surface may be irregularly or uniformly red, clean or slightly scaly (*Erythematous type*.)
- III. Eruption of papules and vesicles, or both. Small papules punctate area, may be conical or flat, with burnished like surface. Sometimes vesicles rapidly develop on papules. Sometime pustules form.
- IV. Vesicles enlarge and may become confluent; itching usually intense. Swelling of skin more or less marked; at times this is exaggerated when vesiculation is slight (*E. Oedematosum*.)
- V. (1) Vesicles dry without rupture, surface hardens, scaly masses are cast off leaving red tender skin, which may continue scaling or become normal. (*Cheirpompholyx*.)

* Specially contributed to *The Antiseptic*.

(2) Vesicles break, exudation in droplets, formation of fibrinous crusts.

VI. Crusts become culture media for various organisms whose products increase irritation. Pustulation and increased excoriation may follow.

VII. Exudation may be so free as to rapidly wash away crusts or not allow them to form *in situ* and a continually leeting surface is left. (*E. Madidans.*)

VIII. Reaction of surface vessels with dilation shows between crusts and under leeting thin epidermic areas as a bright red colour. (*E. Rubrum.*)

IX. Acute exudation checked, the surface dries but serum still loads the deeper parts, proper formation of horny cells awaiting, the desquamating surface cells adhere, and visible instead of invisible desquamation continues. (Scaly Eczema—*Parakeratosis.*)

X. Surface epidermis is thinned down and cracks, often associated with continued Erythema. (Cracked Eczema.)

XI. Skin thickened and deep; painful fissures may or may not form according to locality.

XII. In parts, *e. g.*, legs, where stasis from varicose veins exists, necrosis of areas leaving ulcers may occur, and hæmorrhages may form in the skin. (*Varicose Eczema—Stasis Dermatitis.*)

General Treatment. Keep patient in bed if disease is extensive, especially when trunk and lower extremities are involved. Sedatives may be required, by preference those not causing dilation of skin vessels, *e. g.*, Chloral, Sulphonal, Ammon. Bromid., Phenacetin; an exception to this is chronic varicose ulcers of the leg when opium is often most useful. Bedroom should be kept cool and well ventilated. Bed clothes should be light and non-irritating fabrics (cellular flax fabrics, lawn, linen) worn for under-clothing in all acute cases. Treat *sec. art.* co-existing morbid conditions, *e. g.*, gout, diabetes, various dyspepsias and constipations, anæmias and renal diseases. Ascertain if there is any indication of defective blood coagulation, (history of free bleeding, use of coagulometer) if so, administer freely salts of calcium (lactate, chloride) or if constipation exists magnesium salts; at the same time limit the dietary as to acid fruits, acid wines and beers, and prohibit vegetables containing oxalic acid and its salts, *e. g.*, spinach, rhubarb, tea, sorrel. In other cases do not load patient's memory with dietetic lists, but direct the patient to notice if the skin flushes after a meal, if so to note down all he ate or drank; then the next time it occurs

see if any foods are present in those meals and not in meals when no flushing followed, and if so to avoid them. Alcohol generally is bad. Remember that arsenic is a most injurious drug in very many cases of eczema. Obstinate or recurring eczema in any special region of the body may sometimes be relieved by counter-irritation (mustard) over the spinal cord region about the spinal organ of nerve supply of diseased areas.

LOCAL TREATMENT.

I. Vehicles for applying drugs to the skin.

Ointments, unsuitable for acute erythematous, œdematous, vesicular and many papular eczemas; suitable in pustular, scaly eczemas and chronic infiltrations.

Powders, suitable for acute erythematous eczemas and under restrictions in leeting and vesicular types.

Pastes, suitable for vesicular, leeting, some erythematous, cracked and infantile eczemas.

Lotions, suitable in most cases.

Varnishes, suitable in some erythematous, vesicular and papular eczemas, unsuitable on hairy skin, especially when frequently in movement.

Poultices, fomentations, linaments, suitable in crusted and some wet and irritated types.

Baths, suitable in dry scaly types, and many vesicular and wet forms and in some papular eczemas.

II. Drugs for local application.

Soothing and moderately astringent drugs suitable for acute types, and more stimulating drugs in later stages. They vary with the idiosyncrasy of the patient and the view taken as to the cause of the disease, *i. e.*, the idiosyncrasy of the practitioner.

III. Details of local applications and treatment of cases.

The first operation is to clear away crusts, &c., where they exist. Warm baths and prolonged soaking are very valuable if the skin is not too macerated or hyperæsthetic. Dry pruriginous cases with thickened skin often require alkaline baths to soothe and cleanse them, *e. g.*, Sod. Carb. or Pot. Carb. 2 to 10 oz. or Borax 2 to 5 oz. in a 30 or 40 gallon bath. If the skin is much inflamed a starch bath is useful, *i. e.*, $\frac{1}{2}$ to 2 lb. starch crushed into a powder is placed in a basin and made into a paste, with cold water, the basin is put in a bath under the tap and the hot (not boiling) water turned on, and as it overflows the basin it carries

the intact uncooked starch granules into the bath. Gelatin baths (1 to 3 lb. gelat. in 30 gall.) act like starch. When prolonged soaking in bath is not possible, strips of absorbent rag (*e.g.*, cellular cloth, oatmeal cloth, &c.) soaked in oil may be wrapped round the parts to be cleansed and kept on and reapplied until the crusts can be removed. Boric starch poultices (Form I) are of great value in localized cases, *e.g.*, scalp and face of infants, legs in eczema rubrum, &c., where crusting and scaling are accompanied by congestion and irritation; with skilful nursing they may be used in more generalized cases. After cleansing apply remedies for case; *e.g.*—

Wide spread erythematous eczema of acute type with more or less crusting and vesiculation in places.—Remove crusts with boric starch poultices and at same time treat other areas with powders. If possible put patient to bed, dust him all over from a flour dredger and wrap him up in a well powdered sheet. Simple starch, starch and magnesia or Form XVII, XVIII, XIX may be used. If visible inflammatory reaction not very marked but itching furious, a little camphor in dusting powder may be a great help. (Form XX.)

UNNA's plan of having muslin bags fitted to parts and filled with powder and quilted is invaluable for ambulant cases.

At this part of the paper it is well to briefly consider the pharmacology of powders applied to the skin:—

(1) Protection against external irritants (*i.e.*, taking duty for damaged epithelium.)

(2) Soak up liquid exudations and prevent them macerating the tissues, further by preventing them evaporating directly from the skin they prevent sudden chilling of the diseased surface. The gradual evaporation from the surface of the powder causes a constant and regular cooling of the inflamed tissue and slightly aids the contraction of dilated vessels.

(3) Antiseptic and anæsthetic action of certain *soluble* or *volatile* additions to the simple powders. It will be readily understood that in simple hyperæmia without much œdema or inflammatory effusions in the corium powders alone may remove the symptom, but in the more advanced stages although most useful in tiding over the very acute phase they will rarely completely cure. Some more penetrating vehicle is required later on.

Limited vesicular and erythematous eczemas without great maceration of surface tissues are advantageously treated with lotions or varnishes.

Lotions may be watery or spirituous. Watery lotions may be solutions, or suspensions of insoluble powders. The powder lotions are extremely valuable in acute erythematous and some vesicular and papular eczemas. Form XXI is the type of these lotions; occasionally it will be found that glycerine will not suit the patient and mucilage of acacia has to be substituted. In papular eczemas it is often necessary to add a more powerful antipruritic to the powder lotion, *e.i.*, (Forms XXII, XXIII and XXIV.)

N.B.—Powders and powder lotions in vesicular and leeting eczemas are apt to cake and form scabby masses adherent to the skin. When this occurs the treatment must be intermitted while crusts are removed as described above.

Watery or spirituous solutions or emulsions without suspended powders are most valuable in vesicular wet eczemas and in cases where subjective sensations, *e.g.*, itching, are more urgent than the visible lesions. Very hot water fomentation often relieves paroxysms of maddening itching of some locality of the eczematous surface. Sometimes its beneficial effects are enormously increased by addition of a teaspoonful each of Liq. Carbonis Detergens and Liq. Plumbi Subacetat. Fort. to the pint. Hot water saturated with boric acid is good. Some practitioners prefer Carbolic acid lotions 1 in 40 or 1 in 60 or Form XXIV or a 2% salicylic acid in 60% spirit may give great relief in pruriginous papular eczema.

Localized vesicular eczemas with much leeting may be advantageously treated by alkaline lotions, *e.g.*, cellular cloth soaked with Form XXV applied to the part under oiled silk or a saturated solution of Carbonate of Lithia without oil silk. (*N.B.*—Some authorities condemn this treatment). Aided by chemical osmosis the exudation is checked and in many cases the patch becomes dry enough to permit the application of pastes, etc. Another valuable treatment for greatly leeting areas is black wash or bad lotion, the parts bathed with lotion for 15 to 20 minutes daily, and after bathing allow sediment to remain on skin and cover with binding of linen spread with freshly made oxide of zinc ointment or Form XXVI. UNNA's salve muslins may be used, but are rather expensive.

Localized obstinate wet patches sometimes require more powerful astringents, *e.g.*, nitrate of silver (Form XV) painted over the area at several days interval with the interim treatment by a paste (Form III). This method is of incalculable value between toes, soles of feet, in all flexures behind ears and face and neck (if temporary discoloration is not objectionable.) *N. B.*—In those regions where moist surfaces are in contact it is necessary to keep between the surfaces accurately fitting strips of linen lint. Strong solutions of picric acid may also be used.

When the areas have become nearly dry, after treatment as above with powders and lotions and also in cases where they are nearly dry from the first, pastes have great value. They produce a deeper action than powders and watery lotions, and have the advantage over ointments of absorbing watery exudations, but the paste must be spread in a very thin layer over the surface. The absorbed exudations then evaporate from the surface of the paste and a cooling influence is experienced [see page 12 of M. S.] pharmacology of powders *supra*.] (Forms III, XXVII, XXVIII and XXIX are useful pastes.)

The acute phase being tided over drier scaly infiltrated areas may remain. Treatment with stimulating ointments, *e.g.*, (Forms IX, X, XII & V,) in very deep sluggish infiltrations (Form XIV) with perhaps the occasional application of nitrate of silver (Form XV) or strong alcoholic solution of picric acid. Sometimes much infiltrated patches require well rubbing with spirit of soap (Form VII) followed by a bath with or without (Form XIII.) These stimulating treatments must be used carefully at first or limited with careful gradation to stronger preparations and more vigorous rubbing in as the practitioner or intelligent patient judges to be necessary. Remember that *overtreatment* may precipitate anew a wide spread dermatitis. Cautious application of X rays help in deeply infiltrated patches.

A brief summary of treatments modified to suit the special requirement of special regions of the body may be of value:—

Moist and crusted eczema about ears.—Frequently a mixed seborrhoeic type.

- (1) Remove crusts by oil soaking.
- (2) Apply paste (Form III) or if seborrhoea of scalp is marked, (Form XXVIII.)
- (3) If not relieved or if fissures are present, paint with Ag NO₃ (Form XV). Sometimes especially in children a coating of zinc jelly (Form XXX or XXXI.)

Facial eczemas.—If possible clothe face with lint mask. Keep patient indoors during acute phase.

- (a) Pustular and vesicular eczemas of face.
 - (1) Remove scab, &c., with oil or (Form XXXII.)
 - (2) Apply paste (Form III or XXXIII,) or if not much exudation, ointments (II or X.) (Form XXXIII and X when pustular.)
 - (b) Erythematous eczema of face. Calamen lotion (Form XXI) or else a varnish (Form XXXIV or XXXV.)
 - (c) Chronic erythematous eczema of face in old people accompanied by considerable thickening of skin with exaggeration of natural furrows. Apply (Form XXXVI.)

ECZEMA OF BEARD.

- (1) Cut hair short.
- (2) Apply boric starch poultice (Form I) and keep on all night.
- (3) Epilate any hair surrounded by pustule.
- (4) Antiseptic ointments (Forms X, XI, XXXVII.)

PAPULAR INFILTRATED ECZEMAS OF NECK IN OLD PEOPLE.

- (1) Dust Powder (Form XVII) for few days.
- (2) Ag No₃ (Form XV) once a week; continue with Dust Powder for week.
- (3) Paste (Form III) for week.
- (4) Ointment (Form IV) until cured with occasional repetition of Form XV.

OBSTINATE ECZEMA OF UMBILICUS.

- (1) Clean out umbilicus (1) with solution of borax, failing to remove debris, cautiously clean with swab wet with Liquor Potassæ and afterwards immediately douche with boric lotion.
- (2) After cleansing and drying paint with (Form XV.)
- (3) Rub ointment (Form XXXVII) into umbilicus and spread more on lint and fix with pad of wool and strapping.

AXILLA.

Generally seborrhoeic *Norman Walker's* method of keeping application in contact with skin most valuable.

- (1) Spread ointment or paste on small pieces of lint and fit them over skin.
- (2) Fit a lady's axillary dress preserver with a pad between wings and fix with a turn of bandage.

ANUS.

Laxatives (Form XXXVIII.)

Hot or cold water bathing. Boric ointment or (Form XXXIX) or anthrasol starch jelly (Knoll).

Use sterilized paper or sponge after Storling (N. B. Innoculation with septic germs in paper a common cause). If much infiltration stronger applications may be required, but not until careful Examination of anal canal made with a small anal speculum and all the crypts just above. Junction of skin mucous membrane Crypts of Morgagni examined with bent probe and afterwards a careful rectal examination made and if catarrhal Proctitis or piles exists which should be treated *sec. art.*

SCROTUM.

Sometimes easily cured at times obstinate. *Vide Sec. Eczema.*

- (a) Acute Vesicular Eczema of Scrotum.
 - (1) Calamine Lotion.

(2) Later on Black wash.

(3) When dry (Form XL,) and if irritation recurs intermit with Ungt Zinci or Paste (Form III.)

(b) Chronic Erythematous.

Dust Powder (Form XVII) Later on dust with Form XLI.

(c) Very obstinate cases with much infiltration moist well with (Form VII) then wash with hot water, dry well and apply Form XXVI on lint.

In very extreme cases Tincture of Iodine, or scarification may be necessary.

THICKENED PALMAR AND PLANTAR ECZEMAS.

Liq. Potassæ, or Acid acetic, applied carefully to thickened horny masses (avoiding deep fissures) followed by curetting the tissue as it softens, is of very great value. This should be followed by constant application Form XLII beginning with weaker and increasing strength. Nitrate of Silver (Form XV) to fissures occasionally is useful.

Prolonged soaking feet and palms on ordinary Lamp paraffin succeeded in one of the author's cases when other remedies failed.

VARICOSE ULCER OF LEG.

Although this condition and tertiary Syphilitic ulcers do not come under the scope of this paper the author takes the opportunity of referring to the intense value of an old preparation not often used. *s. s.* Pasta Iodi et amyli.

Starch in Powder 1. Glycerin 2. water 6. boil and when nearly cold add Liq. Iodi (B. P. 1885) 1 and mix well. In a large clinic of a dispensary devoted to treatment of Leg ulcers the author has tried in a vast number of cases but in a large number of cases the above application thereby spread on lint has proved the most successful. In a few cases where the skin ex-ulcer is very irritable a paste with half the quantity of *Iodine* at first is useful. In conclusion a note of warning may be sounded although some may consider it an antiquated idea. "Do not be in too great a hurry to cure acute or wide spread Eczema in little babies or very old people. In babies, convulsions and pneumonias have been known to follow too rapid cases and in old people various apoplexies.

Prescriptions.

FORM.

- I. *Boric Starch Poultice.* 1 teaspoonful boric acid and 4 tablespoonfuls starch. Mix with water. Pour on 1 pint of boiling water. Spread the jelly on linen or calico $\frac{1}{2}$ inch thick, and, when cool, cover with muslin and apply to part. Cover with jaconet and leave on for a few hours. Remove and reapply if crusts do not come off.
- II. Acid. Boric, gr. xx to xl, Lanolin 3v. Ol. Oliv. 3iii.
- III. Acid. Salicyl. gr. x to xx. Zinc Oxid.; Amyli; Lanolin; Ol. Oliv. 44 3ii.
- IV. Ammon. Carb 3ii. Sod. Biborat 3ss. Aq. ad 3xii solve diende adde Glycerin. 3i to 3ii, Spirit vini Meth. 3vii.
- V. Sulph. Præcip. 3ss. to 3i, Acid Sannic gr. xx to xxx, Lanolin 3vi, Ol. Oliv. 3ii.
- VI. Ol. Theobromat 200. Ol. Amydal 400. Sulphur Precip, 24. Resorcin 12.
- VII. Sapo Mollis 3ii. Spirit Vini. Rect. 3i.
- VIII. Resorcin. gr. 70 to 100. Ol. Ricin. 3iii. Spirit 80 p.c. ad 3iii. Ess. Violæ. q.s.
- IX. Hydrarg. Am. Chl. gr. x. Liq. Carb. Detergen. 3ss. Vaseline 3i.
- X. Hydrarg. Am. Chl. gr. x. Vaseline 3i.
- XI. Resorcin., Sulph Præcip. aa. 3ss, Lanolin 3vi; Ol. Oliv. 3ii.
- XII. Acid Salicylic. Gr. xxx., Liq. Carb. Detergen, 3i, Vaseline 3i.
- XIII. Acid Sannic., Sod. Biborat aa. 3iv. to 20 or 30 Gallon bath.
- XIV. Icthyol 4 to 6 p.c., Chrysarobin 3 to 6 p.c., Acid Salicylic 2.5 p.c., Adeps ad. 100 p.c.
- XV. Argent. Nitrat. gr. xv., Spt. Aeth. Nit. 3i.
- XVI. Resorcin I. Benzoinol 99.
- XVII. Acid Boric 3ii., Zinc Oxid. 3iv. Amyli 3ii.
- XVIII. Acid Boric 3i., Zinc Stearat 3ii., Talc 3v.
- XIX. Acid Salicylic 2 p.c. Powdered Talc. 98 p.c.
- XX. Pulv. Amyli 3vi., Zinc Oxid 3ii., Pulv. Camphor. gr. x to xx.
- XXI. Calamen Præp. 3ii; Zinc Oxid 3iss; Glycerin 3i to 3iv; Aq. Rosæ. 3ii.
- XXII. Acid Carbolic m. xx; Zinc Oxid 3i; Glycerin m. X. Aq. Calcis, Aq. Rosæ aa. 3ii.
- XXIII. Acid Boric 3i, Sol. Calamin 3vi.
- XXIV. Acid Hydrocyan. Dil. 3i. or 3ii. Calamin 3i. Cret. Præp. 3i Glycerin 3ii. Aq. Calcis 3iii, ss. Aq. Sambuc. 3iv.
- XXV. Pot. Carb. 3ii; Aq. 3viii.
- XXVI. Emplast. Plumbi 3i. Vaseline 3i.
- XXVII. Zinc Oxide 6. Serra Silic. (Kieselguhr) 2. Adeps Benzoat. 28.
- XXVIII. Form XXVII, with 4 parts Precipitated Sulphur.
- XXIX. Ol. Oliv. 100, Zinc Oxid 5 p.c., Liq. Plumbi Subacet 2.5p.c. Water 8p.c.. Hydrarg. Oxid Flav. 1p.c., Amyli 50p.c., Lanolin Anhydr. 22p.c.
- XXX. Zinc Oxid. 30. Gelatin 30. Water 80. Glycerin 50. (less water and Glycerine in hot climate). To be melted in water bath and painted over the area and when nearly set dabbed over with fluffed out cotton wool.
- XXXI. Lanolin 48. Zinc Gelatin (Form XXX) 120.
- XXXII. Icthyol. gr. x. to xx. Ol. Oliv. 3i.
- XXXIII. Hydrarg Am. Chl. gr. x., Lanolin., Ol. oliv., Zinc Oxid., Amyli. 3ii.
- XXXIV. Zinc Oxid. gr. xx Tragacanth gr. xxv., Glycerin gr. x., Aqua Gr. 500. Paint over the parts and allow to dry.
- XXXV. Ol. Cadem 1. Targacanth 5., Glycerin 2, Aqua 100. Paint over the parts and allow to dry.

- XXXVI. Camphor gr. xxxv., Emplast. Plumbi ℥iii, Parolein ℥iii, Ol. Oliv. ℥i.
 XXXVII. Acid Salicylic., Sulph Præcip. aa gr. xx., Vaseline ℥i.
 XXXVIII. Ext. Bellad. Fol. gr. $\frac{1}{2}$, Aloine gr. $\frac{1}{2}$, Strychnin gr. $\frac{1}{8}$, ft. pil. 1 pill at 6 p.m.
 XXXIX. Bals Sulphur ℥i, Vaseline ℥i
 XL. Picis Liquid ℥i. Camphor gr. x Adep. Henz. ℥i
 XLI. Hydrarg. Subchlor ℥i., Amyli ℥iv.
 XLII. Acid Salicylic xv. to xxx., Empl, Plump., Vaseline aa ℥ss.

*RESPIRATORY AFFECTIONS OF INFANCY AND CHILDHOOD.

BY

SURGEON-MAJOR R. E. WRAFTER, B.M.S. (RETIRED).

Dehra Dun.

Although the study of affections of the respiratory organs in childhood is beset by some difficulties which we do not meet within the adult, the points of difference between these ailments are sufficiently well marked in adolescence for all purposes of practical utility, notwithstanding many enquiries may be started with reference to the intimate nature of the morbid processes, which we may be unable to answer satisfactorily. At every age of life inflammatory affections of the respiratory mucous membrane exceed all others in frequency; and even when the pulmonary substance becomes eventually involved, it is often by the extension to it of mischief which began in the mucous membrane. But in infancy and childhood this is pre-eminently the case, for the delicate and highly vascular lining of the respiratory organs resists more feebly the influence of noxious impressions from without, while it sympathises most acutely with many morbid processes within. This extreme susceptibility of the mucous membrane of the respiratory organs in childhood renders its disorders of very frequent occurrence, while we are compelled to observe closely the signification of symptoms that may betoken disturbance from such various causes, something of this sympathy with the affections of other parts exists even in the adult, as we may see exemplified in the cough that attends upon affections of the liver, but in the child the sympathetic disorder of the respiratory mucous membrane is vastly more frequent, and nurses, taught by experience, will speak to us about a tooth-cough, a stomach-cough, a worm-cough; while we will soon find for ourselves that the intestinal mucous membrane is seldom affected without that of the respiratory apparatus suffering also. It is a curious fact, however, to which Professor Jorg of Leipsic was the first person to call attention, that this extreme susceptibility of the lining membrane of the respiratory apparatus does not exist to the same degree during the

* Specially contributed to "The Antiseptic."

first month or two of infantile life as it does afterwards, the exposure of an infant two or three weeks old to a low temperature or to a vitiated air, will be followed by disturbance of the function of the liver, and the occurrence of jaundice, or, perhaps, by such depression of the muscular power as to render the child incapable of taking a full inspiration, so that its lungs collapse, and it succumbs from disorder of the respiratory organs but without the cough or bronchitic symptoms, which would not fail, if it were a little older, to announce the irritation of the mucous membrane of the air-tubes, why this is so we do not know, but suppose it to be the result of the generally feeble vitality which renders the lining membrane of the bronchi less susceptible; just as that of the intestines also seems to be at the same period; since, while constipation is frequent, diarrhoea is comparatively rare during the first two months of infant life, the mucous membrane of the nares, however, has not by any means this insensibility, and Coryza or gravedo is an affection most frequent, and most important, during the first two months of infantile life, when the other forms of catarrh are comparatively rare, this affection, in its most frequent form, is a source of discomfort rather than of danger. Its most prominent symptom has given rise to its common name of 'the snuffles;' for, the mucous membrane of the nares being swollen, the child is no longer able to breathe through its nose as it was wont to do, but is compelled to breathe likewise through its mouth, and its difficult inspirations are attended by a peculiar snuffling noise, which, during sleep, sometimes amounts to a complete sibilus, as in common catarrh, the secretion from the mucous membrane is at first suppressed, afterwards it flows in an increased quantity, and then at length it is altered in character, and becomes thicker and puriform, and then it sometimes dries and forms crusts about the nostrils, which interfere greatly with free respiration, and cause the child much annoyance. At the onset there is often a degree of heat of skin and febrile disturbance, but these symptoms soon subside, and, with the exception of the snuffling respiration, the child seems quite well. If the attack be more severe, however, it may occasion a good deal of suffering for if respiration through the nose be very much impeded or altogether prevented, the child is rendered unable to suck freely, and so soon as it has seized the nipple and begun to draw the milk, it is compelled to leave it in a state of threatening suffocation or apnoea. Its distress, also, is further increased by the circumstance that its mouth, being constantly kept open in order to breathe, the tongue and fauces become extremely dry and deglutition, even when the child is fed artificially with a spoon or feeding-bottle is often attended with difficulty. Any such severity of the disease, however, is very un-

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usual, though such cases do sometimes occur, and even prove disastrous: the dyspnoea and pucking, together, wearing out the little patient. In the great majority of instances indeed, when this event occurs something more exists than a simple inflammation of the schneiderian membrane, since, it either secretes a very tenacious mucous in extreme abundance or becomes coated with false membrane, which sometimes extends even to the tonsils and soft palate. Cases of this kind are usually associated with extreme depression of the vital powers, and have received on this account the name of coryza maligna or antiaditis. We have no doubt of their identity with the term diphtheria of which they constitute the form known as nasal diphtheria, though some twenty or thirty years ago, when diphtheria was quite a comparatively unknown disease, their real nature did not strike us then as it does now. We shall therefore leave them out of consideration here, and confine our remarks to that of simple coryza, which, as above stated, is usually a source of discomfort rather than a cause of danger, this simple coryza calls for but little treatment, and, indeed, treatment appears to exert but little influence over it. It is desirable, however, if there be much difficulty in breathing that the child be taken from the breast, though it may still be fed with its mother's milk by means of a spoon, since the fruitless efforts to suck aggravates its distress, and should therefore be prevented. If heat of skin and other indications of fever attend its onset, some mild diaphoretic medicine, with a few drops of Ipecacuanha wine and spiritus etheris nitrosi may be given, attention must be paid to the state of the bowels, and in the course of ten days or a fortnight the infant will be found again breathing quietly, and the disease will have subsided. As the secretion becomes thicker, care should be taken to prevent its accumulating and drying at the opening of the nostrils, by which it would cause serious discomfort to the child. Cases are sometimes met with, in which coryza, though not of a severe kind, is troublesome by its continuance for weeks together. This chronic coryza is, we believe, almost always connected with a syphilitic taint. We have on several occasions met with it when there were not above one or two spots of copper-coloured eruption about the nates and genitals to mark its character; and a few instances of it may have come under our notice in which no positive evidence of hereditary taint, always to be borne in mind, could be obtained, but which nevertheless got well under the use of small doses of the Hydrarg. cum Creta. With the increasing age of the infant there is a growing liability to catarrh, and during the period of dentition the susceptibility of the mucous membrane of the respiratory organs appears to have attained its maximum. Slight variations of temperature now induce catarrhal seizures: or even, independently of any such exciting cause, the mere approach of a tooth towards the surface

of the gum often gives rise to its symptoms, which subside when the source of irritation ceases, such attacks often alternate with attacks of diarrhoea, or the two co-exist; the symptoms of disturbance of the intestinal mucous membrane predominating at one time, those of disturbance of the respiratory membrane at another. The preponderance of one or the other affection seems much to depend on atmospheric causes; and children who, during the summer months, would suffer from diarrhoea, will in precisely similar circumstances in the earlier months of spring, or the latter months of autumn, suffer from catarrh. From the extreme susceptibility of the two great mucous surfaces arise a large proportion of the ailments, and many even of the serious diseases of infancy. Morbid as well as reparative processes go on most rapidly in early life, the flux of to-day may to-morrow be attended by dysenteric symptoms: the catarrh of to-day may to-morrow have put on the grave features of acute bronchitis. Now these two circumstances taken together—the extreme susceptibility of the respiratory mucous membrane, and the rapidity with which its trivial disorders sometimes becomes a grave disease—give to the catarrhal affections of infancy an importance such as in more advanced life they do not possess. This importance, too, is still further increased by the tendency of the lung to become collapsed when the entrance of air into its minuter cells is impeded even by a comparatively trivial cause; while in other cases, or even in connection with the collapsed condition of the lung, the inflammatory process may invade the pulmonary cells and the general tissue of the lung, and that which had seemed a slight cold may grow to a dangerous bronchitis, or a still more dangerous pneumonia. Of catarrh itself and its general characters, little need be said. Allowing for the difference between the ages of the patients, its symptoms are the same as in the adult, sneezing and running at the eyes and nose, and cough, a hot skin and quickened pulse, attend it. In some children the febrile disturbance with which even a common attack of cold sets in is very severe for the first twenty-four hours or more, and then the more threatening symptoms subside, and the true nature of the affection becomes apparent. At other times, when catarrh is extremely prevalent—epidemic in short—this severe onset is usual; and the affection closely resembles, or is probably identical with influenza. Often, too, we will find the commencement of an epidemic of whooping cough preluded by an unusual prevalence of catarrh, the cough by degrees assuming in more and more numerous cases the paroxysmal character and peculiar sound of Pertussis terminated by vomiting. It is unnecessary to allude to the catarrhal symptoms which precede measles; but bearing in mind that which seems to be a mere cold may turn out to be the first stage of a very serious malady, we

are furnished with an additional reason for not slighting it. Lastly, we must not forget that the frequent return of attacks of catarrh is sometimes an indication of that irritable state of the bronchial mucous membrane which the abundant deposit of tubercle in the lungs occasions; and this, again, yields another argument for not neglecting an apparently trivial ailment, while it is our duty, however, on so many grounds, to watch closely every child, although its indisposition may not seem to be more than a simple catarrh or cold, yet in the way of actual medical treatment very little is required. The child should be kept in one temperature, and if the nursery be an airy room, it is desirable that it be confined to that apartment. If already weaned, it may be well to withdraw some of the more solid articles of diet; if not, care must be taken that the child does not, in consequence of its thirst, suck too much, and a little barley water should therefore be given it from time to time, a warm bath at night will do much to allay the heat of skin, and, if the febrile disturbance be considerable, a couple of grains of James's powder, with half a grain of Calomel, may be given to a child a year old, at bed time. During the day a mixture, containing a few drops of Ipecacuanha and antimonial wine, with a little of the compound tincture of camphor, if the cough irritates by its frequent return, may be given with advantage, and, as the fever subsides the spirit of nitrous ether may be substituted for the antimonial wine. The danger, however, in these cases, is of a more grave disorder of the air-passages coming on, and this brings us to a subject which we cannot pass over hurriedly, namely, the Bronchitis and Pneumonia of infancy and childhood, to form the substance of the next contribution.

(To be Continued).

Our Contemporaries.

MEDICINE.

Nasal Reflexes.

KUTTNER (*Die Nasalen Reflexneurosen*). The term "normal" or "physiological reflex" designates the involuntary stimulation of centrifugal nerves, when this is the direct result of the stimulation of centripetal nerves. A nasal reflex may accordingly be produced by any stimulation of the olfactory nerve and of the trigeminal branches which supply the nose. The various reflex processes determined by way of the nose include typical examples for all the forms under which the physiological reflex may manifest itself. The act of sneezing is based on a motor reflex, lachrymation upon secretory reflexes, repletion and evacuation of the capillary bodies upon vasomotor reflexes; the so-called inhibition

nerves functionate in the changes of the respiratory and circulatory rhythm. Normal reflexes are regarded as processes and actions which are carried out in answer to a definite stimulation, without the conscious control of the individual, but still governed by certain laws. The stimulation is transmitted to the central organ by way of the centripetal nerve. As soon as a definite degree of strength is reached a certain stimulating effect is produced upon certain centrifugal nerve tracts. The reflex at first remains limited to nerves rising at the same level where enter the stimulated sensory nerves. As the degree of the stimulation increases, the distribution of the reflex activity, which is essentially continuous, likewise increases up to a certain degree. The indefinite distribution of the stimulation in the central organ meets with certain obstacles. In the first place, there is the resistance furnished by the stability of the central organ itself. This resistance must be overcome step by step, as it were, resulting in progressive diminution or weakening of the stimulatory force. In the second place, the brain itself may have an inhibitory influence upon the determination of the reflex process. There is an area of the brain (optic lobe) stimulation of which immediately interrupts a number of reflex processes. This organ is in connection with all the remaining regions of the central apparatus through its inhibitory fibers, and is supposed to be in a constant state of tonic stimulation. (SETSCHENOW.) Many reflexes can be suppressed at will. Volition can, however, suppress only those reflexes which it is able to produce, and even those only to a limited degree. The will is powerless as far as involuntary reflexes are concerned. These voluntary inhibitory fibers are apparently different from the involuntary ones. The determination of a given reflex may finally be interfered with or entirely suppressed by the simultaneous stimulation of other sensory nerves of special sense.

PATHOLOGICAL REFLEXES.

"Diffuse abnormal reflexes," or "reflex spasm," designate the abnormal increase or distribution of reflexly produced phenomena. In certain cases there is a disproportion between cause and effect, the effect as determined by a stimulus of a definite strength being more marked than it would be under normal conditions. However, the entire process in these cases still remains limited to the normal reflex tracts. This type is represented in the nose by the various forms of nervous coryza. An abnormal distribution of the reflex process is present in those cases where the stimulation in the reflex centre passes beyond the customary area. Conducting paths are rendered active by the stimulus back of the reflex process, which under normal conditions are not excitable at all, or at least not in this particular co-ordination. Clinically, the pathological distribution of the

reflex area as a rule is associated with the increase of reflex irritability, as illustrated by reflex asthma or epilepsy. Factors of ætiological importance in this connection are: Diseases of the central and peripheral nervous system, certain intoxications (strychnine), infectious diseases (tetanus, lyssa) and extraordinarily powerful stimuli, such as occasionally occur, for instance, in very severe neuralgias.

Not only is the inherent irritability of the central organ considerably increased in all these cases, but in addition the resistance, dependent upon the arrangement of the central organ itself and the disposition of the inhibitory fibers, is diminished to such an extent that every stimulation is distributed far around the most various areas. If the pathological condition which determines these phenomena persists for a certain length of time, some peculiar relations seem to develop in the central organ, causing the originally non-physiological association of the centripetal and centrifugal conducting paths to become a permanent institution of the organism. A convincing example is furnished by epilepsy, in those cases which are due to foreign bodies, scar tissue contraction or similar causes. The complete subsidence of the attacks may be counted upon with any probability only if these causative factors can be removed at the onset of the disease. If the affection has existed for any length of time the pathological reflex path has become so easily passable that any sort of stimulus, any physical or sensory excitement, is capable of determining the pathological reflex. In this stage the removal of the original causative factor does not, as a rule, have a curative influence upon the disease.

Reflex irritability may be diminished, constituting a third variety of pathological reflex, but little discussed in text-books. In these cases the stimuli which under normal conditions determine certain associated sensations or reflexes bring about no action at all, or have an effect below the normal standard. Such conditions are met with especially in certain diseases of the nervous system, especially hysteria, and in intoxications (morphine). Although these negative phenomena may occasionally prove distressing enough, they do not play an appreciable part in the discussion of pathological nasal reflexes, because a diminution of the normal reflex irritability of the nose is hardly ever associated with disturbing symptoms.

Whenever a pathological increase of the reflex irritability is referable to some disease of the nervous system, it must be kept in mind that two fundamentally different types of the pathological reflex may enter into consideration:

1. *Organic* changes in the nervous apparatus of the reflex are, such as are caused by various diseases of the nervous system (tabes, sclerosis) or by intoxications (strychnine).

2. *Functional* disturbances in the nervous apparatus of the reflex are, including all those cases in which no anatomical basis is demonstrable at the present state of our knowledge. All the deviations from normal reflex activity and normal associated sensation, developed upon this basis, are comprised under the collective designation *reflex neuroses*. A number of these affect the nose.—F. R.—*The Medical Review of Reviews*.

Prognosis Aphorisms.

Children will sometimes struggle through the severest illnesses and recover. "Never give up a child till he is screwed down." The older the patient attacked by diphtheria or scarlatina the better the prognosis. The prognosis in pneumonia and typhoid fever is favourable in children, but the reverse is true in phthisis and diabetes, both being very fatal in children. Specific fevers are very fatal in old age: but there are some picked lives that recover from pneumonia and erysipelas in advanced age. Very old persons often withstand the advances of cancer, heart diseases, and chronic affections much better than those in mid-life. Generally, women resist the advances of serious diseases better than men, with the exception of tuberculosis. In many nervous affections the prognosis is better among women than among men. They recover oftener than men from conditions that present the symptom of cerebral hæmorrhage, tumour of the brain, acute myelitis, or sclerosis of the spinal cord. The prognosis is usually very bad in acute diseases attacking persons already suffering from chronic diseases. Persons with diabetes, heart diseases, Bright's disease, or some chronic pulmonary affection, are poor subjects for acute illnesses or accidents. In febrile diseases a degree of pyrexia, which is unimportant in a child, is serious in an adult. Whooping cough is dangerous only in young children. Pneumonia is usually benign in the young, but very fatal in the drunkard and the very old. Malignant diseases are very rapid and fatal in children and young adults, but much slower in the old, and may appear to undergo apparent arrest. Sudden death is more likely to occur in aortic regurgitation than in aortic obstruction, but more frequent in mitral obstruction than in mitral regurgitation.—DR. P. H. PYE-SMITH.—*The Medical Times & Hospital Gazette*.

The Treatment of Pleurisies.

ROBIN (*Four. des Prat.*) considers that thoracocentesis is only necessary when: (1) The amount of the effusion or its seat places the life of the patient in danger; that is to say, in cases of left pleural effusion, when the heart is pushed to the right and in which cases sudden death may occur unless the fluid is withdrawn. In right-sided effusions, aspiration

is indicated when the liver extends below the costal border. (a) When the reabsorption of the fluid occurs slowly. The author considers that if a suitable aspirator be used (such as Fernet's) one may withdraw much larger quantities of fluid than is usually advised, and without any risk. During the acute stage the patient should be on a milk diet. He advises calomel in 10 cg. doses every hour for the first day, four doses being taken. This will produce liquid stools without causing diminished diuresis. On the next day he prescribes salicylate of soda, which he finds calms the dyspnoea and favours absorption of the fluid. This he prescribes in 1 gram doses morning and evening for six or eight days. Infusion of jaborandi may be given to vigorous patients in whom there is no displacement of the heart, but to the debilitated or to those in whom the heart is displaced, this drug should not be given. Blistering he finds useful in the early stages and when the effusion is at a standstill. If there be evening fever he prescribes a cachet containing 0.40 gram of quinine hydrochlorate combined with 0.30 gram of pyramidon every evening. For the pain in the side, wet cupping or subcutaneous morphine injections may be used. To increase diuresis he orders infusion of broom with oxymel of squill, acetate of potash, and azotate of potash. As soon as the false membranes have formed the patient may get up, and at this time a tonic medicine and a mixture containing arsenate of soda and potassium iodide may with advantage be given. The author is also in favour of the application of the cautery to the skin and of the free use of the tincture of iodine externally to the affected side. In the period of convalescence respiratory gymnastics are valuable, as is also massage of the chest muscles, and residence at a high altitude is advisable if pleural friction persists.—*British Medical Journal*.

Arterial Degeneration.

RANKIN (*Edinburg Medical Journal*) gives the following points as of prominent diagnostic importance in this condition:

1. The patient is past middle life or bears the stigmata of premature senility.
2. The superficial arteries are hard, prominent, tortuous, and locomotive.
3. The pulse is resistant, of high tension, of a variable rhythm, and of diminished amplitude.
4. The heart is hypertrophied, especially the left ventricle. The second aortic sound is accentuated, and, if dilatation takes place to any degree, a systolic murmur becomes established either at the apex or in the left auricular area.

5. Organic manifestations are frequent and diverse. They vary according to the seat of maximal distribution of the diseased vessels.

6. There is, in a large proportion of cases, a history of syphilis, alcoholism, or physical strain. In many, the patient pleads guilty to all three.

7. There may be a family history of gout or of some other constitutional instability, which conduces to imperfect metabolism.

In the matter of treatment, the patient should lead a quiet life, avoid dietetic excess, and take a reasonable amount of exercise. Alcohol is contra-indicated, the food should be simple, and red meat should be restricted, especially in patients with the gouty diathesis; the bowels should be evacuated daily and simple tonics prescribed.

When anginoid attacks follow on vertigo and dyspnoea, and are accompanied by a high tension pulse, the patient should be kept in bed, fed on simple food, and ordered the following mixture three or four times in each twenty-four hours. Iodide of sodium, 10 grs.; solution of nitroglycerine, 1 per cent, 2 minims; Fowler's solution, 3 minims; decoction of bark, 1 oz. He should also have 1 gr. of calomel at bedtime, every night for a week, followed in the morning by a sufficient dose sulphate of soda or sulphate of magnesia to insure a satisfactory result. If compensation has broken down and there is evidence of cardiac dilatation, digitalis should be given, combined with nitro-glycerine; tincture of digitalis, 15 minims; solution of nitro-glycerine, 1 per cent., 1 minim; solution of strychnine, 5 minims; peppermint water, 1 oz. This mixture should be taken every six hours, until the regularity of the pulse becomes re-established, and then the dosage lessened one-half. Later, when the pulse has become normal, a tonic pill of iron, strophanthus, strychnine, and rhubarb should be given. If the cardiac failure has gone on to the production of general congestion of liver and lungs, leeches and venesection should be employed.—*Charlotte Medical Journal*.

When to give Quinine and when Methylene Blue in Malaria.

DR. A. ROSE, of New York, says: "Methylene blue will have a curative effect in those forms of malaria in which the plasma is most developed, and quinine in those in which the nuclei are the most developed and the plasma more or less wanting. The form which is most decidedly affected by methylene blue is that of the crescents, which consist almost entirely of plasma, while on the other hand juvenile forms of plasmodia which have very little plasma remain unaffected by

methylene blue, but are very sensitive to quinine. The full-grown parasites, the principal part of which consists almost entirely of plasma, are indifferent to quinine but most sensitive to methylene blue; they are completely destroyed by it. There exists, as we see, an antagonism between the action of methylene blue and quinine; the latter destroys the nucleus, the former the plasma. In acute malaria quinine will be indicated; in chronic malaria methylene blue. The dose of the latter is a one-grain pill every two hours, *i.e.*, six pills daily, to be continued for one week. The effect of methylene blue in chronic malaria is as striking as that of quinine in acute malaria."—*Lancet-Clinic*, May 4th, 1907.

Acute Pulmonary Œdema.

Acute pulmonary œdema, writes RIESMAN, is a condition of sufficient importance to warrant having a special chapter in the text-books of medicine. It is the condition which comes on without any apparent exciting cause, and which often kills in a short time. Recovery from an attack is frequent, but there is a striking tendency to recurrence, subsequent attacks being similar to the first. They set in suddenly, usually at night, and place the patient's life in jeopardy. Of the various clinical causes arterio-sclerosis and cardiac and renal disease are the most important. The pathogenesis is obscure, but vasomotor disturbances and a disproportionate activity of the two ventricles, the right predominating, are the chief factors. The symptoms are agonizing dyspnoea, cyanosis, cough, expectoration of frothy albuminous fluid, and profound prostration. Over the lungs, often more over the upper than the lower portions, the characteristic moist rales of œdema are heard. The most valuable remedies are bleeding, dry cupping and cardiac stimulants.—*American Journal of the Medical Sciences*, January, 1907.

OBSTETRICS AND GYNÆCOLOGY.

Placenta Previa.*

BY

E. O. GIERE, M. D., MADISON, MINN.

Surgeon to *Ebenezer Hospital*.

"And they journeyed from Bethel; and there was but a little way to come to Ephrath; and Rachel travailed, and she had hard labour.

"And it came to pass, when she was in hard labour, that the midwife said unto her, 'Fear not; thou shalt have this son also.'

"And it came to pass, as her soul was in departing (for she died) that she called his name Benoni; but his father called him Benjamin.

* Read before the Camp Release Medical Society, 24th May 1906.

"And Rachel died, and was buried on the way to Ephrath, which is Bethlehem.

"And Jacob set a pillar upon her grave; that is the pillar of Rachel's grave unto this day."

Here, in the 35th chapter of Genesis, we have recorded the first death in history occurring during childbirth. As to the exact cause of Rachel's death we have no means of knowing, for the scriptural words omit to state it, and Josephus in his "Antiquities of the Jews" has only the following few words to offer in his narration of this incident: "And when he (Jacob) was gone thence, and was come out against Ephrath, he then buried Rachel, who died in childbirth."

But from the scriptural evidence afforded us it is very reasonable to assume that Rachel died immediately following the birth of Benjamin, and therefore, again, that the cause of death in this first recorded case can be laid to hæmorrhage or embolism; and if to either, the primary cause of death may have been placenta previa.

Since the days of the midwife who attended Rachel to the present day, when the twentieth century obstetrician attends a case of labor, great changes have been wrought and wonderful innovations introduced into the art of midwifery; so that now a woman is not hazarding her own life for the sake of her offspring to any marked extent. Possessed of a thorough understanding of the microbic theory, with the resulting practice of absolute cleanliness, a sound knowledge of the anatomy and physiology of the parts and organs concerned, a practical idea of the mechanism of labor, the modern obstetrician with his up-to-date equipment of soap, antiseptics, chloroform, instruments and dressings proceeds to the bedside of the woman in labor with full confidence of helping his patient through this her trying ordeal safely, with only the remotest thoughts of dangerous complications ensuing. But though this is true there is nevertheless one pathological condition in labor which science has not yet been able to prevent. This pathological condition has stared every generation of midwives and obstetricians in the face, from the remotest ages down to the present times; and the obstetrician of to-day dreads about as much to assume the management of it as did the midwife who at the beginning of history and before the dawn of science could in the presence of grave and imminent danger speak such cheering words to her patient: "Fear not; thou shalt have this son also." That pathological condition is placenta previa.

This, as you well know, designates an abnormal attachment of the placenta at the internal os. The placenta may cover the whole internal os, when it is called central; it may cover only a part of the

internal os, when it is termed marginal; or its lowest limit may be near, but not even partially covering the os, when it is termed lateral. The more central the attachment the graver the situation. Fortunately placenta previa is of comparatively rare occurrence. MULLER, by collecting statistics of different investigators, found it to occur once in every thousand cases of labor. LOMER gives the proportion as one in 723 births, while GARRIGUES gives an average estimate of about one in every 573 labor cases. But when we consider the mortality to both mother and child it is not strange that we should desire that this condition in the field of obstetrics were even far more rare in its occurrence. LUSK tells us that one mother in four dies during or shortly after delivery. MULLER gives the mortality of mothers as being not less than 36 to 40 per cent. HOFMEIER is said to have lost only one out of 46 mothers. EDGAR gives a maternal mortality estimate of a little more than 11 per cent., while others give a much higher mortality rate. The mortality of the child is variously estimated as from 22 to 50 per cent. So whether we accept the statements of others or simply consider the gravity of this class of cases as we have met with them in our own practice, we will all agree that placenta previa is one of the gravest complications of labor.

How shall we make the diagnosis? The only symptom is hæmorrhage. When this occurs during pregnancy, especially during the last half of the pregnant period, placenta previa should be remembered and a careful examination instituted. By palpation, the upper part of the vagina or one side of it will be found to present a boggy sensation which is due to the presence of the placenta in that vicinity; and if the os is dilated and the cervical canal is open, the soft spongy mass representing the placenta can be felt.

Having made the diagnosis of placenta previa, what shall be done? First of all the danger to the mother's life confronts us: (1) From hæmorrhage; (2) and from infection. Second, the child's life is at stake: (1) from the loss of blood through the detached part of the placenta; (2) from the interference with oxygenation of the blood; (3) if the entire placenta is detached and expelled before the foetus the child must of necessity die; (4) if labor sets in before the foetus is matured its chances of survival are very meagre, being of course, more favourable the more matured the child is at the time of labor. In obstetrics the rule is—and I believe that rule to be both just and humane—to consider the mother's life in preference to that of the child; and consequently we proceed to manage the case primarily with the end in view of saving the mother's life at all hazards, and the child's life if possible.

The treatment of placenta previa can be classified under three headings: (1) Prevention; (2) management before labor; (3) management during labor.

Prevention. Not a great deal can be done to prevent this anomalous attachment of the placenta from taking place. However, as endometritis is supposed to figure as a cause, every woman during the childbearing period of life should be advised by her physician to have that disease, when present, treated and cured. Again, as one theory regarding the etiology of placenta previa is that the placenta was first normally attached, but having become detached and gravitated to the lower segment of the uterus it then became reattached, the question comes up if every case of threatening miscarriage with hæmorrhage should not be completed instead of checked.

Management before labor. The diagnosis of placenta previa having been made, regardless of when this may be during pregnancy, but before labor, the question presents itself what course shall be pursued. As the idea of terminating pregnancy may be repulsive to the mother and family, and as an heir may be greatly desired by the parents, and the mother therefore is perfectly willing to assume the risk of going to full term in the hope that labour may terminate favorably, it would be injudicious under such circumstances to induce labor. In instances of this kind the woman should be kept under close observation until labour sets in. But knowing the grave prognosis of placenta previa, and considering the high mortality rate of the children in this condition even at full term, and under the most favorable conditions, it seems to me that the correct plan of procedure would be to explain the case with all its peculiarities and possibilities to the parents, and, if their consent could be obtained to proceed with the induction of labour at once. The former course might become one of policy, but the latter, I believe, should be the one of choice.

Management during labor. We have been called to a case of confinement the nature of which is unknown to us. Nothing abnormal is suspected and "ignorance is bliss." Having made ourselves and the field of operation clean, we proceed to make the preliminary vaginal examination. The os is found partly dilated, the index finger palpates a thick, boggy body at the internal os; the examining hand, on being withdrawn, is found red with blood, and by inspection the draw-sheet is probably found deeply stained with blood. The diagnosis of placenta previa and the first stage of labour is made. Unfortunately for us "Tis folly to be wise," for we realize now the gravity of the case which has fallen into our hands, and for the safe conduction of which we will be held responsible. But fortunately for our patient we have been called during the beginning of

labour, and the true condition has been learned that all may be done that can be done to carry the case to a successful issue. A consultant should at once be sent for, if time and distance permit; the importance of the case should be properly explained to the husband, and due preparations should immediately be made for thorough asepsis. If the patient's general condition is favorable the tampon should now be employed to check hæmorrhage and hasten dilatation. This means that both cervix and vagina should be tamponed, for the vaginal tampon alone is a poor and unreliable agent to depend upon to check intra-uterine hæmorrhage, as well as being an inefficient stimulus to uterine contraction.

The cervix and vagina being both securely tamponed, *the physician should not leave the bedside*, but watch the pulse and be on his guard for signs of internal hæmorrhage. Dilatation being sufficiently accomplished, the hand should now be introduced and worked by the placenta if marginal, but thrust through the placenta if central. Podalic version should be performed, and the child delivered as rapidly as possible. Should, on the other hand, the patient's condition be such that the tampon could not be resorted to as a dilating agent, or that if when used, it does not check the hæmorrhage, then forcible dilatation must be used without delay, and the uterus emptied in the shortest time possible.

The third stage of labor being completed all danger is not yet past. Syncope, post-partum hæmorrhage and sepsis are to be watched for and guarded against, and if they develop they must be treated on general principles.—*The International Journal of Surgery.*

On the Relation of the Frequency of the Foetal Heart Beat to the Sex and Weight of the Child.

BY

J. C. HOLDICH LEICESTER, M.D., B.S., B.Sc., M.R.C.P. (Lond.),
F.R.C.S. (Eng.), I.M.S.

First Surgeon, General Hospital, Calcutta.

Such contradictory results have been obtained by those who have studied the question of the relationship between the rate of the foetal heart beat and the sex of the child, that it certainly seems as if any contribution, however slight, on this subject might be useful. In this paper, therefore, I purpose giving the results obtained from the records of nearly 550 cases which I noted during the time I was Resident Surgeon

at the Eden Hospital for Women, Calcutta. They include Europeans (*i.e.*, persons of unmixed European blood), East Indians (people of mixed Native and European extraction), and Natives of India. Every care was taken, in making these observations that the cases were either at or just before full term that there was no abnormality present, foetal or maternal, as far as could be detected, that labour either had not begun or was still in its very early stages (and in this latter case precautions were taken to avoid timing the heart at or near the period of a pain), and that the membranes had not ruptured. The heart beats were counted for four or more periods of 15 seconds each, and if the results in these different periods varied they were again carefully checked. The children were all weighed on the same pair of tested scales.

From Table I it will be seen that there is very little difference between the average frequency of the heart in the two sexes: thus in Europeans it is only 0.94 beats more in the male than in the female, and in East Indians 1.77 beats more in the female than in the male, whereas in the Natives there is the very slight difference of 0.0 in favour of the females, and the average for the whole, taken together, shows only a frequency of 0.47 beats per minute more in the female than in the male. The range of frequency, as shown by the difference between the maximum and minimum rates demonstrates practically no difference between the two sexes. As to the percentage of cases with a frequency below 140, in both Natives and Europeans there is a considerably higher percentage in this class among the females than among the males.

Next as to the influence of weight, it will be seen on turning to Table II, that in Natives the average frequency of the heart beat regularly and steadily diminishes as the weight of the foetus increases; in Europeans, with one slight exception (*viz.* that in children of 7-8 lbs.) the same applies, but in East Indians, though there is clearly a tendency in the same direction, the steady and regular diminution seen in the other cases is not so well marked.

The conclusions then (if one may be permitted to draw any from so small a number of cases) would seem to be: (1) that sex has practically no effect on the frequency of the foetal heart beat, (2) that it is quite impossible in any given case to form even a rough judgment as to sex from the rate of the foetal heart beats, and (3) that weight does seem to exercise, as a general rule, a distinct influence, since the slower the rhythm of the foetal heart the bigger the child is likely to be. To this last, however, it must be admitted there are numerous exceptions.

TABLE I.

SHOWING THE AVERAGE, MAXIMUM AND MINIMUM RATE OF THE FETAL HEART-BEAT IN EUROPEANS (IN INDIA), EAST INDIANS AND NATIVES OF INDIA.

Sex.	No. of Cases.	Average.	Maximum.	Minimum.	Percentage below 140.	Percentage 140 & over.
EUROPEANS (IN INDIA):						
Males	50	144.08	180	120	28.00	72.00
Females	51	143.14	180	118	39.22	60.78
EAST INDIANS:						
Males	86	142.00	186	120	39.53	60.47
Females	94	143.77	188	122	37.23	62.77
NATIVES:						
Males	141	140.96	174	118	40.42	59.58
Females	124	140.97	174	118	45.96	54.04
ALL						
Males	277	141.89	186	118	37.91	62.09
Females	269	142.36	188	118	41.26	58.74

TABLE II.

SHOWING THE AVERAGE, MAXIMUM AND MINIMUM RATE OF THE FETAL HEART-BEAT IN CHILDREN OF VARIOUS WEIGHTS OF EUROPEAN, EAST INDIAN, AND NATIVE PARENTAGE.

Weight of the Child in Pounds.	No. of Cases.	Average.	Maximum.	Minimum.
EUROPEANS:				
5--6	13	148.923	180	118
6--7	17	142.000	168	130
7--8	40	144.500	180	118
8--9	23	140.913	166	120
9--10	5	137.600	142	134
EAST INDIANS:				
4--5	7	139.143	160	128
5--6	30	143.533	164	126
6--7	51	144.706	188	120
7--8	53	142.264	166	122
8--9	32	143.687	168	126
9--10	7	136.571	148	120
NATIVES:				
3--4	7	143.142	160	118
4--5	66	142.894	174	112
5--6	101	142.019	172	116
6--7	76	138.921	170	120
7--8	10	137.400	172	120
8--9	3	135.333	138	130

—The Journal of Obstetrics and Gynecology.

Treatment of Puerperal Eclampsia.

ZINKE (E. G.). *Trans. Amer. Assoc. of Obstet. and Gynecol.*, 1905. Vol. xviii., p. 264.—Zinke bases his treatment of cases of puerperal eclampsia upon the theory that this disease is due to an accumulation of a toxin or toxins—the exact nature of which is unknown—within the maternal organism, resulting from an imperfect or sufficient elimination of the effete elements produced by the foetal metabolism. He treats the subject systematically as follows:—

1. The Prophylactic Treatment.

(a) *Prophylaxis before the appearance of symptoms.* All the excretory organs of the body, the kidneys, the liver, the lungs and the skin of the pregnant woman must be kept in perfect order.

(b) *Prophylaxis after the appearance of symptoms.* If the symptoms are few and mild, the strict observance of the ordinary rules of the hygiene of pregnancy will suffice. For severer cases he recommends:—

Milk diet, strict and absolute, from the start. Water, *ad libitum*.

Catharsis must be prompt, free and regular every day. Winckel's pill of aloes and colocynth, with or without calomel, before bedtime, and followed by a saline draught in the morning, is very efficient. Where constipation is severe, calomel or compound jalap powder (singly or combined) should be given at night, followed by a dose of one of the stronger sulphate waters, like Rubinat, in the morning. Excessive catharsis must be avoided.

Hot baths or packs daily.

Pilocarpine as a diaphoretic is contra-indicated.

Glonoïn, in one or two minim doses, is one of the best diuretics, or rather heart stimulants, rest rather than stimulation of the kidney being indicated.

Fresh air, an abundance of fresh water, gentle exercise, calisthenics and massage when the patient is strong enough; if weak sleep and rest in bed.

2. The Curative Treatment.

Three varieties of puerperal convulsions are recognized—(a) the malignant variety, which does not yield to treatment at all; (b) the benign variety, in which recovery takes place spontaneously; and (c) the variety of mean gravity, in which both course and cure are favourably influenced by careful and judicious treatment. The objects to be attained are:—

(a) *To control and abbreviate the duration of the seizure.*

Chloroform by inhalation is universally employed.

Tincture of veratrin viride hypodermically in doses of 10 to 20 minims every half hour or hour until the pulse-rate has been reduced to 60 per minute. Convulsions will not occur if the pulse-rate is kept down by this means.

Morphine does not find favour with ZINKE since it "increases the tendency to death during coma by its interference with the eliminative process" (PARVIN).

Chloral hydrate is one of the most helpful remedies in the pre-eclamptic stage (to procure sleep), but when given to control convulsions it has been disappointing.

Normal saline solution is recommended in moderate quantity under the skin and copiously by the rectum.

Extract of thyroid and parathyroid glands.—Their value awaits further confirmation.

The withdrawal of cerebro-spinal fluid by lumbar puncture for the relief of intra-cranial pressure, is a hazardous and doubtful procedure.

Oxygen inhalations are of value during and between the attacks.

(b) *To protect the patient against injury during the convulsions.*

The convulsive movements must not be restricted. The patient must be prevented from falling out of bed, the tongue must be protected, and the pharyngeal cavity must be kept free from accumulation of fluids.

(c) *Means to remove the supposed cause of the disease from the system.*

The drugs recommended above in Prophylaxis when symptoms have appeared are useful, though the patient must not be overwhelmed with drugs. Notwithstanding that interruption of gestation by induction of labour, artificial delivery, or accouchement force, has not been attended with the good results so ardently expected, emptying the uterus is the only logical mode of treatment in severe cases where a judicious trial of other means have failed. If evacuation of the uterus be decided upon, deep cervical incisions or vaginal hysterotomy should be followed by forceps or by version and extraction. Where the cervix is not completely effaced and the os is still closed, Cæsarean section is indicated. Digital, manual, balloon, and metallic dilatation should not be attempted unless the parts involved can be quickly opened up without injury. Shock, excessive hæmorrhage and prolonged operative interference must be avoided.—*The Journal of Obstetrics and Gynecology.*

A Pair of Forceps in the Abdominal Cavity for Ten and a half Years.

STEWART (J. E. F.). *British Med. Journ.*, 1907. Vol. i., p. 313.—A woman aged 40 had had a prolonged attack of diarrhoea, and complained

of her urine which was ammoniacal. Abdominal examination revealed a broad scar, and the patient stated that ten and a half years previously she had been operated on for an ovarian tumour, and having experienced no benefit, had refused all subsequent proposals of operation. In the left iliac region a hard body could be felt, in which could be outlined the handles of a pressure forceps. A radiograph showed the forceps lying in the pelvis, the handles being directed upwards and forwards. On opening the abdomen the intestines were found matted together, and the forceps lay inside the lumen of the bowel. It was removed. Recovery was uneventful. FRANK E. TAYLOR.—*The Journal of Obstetrics and Gynecology.*

OPHTHALMOLOGY.

Some Notes Upon Granular Conjunctivitis or Trachoma.

BY

CHARLES MANCHE, B.A., M.D.,
OF MALTA.

It is not my intention in this short article to give a detailed account of the history, distribution, etiology, and bacteriology of trachoma, but to limit my remarks to its contagiousness, the difference between it and follicular conjunctivitis, and the prophylactic means recommended to check its spread.

Trachoma is endemic in Italy, and more particularly in Sicily, where it prevails among the lower classes. Italian oculists have tried during the last few years to diminish its dissemination, and, besides individual studies, have also organized for the purpose a "National League against Trachoma," of which the first congress was held at Palermo in April, 1906. In the following October the Italian Ophthalmological Society, having met in Rome for the annual meeting, brought forward trachoma as one of the subjects selected for discussion.

From these meetings and from the numerous communications of the specialists who took part in them, I bring together some points that I think may interest the readers of *The Ophthalmoscope*.

Contagiousness.—That trachoma is contagious has been admitted from the remotest times, notwithstanding the fact that the causal microbic agent has not up to the present been discovered. In fact, the bacteriological studies made by many a competent observer in the matter, from SATTLER twenty-five years ago down to the present time, have not yet succeeded in discovering and in experimentally demonstrating the presence of a micro-organism causing trachoma. Recent experiments have nevertheless put beyond doubt the fact that a piece of trachomatous conjunctiva

introduced into the eye of the monkey as also into that of man, brings on, in two or three weeks, an attack of acute conjunctivitis which, a month after, presents all the characters of true trachoma. They have not stopped at the macroscopical appearances, but these experiments have been carried out scientifically, that is, based on microscopical specimens not only of the conjunctiva from which the portion to be inoculated was taken, but also of that which, after the inoculation, developed granular conjunctivitis with all the characters and sequelæ of trachoma.

In March, 1906, BAJARDI, in fact, made some experiments with trachomatous grafts on the conjunctiva of four monkeys, obtaining a positive result in three of them, the other being negative. The trachomatous *débris*, filtered through BERKEFELD'S candle, gave in sixteen experiments a negative result. These experiments confirm those made by HESS and ROEMER on the monkey.

ADDARIO, of Palermo, however, having tried uselessly for a whole year to discover the micro-organism of trachoma, would not believe that such disease was contagious; so much so that he asked HESS to inoculate him with trachomatous *débris*, which the latter refused to do. When ADDARIO returned to Italy, in 1900, he practised these inoculations on three completely blind individuals, who were willing to undergo the experiment. The grafts were taken with all possible precautions from three typical cases of trachoma, associated with vascular pannus. A piece of conjunctiva, examined microscopically (*viz.*, fixed in sublimate, embedded in paraffin, and the sections stained by means of the ferric hæmatoxile of HEIDENHAIN), presented diffuse multiplication of the adenoid stratum in the shape of papillæ and lymphatic follicles of all dimensions, which according to the author, are the characteristic signs of mixed trachoma.

The trachomatous graft was placed in the inferior *cul-de-sac*, a small incision having been previously made by means of BOWMAN'S knife. Symptoms of acute granular conjunctivitis followed a week after in the three cases, the same process repeating itself spontaneously in the non-inoculated eye, by direct contagion from the secretion, and, finally, after six or seven weeks, the development of trachoma was complete in both eyes in all the patients. Both the macroscopical aspect as well as the microscopical examination of the conjunctiva in the three cases revealed typical trachoma.

From the above result ADDARIO concludes that "Trachoma is a contagious disease, and that contagion has been produced experimentally on man by means of trachomatous mucous grafts, or by the carriage of the secretion into the conjunctival sac."

The diagnosis between trachoma and follicular conjunctivitis.—This question, which is still under discussion, has also been seriously studied in Italy. Some authors of repute still maintain that the two diseases are one and the same thing at different stages, and that the more or less complete development of the disease depends on the general state of health of the individual and the hygienic surroundings in which he lives.

The differential diagnosis between these two diseases is by no means futile—it is not only a scientific question but one of great social importance. For, as everyone knows, those emigrating to certain countries, especially to America, are subjected to an examination of the eyes, and are prohibited from landing if found suffering from trachoma. The same rule is enforced in certain industrial manufactories, colleges, armies, etc. Now, if it be admitted that every swollen follicle, every projecting papilla on the conjunctiva of an individual is sufficient to cause him to be considered as suffering from granular conjunctivitis, and hence rejected, it would be a great drawback, not only to the individual, but also to the society to which he belongs. Hence, the clinical, anatomico-pathological, and experimental studies made to establish the non-identity of the two diseases are of the utmost importance. The communications, especially those of SAMPERI and of PETRELLA, read at the Congresses mentioned above, have evidently demonstrated that the two diseases differ essentially. While follicular conjunctivitis is not contagious, and leaves no sequelæ, but disappears even without treatment, granular conjunctivitis is contagious, and is followed by pathological alterations of the conjunctiva, which subsequently bring on the palpebral and corneal results so well known to all.

SAMPERI notes the different localisation of the two diseases. Thus, the granulations of trachoma appear from the beginning on the superior, tarsal conjunctiva, invading later the superior *cul-de-sac* and exceptionally the inferior, extending themselves to the bulbar conjunctiva; while the follicles in follicular conjunctivitis develop themselves nearly exclusively in the inferior *cul-de-sac* and appear in the shape of small prominences, semi-transparent, and greyish-red in colour, disposed in lines parallel to the palpebral edge. The disappearance of the granulations, besides, is followed by indelible deposits of cicatricial tissue; while the follicles disappear by absorption, the conjunctiva thus returning to its normal state. SAMPERI also denies the contagiousness of the follicular kind, so that among the cavalrymen, in whom the disease is frequent, owing to the overburdening of the air with dust in cleaning their horses, and the ammoniacal vapours exhaled from the stables, he has never observed the

transmission of the disease from one man to the other; but the disease attacks mostly those suffering from granular enlargements in other parts of the body, i. e., those of a lymphatic temperament. SAMPERI is so certain that the disease is not contagious, that he caused his own eye to be inoculated with a follicle taken from a patient's eye suffering from the disease, after the follicle had been reduced to a pulp in a sterilized receptacle. With the exception of a conjunctival irritation, which disappeared in the course of a few days, he did not experience any further trouble.*

The inoculations practised by MAYWEG, by V. GRAEFE, and by SAMPERI, by means of the secretion of follicular conjunctivitis, were always negative, whence those who maintain the follicular to be another form of granular conjunctivitis, depending also on a microbic agent, explain this inefficaciousness of the secretion by holding that the infective material is contained in the substance of the follicle itself, which does not undergo ulceration as happens with the granulations met with in trachoma. SAMPERI holds the follicle to be nothing more than the agglomeration of lymphoid cells determined by the irritation of the conjunctiva, caused by stimuli, which act more on the inferior *cul-de-sac*, irritation and inflammation, which may be greatly helped by the bacteria normally present on the conjunctiva, but these are in no way to be considered as the exciting cause of the disease.

PETELLA, in a paper read at the Palermo Congress, gives clearly the distinction between granular ophthalmia (trachoma), follicular conjunctivitis, and the papillary hypertrophic conjunctivitis, both with regard to contagion and symptoms, as well as with reference to course and results. He attributes the first to contagion, and the other two to the exposure of the eyes to the action of dust, smoke, salt water, wind, etc., and these are consequently more common with workmen, farmers, sailors, and similar people, continually exposed to the above causes. This state of chronic irritation with development of follicles, found normally in these classes, does not require any treatment, and must not be confused with trachoma, which is a specific and contagious disease.

Prophylaxis—This is the most important part of the subject, especially as regards those nations and cities where trachoma prevails, causing so many ravages, and incapacitating the greater part of the population. Experience and statistics compiled by Italian specialists have proved that

* The same experiment, made by AXENFELD on his own eye, brought on, fourteen days after the inoculation, a follicular conjunctivitis, which infected the other eye, and which took a whole year's treatment to get better. It left, however, no trace of its previous existence.

in many parts of Italy, but more particularly in Sicily, trachoma is frequent among the poorer classes and those living in bad hygienic conditions, and goes on increasing on account of its contagious nature, of the ignorance common to these classes, and, finally, of their means being insufficient to keep up and to effect a proper cure.

At the Congress held by the Italian Ophthalmological Society in Rome, the following resolutions were passed, which SCILINGO, a renowned oculist and a Member of Parliament, took it upon himself to lay before the Italian Government, so that the necessary provisions may be issued in due course:—

- (1) Compulsory notification of all cases of trachoma coming under the notice of both civil and military medical officers.
- (2) Obligatory presentation of a certificate to the effect that they are not suffering from trachoma by all those persons applying for admission into schools, colleges, public offices, army, navy, etc.
- (3) The opening of outdoor eye departments in all the provinces where the disease prevails, as already done for venereal diseases.
- (4) The institution of schools for trachomatous pupils in all the provinces, and the isolation of those already affected in those places where such schools have not as yet been erected.
- (5) Periodical inspection of all educational institutes, and diffusion among the people of pamphlets to teach them the way of protecting themselves from trachoma.
- (6) The opening of post-graduate courses in the Universities both for qualified practitioners and also for district and sanitary medical officers.
- (7) The provision of separate wards for trachomatous patients in hospitals and ophthalmic departments.

The above recommendations show that the Congress wishes the Government to take as much interest in trachoma as it has already done with reference to syphilis, tuberculosis, malaria, gout, scabies, etc. Unfortunately, trachoma is prevalent also in Malta, particularly among the poor class in the populated centres and in the villages, and the provisions, which are being made in Italy, Germany, America, etc., are quite as necessary here, in Malta, to check the progress of this disease, so serious, and at the same time so common.—*The Ophthalmoscope.*

Recent Advances In Ocular Therapeutics.*

BY

G. STERLING RYERSON, M.D., C.M.

Professor of Ophthalmology and Otology, Medical Faculty, University of Toronto.

The time was not so long ago when the ophthalmologist had but few drugs to rely upon to combat the special diseases of the eye. Atropine, eserine, and more recently cocaine constituted his main support. Now, however, an array of pharmacal preparations and numerous alkaloïds, are at hand to aid his surgical skill. For convenience of description I propose to divide these therapeutic agents as follows:—

1. Local anesthetics, (a) superficial, (b) deep.
2. Drugs acting specially upon the iris and ciliary muscles.
3. Drugs affecting the vascular condition of the eye.
4. Astringents and antiseptics and other general remedies in their local application.

CLASS 1. *Cocaine* cannot be used in all cases with perfect safety. Its action has precipitated attacks of glaucoma and the shedding of large portions of the corneal epithelium have been recorded. It is toxic in some persons, even when applied to the conjunctiva, causing faintness. It lowers the nutrition of the cornea and its use in corneal ulcers should be guarded. The anesthesia produced is somewhat superficial.

Eucaïne is less toxic than cocaine but is irritating and painful when applied to the conjunctiva. Its anesthetic effect is about equal to cocaine. It should be used in a 2 or 3% solution, but can be used stronger without ill-effect.

Tropocaine is also very painful, but its anesthesia is deep and lasting.

Holocaine is a powerful anesthetic, but is more toxic than cocaine.

Stovaine is an ideal local anesthetic; it produces a deep and lasting anesthesia and is free from poisonous qualities, so that it may be injected freely under the conjunctiva, but produces a good deal of smarting before its anesthetic effect is produced.

Alypin is the local superficial anesthetic *par excellence*. It does not cause dilatation of the pupil or paralysis of accommodation, nor has it any toxic effect. It is not very deep in action nor very lasting in anesthesia.

Dionin is a powerful sedative, hypnotic and lymphagogue, and is of great value in episcleritis, iritis, irido-cyclitis, glaucoma and corneal

*Read at Meeting of Ontario Medical Association, 28th May, 1907.

opacities. Its later beneficial effect is caused by its lymphagogue action by which absorption is rapidly produced. I have seen most remarkable cures by its use in opacities of the cornea. In effusions of blood or lymph into the vitreous it produces rapid absorption. I have seen an anterior chamber full of blood clear up in twenty-four hours under its influence. It may be combined with atropine, adrenalin, or cocaine. I regard it as one of the most valuable additions to our eye materia medica of recent times. It is used in a strength of from 2 to 10 per cent., always beginning with a weak solution and warning the patient of the reaction which follows its use.

Acoïne is another drug of this character which is highly recommended by DARIER. My experience is that while it is productive of deep anesthesia, it is very painful. I have used it to mitigate the pain of subconjunctival injections.

CLASS 2. It is not necessary to say anything about atropine. Its action is well known and I am discussing recent or nearly recent drugs.

Scopolamine is not very new, but is very useful where atropine cannot be borne or where atropine has been used a long time and lost its effect.

Duboisine is very toxic, but is borne well by some persons.

Euthalmine in 2 per cent. solution dilates the pupil without causing paralysis of accommodation, and as such is useful where a complete ophthalmoscopic examination is desired or where the pupil is contracted.

Eserine and *Pilocarpine* are old and well tried myotics. I would only add that the addition of dionin materially aids their action.

CLASS 3. *Adrenalin* is a powerful modifier of the vascular conditions of the eye. I have tried various preparations in which suprarenal extract is the active factor, but I have found for constant strength and reliability and keeping qualities nothing equals Parke Davis and Co's solution of Adrenalin Chloride. As a remedy it is useful in all conditions of the eye attended by hyperemia. Its greatest use is, however, in controlling and preventing hæmorrhage during operations. The advantage of having a clear field of operation can hardly be overestimated.

CLASS 4. *Argyrol*. I put argyrol in the first place in suppurative conditions of the eye. It should be used in 5 to 50 per cent. solutions, which should be freshly made. Some of the disappointments which have been reported in the use of argyrol have arisen from the use of solutions which have been prepared for some time or have been exposed to light. It has also been claimed that staining of a permanent character arises

from its use. I have never seen this, but can conceive that it is quite possible from prolonged and indiscriminate use. *Protargol* is valuable, but inferior in my opinion to *argyrol*.

Alphazone. One of the difficulties in eye surgery is to render the conjunctival sac aseptic, because substances which destroy microbes effectively also injure the cornea. The strength of solutions of bichloride of mercury for aseptic purposes varies from 1-5,000 or 1-10,000, but solutions of these strengths do not produce effective asepsis. *Alphazone* is said to be effective, is non-toxic and non-irritant, and, so far as my experience goes, I am well pleased with it.

Ichthargan is highly extolled by BRINTON in suppurative conditions. I have found it useful in persistent Blepharitis marginalis.

Mercuriol is another new remedy. I have used it with good results as an adjuvant in the treatment of trachoma.

The Sodium Salts. TROUSSEAU recommends the hyposulphite as an antiseptic lotion in 5 per cent solution. It is non-toxic and non-irritant. SCHIELE recommends the iodate for phlyctenular ulcers. FOX writes enthusiastically of the saccharate injected hypodermically in opacities of the cornea and vitreous.

Brometone. For the relief of asthenopia and asthenopic headaches which lenses have failed to relieve, KYLE recommends five grain doses of brometone every three hours.

Spermine. BOSSE reports considerable gain in visual acuity in a case of tabetic nerve atrophy from the extract of the testicles, and JACOBY reports similar improvement from POEHL'S spermine.

Jequiritol. Powdered jequirity bean has long been known as a remedy in corneal opacity, but jequiritol, an extract, has only comparatively recently been introduced to the profession. COPPEZ reports that his results in trachoma from infusion of jequirity and for its active principal, jequiritol, have been the same. He uses MERK'S outfit, containing vials of graduated strength. He applies cocaine first, avoiding bichloride washes, and gradually increases the strength of the solutions used. When there is reaction he waits until this subsides and resumes with the dose which caused the reaction, usually discontinuing applications after the second reaction. In mild cases of trachoma the disease is favourably modified by weak solutions even when no re-action is reached, and it has undoubted advantages in the treatment of persistent phlyctenular disease, chronic conjunctivitis and after conjunctival burns.—*The Canada Lancet*.

THERAPEUTICS.

Some new Sedatives: Their value compared with that of older Drugs.

BY

ARTHUR FOXWELL, M.A., M.D. (Cantab.), F.R.C.P.
Professor of Therapeutics in the University of Birmingham,
and Senior Physician to the Queen's Hospital, Birmingham.

In this paper I make an attempt to compare the clinical values of some of our more recent sedatives. I use the word sedative rather than hypnotic because often the more valuable use of these drugs is to procure a sedation of undue nervous irritability during the waking hours of the day rather than the induction of sleep. Sedative is the larger term, and includes the smaller, hypnotic.

Naturally, I can only speak with advantage of those drugs of which I have direct personal experience: this greatly limits my field of view; but, the better to indicate the position of these newer drugs in the general scale of sedatives, I shall include one or two older ones of whose value I, at any rate, have no doubt.

The drugs whose virtues I am about to compare are:—Codein, Dionin, Heroin, Morphine: Chloral, Butyl-Chloral, Amylene-Chloral: The Bromides, Bromural, Bromocarpine, Bromidia: Paraldehyde: Sulphonal, Trional, Veronal: Strychnine, Mercury.

If one considers these generally, without any reference to the special conditions of the patient, merely in accordance with their power of inducing sleep in a quite healthy person—then I would place them in this order, beginning with the feeblest:—

1. Strychnine and Mercury: no action.
2. Codein, Butyl-Chloral, Bromocarpin.
3. Amylene-Chloral, Bromural, Sulphonal, Bromide of Ammonium, Bromide of Sodium.
4. Dionin, Bromide of Potassium, Bromidia, Paraldehyde; Trional.
5. Heroin, Chloral Hydrate, Veronal.
6. Morphine;

the dose given being the average dose for each drug.

But one example is sufficient to show the unscientific nature of this classification and the great unwisdom of exhibiting any sedative or soporific without having previously made a thorough diagnosis of your patient. Mr. —, aged 56, suffering from syphilitic phthisis of long duration, had

had persistent insomnia for nine months, since the death of his wife. His brain was incoherently active in the night, but drowsy during the day; at night he rarely got more than two hours sleep. He had tried many soporifics, including opium, but all in vain. His heart had both its ventricles dilated, his arteries were much thickened, and his tension very high. It was evident that his heart was failing, being unable to cope with his thick vessels and the high tension, the insomnia of cerebral anæmia resulting. He was already on a cardiac tonic, so I merely gave him a quarter of a grain of Calomel to be taken thrice daily. In a week he came again; his tension was very slightly above normal, and he had slept every night from eleven to four, on two nights dozing off again after four.

I will now briefly indicate the special value of the members of each group.

GROUP I.—To the exhausted anæmic, or overworked debilitated person, Strychnine is the hypnotic *par excellence*: a full dose, *m v.* to *m vij.*, given at bedtime, bringing sound and long lasting sleep followed by a reinvigorated awakening. The feeble, too easily irritated nerve cells, are toned up to a healthy disregard of the petty impulses—subjective as well as objective—which previously kept them on the rack. In medicinal doses, Strychnine is far more a tonic than a stimulant, that is, it raises the nerve cell to a *permanent* level of greater efficiency.

Mercury stands in the same relation to undue high tension that strychnine does to nervous debility. But it rarely acts so quickly: twenty-four hours usually being needed to produce its effect. It has to remove from the blood the poison which is producing the unduly high tension. I say *unduly* high, for if the tension be only such as is necessitated by thickened arteries, and not one due to any toxin, then Mercury will have no effect upon it, and sedation will not result.

Thus both Strychnine and Mercury do not act as simple sedatives by covering, so to speak, with a cloak of cotton wool, a too irritable nervous system, but they remove the cause of the irritability, and allow the system to act normally.

GROUP II.—Codein as a general sedative has little or no power. No doubt it acts as a soporific in some cases of irritable cough with insomnia, but this action is probably due merely to its soothing action on the cough.

Butyl-Chloral is another local sedative: it gives most excellent results in neuralgia of the fifth nerve, and in toothache, especially if this be neuralgic in character. For this purpose I have often given it in five grain doses, every half-hour till relief arrived, or twenty-five grains had

been taken, but though it has frequently brought relief, I have failed to note any general action as a soporific, the patient's brain being just as active as before its exhibition.

Dr. ARMSTRONG, of Buxton, first drew my attention to Bromocarpin [KBr. 10 per cent., Pilocarpine Hydrobromide $\frac{1}{2}$ per cent.]: I have used it frequently since, where it was important that the sedative should not stop the secretions but rather increase them—*e.g.*, in gouty people. I think it achieves its purpose. I have given it in drachm doses thrice daily. As my patients were nearly all well enough to go about their daily duties it will require a far more extended observation to make any dogmatic statement concerning it. Dr. ARMSTRONG, who had used it a great deal, spoke very highly of it.

GROUP III.—Amylene-Chloral.—My experience with this drug has been almost limited to its sedative action: but on the one or two occasions on which I have given it as a hypnotic it has done well. As a sedative I give *m* 15 of the 50 per cent. solution *t.d.*; as an hypnotic *m* 30 to *m* 50. In one or two neurotic women it has acted well as a sedative, when bromides, trional, and even chloral hydrate have failed. I do not think it induces a habit: at any rate one lady who took it for two or three months gave it up gradually of her own accord without any effort. I think highly of it.

Bronnural [Monobrom—Isovalerianyl—Urea] has been tried a good deal in Germany. Bromine is not dissociated from it in the body, and its sedative effect is supposed to be due to the isopropyl group being linked with the Valerianic Acid: at the same time one must remember that similar compounds containing iodine or chlorine instead of bromine have no sedative action. It is claimed to have no ill-effect; that the sleep obtained by it is natural; that the patient wakes up feeling as fresh and clear as after natural sleep. I have used it a good deal during the last three months, and my own experience bears out the validity of these claims. Its action is a short-lived one—two to five hours—it is therefore, not a good drug to keep up a continuous sedative effect with, and I have only tried it for inducing sleep at night. In all mild cases I have found it uniformly successful: sleep came within the hour and lasted till the usual time of awaking. In two instances where there was a continuings ource of irritation the patients woke in four hours feeling heavy and headachy; but where the sleep lasted right through the night, no such effect was noted. This bears out the contention of the short duration of its action, the natural sleep succeeding this action allowing time for any drowsiness, &c., due to the drug, to wear off. For simple wakefulness, then, it is peculiarly suitable and I know no better drug. It also combats successful mild forms of irritation, and is said to have even induced sleep in

sciatica and takes with lightning pains. But in severe delirium of fever, uræmic conditions, the restlessness of failing heart, great mental excitement, &c., it fails. Its action is prompter than that of the bromides, sleep usually coming within the hour. The dose I have used is one or two tablets, each containing 0.3 grm.; oftener two tablets are needed. I think Bromural has come to stay.

Sulphonal is an uncertain drug, and for this reason I have not used it much of late years. Sometimes it acts perfectly and leaves no trace behind: at others it produces no real sleep, but a persistent drowsiness, which may last 24 hours or more, temporarily spoiling the appetite, and making active mental work an impossibility. My usual dose is 25 grains, from which I have seen no serious ill-effects.

The Bromides are our most certain drugs for maintaining continuous sedation. Their action is slower in onset than the other drugs here considered: one to two hours being necessary to obtain their full effect. But in my experience they are without a rival in their power of maintaining mental quiet for weeks or months with little or no deleterious result, and with no tendency to induce a habit. For this purpose, five grains thrice daily is the dose I usually employ. The dose necessary to produce sleep—20 to 60 grs.—is so large, that its action is not seldom prolonged into the succeeding day, and renders the patient less apt for his work.

GROUP IV.—Bromide of Potassium I have placed here rather than in Group III, as its action is distinctly stronger than that of the other two bromides, though of the same nature. This extra activity enables it to be used as a hypnotic, though the liability to be drowsy during the next day is still a drawback. Bromidia [Bromide of Potassium, gr. 10: Chloral Hydrate, gr. 10: Succus Hyoscyami *m* 10: Tr. Cann. Indicae *m* 2½: to the drachm] is a very reliable hypnotic of considerable strength: a drachm being a sufficient dose in most ordinary cases of insomnia. It acts more powerfully than the mere mixture of the chloral and bromide: at the same time it has less after-effect, and much less tendency to induce a habit than chloral alone. In doses of *m* 10 to *m* 20 *t.d.* it is very useful for continuous sedation, where small doses of a bromide alone are insufficient.

Dionine—Ethyl-Morphine Hydrochloride—was introduced to English practice in 1899, about the same date as Heroin. But, so far, it has not achieved anything like the popularity of the latter drug. It is much weaker in its action—gr. ⅓ Heroin = gr. ⅓ Dionine. But its exhibition is rarely followed by sickness or other malaise—I found this sequelæ three times in sixty trials. It does not lessen the respiratory activity: according to the experiments of WINTERITZ and DAMISCH it increases the respiratory range by 1 to 1½ litres per minute; whereas they found Heroin lessened

this exchange like Morphine. In a case of acute bronchitis I gave gr. ⅓ Dionine: this was followed by deep sleep throughout the night, with drowsiness the next morning, but there was no evidence of any bad effect on the respiration. In many cases the relief given to cough has not been marked, even where several hours of sleep were obtained: other observers find it as great a reliever of cough as Heroin, especially of whooping cough and the irritable cough of phthisis. It is somewhat difficult to fit in this sedative action on cough with its action as a respiratory stimulant and further observations are needed on this latter action at any rate. It is still more difficult to agree with the dictum of BANCHE, "as Dionine reduces the irritability of the respiratory tract, without impairing its function, and promotes expectoration, it may be used in all diseases of the respiratory organs accompanied with irritation," for it is generally admitted that Dionine produces its effect by its action on the centres in the medulla.

Dionine has not the immediate exhilarating effect which is so dangerous a quality of Morphine: it does not tend to induce a habit, and has been successfully used to combat the abuse of Morphine.

To sum up—the hypnotic and analgesic effect is a great deal stronger than that of Codeine, but far inferior to that of Morphine or Heroin, in the doses at present used. Like Codeine, it seems to be almost free from bad after-effects, and capable of being used freely and safely in respiratory and renal disease. Its usual dose is gr. ⅓ to gr. ½, but the smaller dose frequently only brings about 2 or 3 hours' sleep, more than 4 being the exception (in only one-third of my cases.)

I would add that it is a white crystalline powder, freely soluble in water, unirritating when given subcutaneously, and therefore easy of administration.

Paraldehyde is a thoroughly reliable hypnotic of moderate strength, with no bad after-effects. When it first came out I tried it a great deal in cases of restless insomnia due to severe aortic valve disease: it did not always succeed in obtaining sleep, but it never depressed the circulation, nor produced other malaise, so far as I could discover. That it should not always succeed in such cases is not to be wondered at, for aortic insomnia is a difficult one to remedy with anything short of Morphine. The great objection to Paraldehyde is its nauseous flavour, which persists for 24 hours, whether given by mouth or rectum. The dose is 3 j, and a larger one is but little more effective.

Trional. Of the three drugs, Sulphonal, Trional and Tetranol, Trional has best maintained its reputation. I have known it, in a case of hæmorrhagic restlessness, act well, repeatedly, in 10 grain doses, after

Morphine and others had failed: we have all known it fail; and sometimes it produces alarming symptoms. But on the whole it is a reliable hypnotic of moderate strength and, in doses of 10 to 15 grains, rarely produces any untoward symptoms.

GROUP V.—Heroin and Dionine were put on the English market about the same time—1898-1899. Dionine, for some reason or other, missed fire at first, but Heroin caught on at once and has never looked back since. It certainly lessens respiratory exchange, though much less so than an equivalent dose of Morphine. It soothes the respiratory tract more than the other systems of the body. It is to some extent an analgesic, though far less so than its Morphine equivalent. It is not free from the opiate malaise, though this is comparatively slight; and its reduction of the renal secretions has to be carefully borne in mind.

Heroin gr. $\frac{1}{16}$ = Morphine gr. $\frac{1}{10}$ = Dionine gr. $\frac{1}{4}$, is about the right ratio of dosage to produce the same general hypnotic effect; but Heroin would have the best effect upon cough, and Morphine would prove the best general analgesic, whilst Dionine would least upset the body functions.

Chloral Hydrate has gone, I think, too much out of fashion at present, just as it was too much in fashion 25 years ago. It is more to be commended as a sedative in gr. 5 doses *t.d.*, than as a hypnotic in doses of gr. 20 and upwards. Given thus, as one ingredient in a tonic prescription, it runs no danger of inducing a habit and acts excellently. In larger doses, as a hypnotic, it is apt to depress the heart, but I think it is only when given continuously that it causes anxiety on this score, or if the patient's heart be already greatly weakened by alcohol or fatty degeneration. When given for long periods no doubt it greatly lowers the nervous system and thus induces cardiac failure.

Veronal, taken altogether, is the most satisfactory hypnotic I know. Its action is sure, powerful, and unaccompanied by untoward complications. I gave a chronic bronchitic with a feeble dilated heart, a woman of 60, gr. 5, *t.d.*, for restlessness, troublesome cough and asthmatic breathing: by an oversight it was continued for five days: the patient became semi-comatose, but the respiration was quieter and fuller and the pulse stronger: there was no stertor, the condition being more nearly allied to trance, and from it she could always be momentarily roused. Cerebral thrombosis was feared, but on removing the drug the normal waking state slowly returned and, with it, her condition was in every way greatly improved. As much as 65 grains was taken by a melancholic woman;—a semi-comatose state, with stertor lasting 24 hours, resulted, and was not

entirely recovered from for six days, but the pulse remained good throughout. Rarely giddiness, headache and vomiting have been noticed, as well as transient eruptions, but no serious complications.

As a simple hypnotic, 3 grains is a fair dose to start with; very seldom, except in mental cases, will more than 7 or 8 be required. But writers differ very widely as to the dose; LILIENFELD [*Berliner Klin Wochenschr.*, No. 20, 1903], says that only in doses of 15 grains and over is drowsiness felt the next day, whereas in two or three instances I have known rather annoying drowsiness to result from one-third this dose. Drs. BERENT [*Therap. Monatshefte*, June 1903], and WURTH [*Psychiatr.-neurolog. Wochenschr.*, No. 9 1903], both think it equal to double the quantity of Trional. This seems to me a very fair judgment of its strength; and it has the great advantage that you can give as large a dose of it as of Trional, or even a larger one. PROF. BARTHOLOW recommends trying the two together—two parts Veronal to one part Trional. He says they both have a cumulative action, so that if you begin with a full dose you can lessen the amount in succeeding ones. Others deny this cumulative action. Cumulative action is always a difficult thing to determine: my own experience is as yet too limited to make a decided statement, but I am inclined to agree with PROF. BARTHOLOW, though I do not think there is any danger of a *sudden denouement* of its accumulation, such as one associates with digitalis, but only an increasing effect from continuing the same dose. Veronal should give excellent results as a sedative, and in the few cases where I have tried it in doses of $1\frac{1}{2}$ to 2 grs., *t.d.*, I have not been disappointed. But one must try it for several months on the same patient, and on several patients, before any dogmatic statement can be made.

It is far more soluble in hot liquids than cold: hence when a speedy action is required it is best given in hot tea, milk, or water. Given thus, it should induce sleep in half an hour. The sleep is quiet and natural and, if the dose be small, no unpleasant heaviness is experienced on awaking. At the same time, it must be admitted, it is much more likely to cause this sequela than such a drug as Bromural: in fact, so far as after-unpleasantness is concerned, Bromural is best of all drugs of which I have experience.

Morphine, as an analgesic, stands alone: the others, if they produce analgesia, do so only as a part of a general drowsiness and dulling of sensation: Morphine alone can assuage pain, and yet leave the intellect clear and alert. But for insomnia, apart from pain, not only are its after-effects often so unpleasant that the patient prefers sleeplessness, but

its hypnotic power is not very constant, and even half a grain may produce a pleasant wakefulness instead of sleep.—*Folia Therapeutica.*

Sulphate of Copper in the Treatment of Typhoid Fever.

BY

J. F. STEVENS, A.M., M.D.

*Dean of the Nebraska College of Medicine: Medical Department
Nebraska Wesleyan University: Professor of the Principles
and Practice of Medicine in the Same. Lincoln, Neb.*

Copper is one of the most potent algæcides known. Under favourable conditions 1 part of copper per 1,000,000,000 suffices to destroy spiogrya. A large majority of algæ are destroyed by 1 to 3,000,000. The colloidal solution of copper, produced by the action of water upon metallic copper surfaces, proves to be the most destructive. Possibly this is due to the perfect solution formed. Nor is copper fatal to algæ alone. Under favourable conditions the bacilli typhi abdominalis succumb to a dilution of from 1 to 100,000 to 1 to 500,000. As with the algæ, the colloidal solutions are immensely more potent than solutions of the copper salts. Of the salts the sulphate proves the most actively destructive, possibly because of its solubility. Mercuric chloride is but slightly more fatal to typhoid germs than copper sulphate. Carbolic acid, thymol, formalin, naphthaline, sulpho-carbolate of zinc and other accepted antiseptics take low rank in comparison.

These facts, together with a knowledge of the mild toxicity to the human family, suggest at once the possible value of the drug in the treatment of typhoid fever. Experience teaches that a six per cent. solution of the salt is the most convenient. Remembering that copper is notoriously liable to be contaminated with arsenic, care must be taken to procure a perfectly pure drug. Beginning early in the disease, two drops of this solution diluted in one-half glass of water should be given hourly. An occasional sensitive stomach will call for a reduction of the dose to one drop. One drop will contain about one-sixteenth of a grain. If the tongue becomes dry, the dilution may be slightly acidulated with aromatic sulphuric acid. If the breath becomes foul, moderate doses of baptisia will prove useful. Patients should be continued on the treatment until convalescence is well established, when the drug may be stopped and small doses of strychnine substituted. During convalescence the pulse rate will frequently be found subnormal. This is probably due to the action of the copper on the nervous system and need cause no alarm. The same phenomenon is often very marked in cases treated with

sulpho-carbolate of zinc. Both drugs act as a sedative to the nerves. When cases are seen early, before there is marked degree of intestinal ulceration, the use of large colonic flushings containing from five to ten grains of copper sulphate to the quart prove of very great value in shortening and lightening the course of the disease. The writer has seen such decided results that he can speak with much confidence. Good judgment must be exercised in this as well as in any other treatment. The patient's hips should be slightly elevated and the solution be allowed to enter slowly. Two quarts should be used hourly for several days. After retaining the enema for five or ten minutes, the patient may relieve himself, using a bed pan. Should the treatment irritate the bowel, reduce the drug strength, or use once in two hours instead of hourly. It is my custom to use the remedy thus for three days, then use once in three hours for several days, after which the intervals between are gradually lengthened until once daily yields to non-use.

During the autumn and winter of 1906 and 1907 fifteen cases of typhoid fever were treated with copper, all of whom recovered. Six of these cases were treated in St. Elizabeth Hospital, and nine in private families. The youngest was nine years old and the eldest thirty-seven. One was a case of walking typhoid. The six hospital cases came from a railroad construction camp and, with the exception of two, were well advanced in the disease when admitted. The railroad cases were of a bad type, patients being delirious and in several instances having hæmorrhages. Cases in private practice were seen much earlier in the disease, ran a milder course, convalesced sooner, and on the whole presented more gratifying results. Two of the hospital cases received the colonic flushings above referred to in addition to the remedy per orem. Bowel washings were omitted in the other four cases, because of great abdominal tenderness and very evident profound ulceration. Eight of the cases in private practice received injections. In one family having two cases, one patient was already in the course of the second week of the disease when first seen. The second case coming under treatment early, was treated by flushings and convalesced at the end of two weeks, after running a comparatively mild course. Another young man of eighteen who had been ill one week when first seen and whose case was typical in point of prodrome and beginnings, had a normal temperature at the end of fifteen days. The last case treated was a girl of ten years who, at the end of two weeks, presented a normal temperature. This case received colonic flushings three times a day only, owing to the fact that she was rebellious, and was treated throughout by reduced copper in the place of copper sulphate solution. A trituration was made with sugar of milk, representing one five-hundredths of a grain of copper to

one grain of sugar of milk. Of this ten grains was administered hourly during the day, the doses being reduced as the patient improved.

Diet in all of these cases was, in the main, butter-milk. At no time was sweet milk given. Skimmed and strained soups were used, particularly tomato soup. The juice of ripe tomatoes, expressed and strained, was given to such as liked it, in quantities of from one-half to one wine-glassful a number of times daily. As the case convalesced, tapioca was gradually added to the diet. The nurses were instructed to insist that the patient partook of good quantities of water. If the tongue became dry, a few drops of diluted hydrochloric acid was added to the water, which proved very grateful to the patient. When the temperature had been normal one week, the diet was carefully changed into semi-solid foods, and later on into the food of health. These cases, in addition to forty-three reported in the *Western Medical Review*, November 1906, make a total of fifty-eight cases treated on the copper plan, with one death. The patient who died was very far advanced in syphilis, so much so as to make recovery impossible under any circumstance.

It would seem that this list serves to establish the fact that copper is one of our most reliable remedies in the treatment of typhoid fever. Like other remedies, however, it must be used with good sense and every possible chance given the patient in all ways for recovery. Absolute quiet, absolute rest, careful nursing, constant attention to details, are all necessary. Without these, failure must usually come in the treatment of any serious disorder.

The case in which reduced copper was used instead of one of the salts, proved particularly happy in the outcome, so much so, as to suggest further study and trial in this direction.—*The Medical Brief*.

Points to be kept in Mind in connection with the Administration of Chloroform and Ether as Anesthetics.

BY

H. J. H. HOEVE, M.D.

Professor of Anatomy in Drake University College of Medicine.
Des Moines, Iowa.

In many private cases, and even in a great many hospitals, an observant eye finds at once that the examination of patients regarding the determination of the anesthetic to be employed, is frequently limited to auscultation of the heart of the patient and a nodding of the head of the examining physician. The urine examination is slighted in many cases,

as though it were of no import to know whether chloroform or ether should be used. Because of the laxity in examination in regard to selecting the proper anesthetic I have prepared the following classification:—

Chloroform, and not ether, should be used in the following cases:—

1. In affections of the respiratory organs, where ether would cause too much irritation. 2. In nephritis. 3. In labor cases. 4. For children. 5. Cases on the battlefield. 6. In hot climates. 7. Cases where actual cauterization is necessary. 8. In abdominal sections, if the bowels are distended with gas, and where coughing and vomiting, which are more frequent with ether, must be prevented.

Never use chloroform for a second anesthetic within a week from the first administration.

Ether should be used as follows:—

It should always be preferred, wherever possible, except at the induction of narcosis.

One of the main points in classifying cases is to remember that ether is much more irritating than chloroform, and consequently produces a more abundant secretion from the mucous membranes. It may also produce an irritation of the stomach through the saturated saliva. The fact that ether possesses greater power to irritate is proved by the fact that it requires but five per cent. of air to properly dilute it for anesthesia, while chloroform requires ninety-five per cent. of air.

Preparation of patient. (BRYANT.)

Make an examination of the patient from top to toe.

Examine the secretions.

Make a record of the pulse and respiration.

No food six to eight hours before operation, except a glass of milk.

Remove false teeth, if there are any.

Loosen everything that constricts the body anywhere.

Cause the evacuation of the bladder and rectum.

Have enough fresh air in the operating room.

Relieve patient's fear.

If, during an emergency, an anesthetic must be administered without emptying the stomach, then the best thing to do is to pass the stomach tube after the patient is under the anesthetic.

All constriction should be removed, as the heart will have enough work, and any pressure upon the capillaries in different areas would impede the circulation greatly.

Position.—The horizontal position is necessary. The head should be on a level with the body, and if the patient should insist upon a

pillow, it must be removed as soon as the anesthetic begins to take effect. A small roll may be placed under the shoulders and neck to free the respiratory passage.

The teeth of the manible should be kept anterior to those of the upper jaw. This is accomplished by pressing the manible forwards. This frees the larynx. It is impossible in this position for the tongue to fall back upon the epiglottis. The points to be kept in mind now are :—

- (a) Allay the patient's fear.
- (b) Take care of his comfort.

When a patient holds himself down by his will power, he will struggle as soon as his will power is anesthetized. In order to allay his fear, it may be well to give a little morphine and atropine hypodermically. In some cases one-half to one ounce of whisky may be administered. The patient should be kept as dry as possible. Attention should be paid to the position of the extremities. Paralysis has been caused in not a few cases by permitting the extremities to rest on the edge of the table. The arms should be drawn up to the shoulders; the nose and lips should be anointed with vaseline or cold cream in order to prevent irritation; the eyes should be covered by a towel for the same reason. If the head is turned to one side the saliva accumulates in the cheek on that side, and can easily be wiped out by means of a piece of gauze.

The temperature should be carefully watched, as the anesthetic has a tendency to decrease it. The patient should be kept well covered.

The anesthetizer has absolutely no business to watch the operation; if he attends to his duties properly he has no time for anything else.

Chloroform is nearly always used to begin the anesthesia, if it can be had. Nitrous oxide serves the same purpose, and is probably better. It requires a great deal of judgment in the first stage as to the concentration of the vapor.

In administering the ether the cone is first held a few inches away from the face, permitting greater dilution; so, when the cone is placed down squarely upon the face, the patient breathes in the natural way; not quicker than normal. As soon as the respiration is normal the anesthetic may be pushed. The maximum dose of chloroform to be used is sixty minims a minute, the usual dose is twelve minims, and the minimum dose is six minims a minute.

When the respiration becomes irregular, it is necessary to dilute the vapor by lifting the cone. This is also necessary when the patient holds his breath on account of the deep inspiration, which will shortly follow.

Involuntary muscular contractions are frequently present. If there are struggles, the mask must be partly removed on account of the danger of heart paralysis. In the first period the anesthetic is given very slowly; in the second, push it, and in the third period be very careful.

During the second period, semi-consciousness, the patient has lost control over his muscles, but the reflexes are still present. In cases of confinement, colic, or reduction of dislocations, it is not necessary to push the anesthetic further, but from statistics it is dangerous to operate at this stage, because the reflexes are still present, and a reflex might cause paralysis of the heart. If semi-consciousness is required, as in confinement, no more anesthetic is used until the patient begins to move. This is the dividing line, in reality, between surgical anesthesia and semi-anesthesia.

The Most Valuable Reflexes :

1. Pharyngeal—swallowing movements.
2. Conjunctival—touching the lower margin of the upper eyelid.
3. Deep pupillary reflex.

1. The pharyngeal reflex is due to ether vapor irritating the back of the pharynx, and the swallowing movements are the results.
2. In order to obtain the conjunctival reflex, pull the upper eyelid upwards, and touch the lower margin; the result will be wrinkling of the lower eyelid.

Remember, then, that as long as the reflexes are present, the patient is not ready for operation. If the eyes should resist opening, then you do not have to test for the conjunctival reflex. It is a fact that the eye muscles are affected very late, and as soon as they are affected the patient is ready for operation.

A good way to avoid vomiting is to give enough ether to have the pupils a little dilated. The chief indication that the patient is too deeply anesthetized is heavy snoring; this is due to paralysis of the soft palate. There are certain signs, called danger signs, which indicate that the patient is too deeply anesthetized.

Danger Signs :

1. In connection with the pupil.
2. In connection with the respiration.
3. In connection with the pulse.
4. In connection with the skin.
1. Withdraw the anesthetic at once if the pupil is dilating, and the superficial reflexes do not return.

2. Watch the respiration carefully; if it is bad, compress the epigastric region a few times, the patient will respond with a deep inspiration, and the danger is passed.

The pulse does not always become irregular before it increases in rapidity. If it runs up to one hundred and forty or one hundred and fifty, then it is necessary to use pilocarpinæ hydrochloras, 1/40-grain, hypodermically, or if this is not successful, salt solution.

The respiration must be carefully watched. If artificial respiration is induced immediately after the cessation of the respiratory centers, the chances, according to some good authorities, are ninety-nine out of a hundred that the patient will recover.

In giving an anesthetic it must be remembered that the patient is nearer death than life. He may die at any time, after a few whiffs, or after the operation is over. Probably the most frequent cause of death is the early paralysis of the heart. This occurs before complete insensibility has set in, and is usually due to concentrated vapour reaching the heart. If the patient has been struggling, the next few inspirations, being much deeper than the rest, will saturate the blood to the utmost, and the blood passing into the heart reaches the coronary arteries, and the heart stops reflexly. The same condition may also be brought about by irritation of the mucous membrane of the nose. It is the result of too great irritation of the vagus nerve, resulting in reflex inhibition, but the same kind of irritation may cause the heart to start again. Therefore, the point is to prevent too much irritation of the respiratory tract.

The late paralysis which sometimes occurs, is due to the weakened condition of the centers in the medulla, whenever an operation lasts a few hours. The vaso-motor center is the first to stop, and the last is the respiratory center. When the vaso-motor center is stopped, all the vessels relax, and the blood goes through the arteries into the veins. This, of course, might cause death by cutting off the blood to the respiratory centers, or it might be due to direct poisoning of the respiratory center, but in most cases it is due to anæmia. This is also the reason why a patient should not be anesthetized in the sitting position.

Routine treatment for vaso-motor paralysis.

1. Inversion of the body.
 2. Mechanical excitation of the heart.
 3. Thermal excitation of the heart and vessels.
 4. Chemical excitation of the heart and vessels.
1. Invert the table, permitting the patient's legs to hang over the foot end; the knees will form a firm hold. This does not bring the blood

in the heart back to the brain, but that which is in the veins below the diaphragm into the right auricle, and a contraction follows.

2. (a) Pressing the region over the heart at the rate of about one hundred and twenty a minute.

(b) Squeezing the heart between chest wall and ribs (hand under ribs).

(c) If possible, take hold of the heart itself.

(d) Incision over heart, and pressing upon the heart itself.

(e) Aspirating the contents of the right ventricle.

3. Steaming hot cloths, towels, or the like over the pericardium, at the same time rectal injections of hot normal salt solution (120° F.). It may be given intra-venously at the same temperature. The result is the same—a contraction of the involuntary muscles and the vessels.

4. Intra-venous injections of ammonia, 15/20 m., and four times as much H₂O every fifteen minutes, because the action of the ammonia, is very fleeting, as it is destroyed in the liver. Strychnin might be used also, followed up with digitalis.

Routine treatment of Respiratory Failure:—

1. Mouth open and tongue pulled forward to clear the passage.
2. Head to one side of the body, a little lower than the body.
3. Artificial respiration.
4. Rhythmic contraction of the tongue.
5. Hot injections into rectum and veins.
6. Drugs.

The remedies for respiratory failure depend mainly upon:—

1. Reflex stimulation of the respiratory centers.
2. Direct irritation of the respiratory tract.

Reflex stimulation of the Respiratory Centers:

1. (a) Rhythmic contraction of the tongue.
- (b) Dashing a little ether upon the bare abdomen.
- (c) Slapping the chest with a towel wrung out of ice-cold water.
- (d) Stretching of the sphincter ani (the most painful procedure.)

Ordinary compression of the chest is sometimes followed by an inspiration. In the larger hospitals a tank with oxygen is mostly at hand, and ready for use.

It is important to hear or feel the current of air from the nose. If this is impossible, the nose may be occluded, in which case the mouth is opened, and if this does not relieve the condition, the tongue forceps must be used. Failing of relief, a finger is placed in the larynx. If this is not successful, the patient is inverted. If all of this is unsuccessful, a sub-hyoid laryngotomy may be indicated. The trachea might now be

cleaned by means of a small rubber catheter passed in through the artificial opening and the contents withdrawn.—*The Medical Brief.*

Chlorid of Sodium, or Salt, has many Virtues.

SALT is one of the best cleansers for the teeth and gums. It will also cure dyspepsia and sour stomach by putting about a quarter of a teaspoonful in the mouth and swallowing it with a mouthful of water. Salt will cure boils and sores, and is a most excellent eye-wash. Salt is excellent for the skin. It is a disinfectant for cuts, wounds and sores. Salt and soda are excellent for bee stings and spider bites. Land is greatly enriched and grass made to grow by sprinkling salt on the ground. Salt used when sweeping carpets freshens them and keeps out moths. It will put out a fire in the chimney as well as revive a coal fire. Salt in the oven under baking tins prevents scorching on the bottom. Salt, when put on ink spots freshly made, will remove them. Salt will make flowers fresh if a little is put in the water. Salt is good to wash the head with to prevent hair from falling. A little salt taken every morning will sweeten the breath and stomach.—*The Dietetic and Hygienic Gazette.*

Tannin in Dental Pain.

KNEV (*Wien. med. Presse*), as a dentist in Ischl, where neuralgia of dental origin is extremely prevalent has had great experience in the treatment of this disorder. The most universally useful application to the gums is a lotion of two parts of tannic acid to ten parts of rectified spirit. When this is painted on the gums and round the teeth, it relieves almost every kind of dental pain. It is also the best application in alveolar pyorrhoea. Loose teeth under this treatment soon becomes tight, and regain their power of mastication.—*British Medical Journal, July 20th.*

Adrenalin in Diabetes Insipidus.

VARANINI (*Gazz. degli Osped*) reports a case of diabetes insipidus successfully treated by adrenalin. The patient, a man aged 27, had suffered from diabetes insipidus since the age of 16. He drank from 5,000 to 6,000 c.cm. of fluid per diem in addition to the liquid contained in his food, and passed from 9,000 to 10,000 c.cm. of clear non-albuminous, non-saccharine urine in the twenty-four hours. The adrenalin (Parke, Davis, and Co.'s 1 in 100 solution) was given in 7-minim doses, increased later to 10 minims. After two days the urine lessened to 7,000 c.cm., and rapidly decreased to 4,500 c.cm. per day, the general condition improving *pari passu*, and as long as he continued taking the drug the improvement was maintained.—*British Medical Journal, July 20th.*

MEDICAL JURISPRUDENCE.

Physicians and Surgeons—Necessity of Patient's Consent to Operation on Minor.

A boy 17 years old consented, with the concurrence of several adult relatives present, to an operation to remove a tumor from his ear. He died under the anæsthetic. His father sued for damages as the personal representative of his deceased son on the ground that his consent had not been obtained. Held, that, in the absence of negligence on the part of the Surgeon, he cannot recover. *Bakker v. Welsh*, 108 N. W. Rep. 94 (Mich.)

It is conceded law that consent makes a surgical operation lawful. See *Stephen*, Dig. Crim. Law, Art. 225. But consent alone is not enough to justify what is "clearly an aggravated battery." *Bell vs. Hansley*, 3 Jones (N. C.) 31. The true justification for such an act must be found in public policy, which demands that a Surgeon should operate where it is proper for him to do so, though consent will generally be an important or controlling factor in determining the reasonableness of the operation. But the consent to be significant should be given by one of years of discretion. Ordinarily, therefore, the consent of the parent should precede an operation upon a child; but if the child consents, and is, though a minor, in fact of years of discretion, the consent of the parent, especially if other circumstances combine to make action by the Surgeon reasonable, should not be essential. The various legal disabilities of an infant have no bearing on his actual discretion in such matters any more than in the case of a married woman, who may by her consent justify a Surgeon in operating upon her against her husband's will. 70 Md. 162.—*Harvard Law Review.*

THE ANTISEPTIC.

SEPTEMBER, 1907.

On the Necessity for Taking Care of the Singer's Voice.



A GREAT deal has been written on the subject of vocal hygiene and on what rules ought to guide the daily life of the voice user. In Europe it is generally recognized both by Laryngologists and singers that "above all other professions that of a singer requires the observance of a strictly physiological life." But in this part of the world the ordinary singer does not seem to have recognized the necessity for taking any particular precaution to safeguard his or her singing voice from injury or deterioration. Special hygienic precautions or regulation of daily life for the sake of preserving the singing voice are practically unknown here. And the merciless way in which some singers use their voice for singing three or four hours at a stretch makes one wonder at the extraordinary tenacity of the human singing voice in singers in Madras under peculiarly trying circumstances. The late Dr. Lennox Browne observed that "after the first act of an opera or execution of the first song, the singer will to a certain extent, have exhausted his energies." In Madras if you suggest to a Bhagavathar (singer) the idea of taking some rest—after his fifteenth song—he will laugh at you. He never likes to admit that he is tired. As long as he has an attentive and appreciative audience he will go on singing. But what is the result? In a few years' time his singing voice is gone and his subsequent attempts at singing are more painful than pleasing to his sympathetic audience. Southern India has had in the past some remarkably fine Hindu singers. Even now we have a few good singers. But the more we hear them the more the conviction is forced on us that they will sing better and that their singing voice will last longer if they will take the trouble to lead a more physiological life than that which seems to be the general rule among singers in Southern India. The temptations in the way of a singer of any repute are many. He usually succumbs to them and his singing voice along with him. We plead for a better and more physiological life for the Indian singers. It

THE ANTISEPTIC.

545

will contribute to their benefit and to the pleasure of the Indian public. It is impossible to lay down hard and fast rules which are to be the guides for the daily life of a voice user. But a few general rules to help them to preserve their voice may not be out of place here just now when so many musical celebrations are going on in Madras and when so many musicians from different parts of the Presidency have come to the metropolis to take part in those celebrations.

According to the late Dr. Lennox Browne "a man's life may be said to be controlled—(1) by residence, (2) by ablutions, (3) by clothing, (4) by diet, (5) by exercise, (6) by amusements and (7) by individual habits."

Residence.—A singer, like any one else, ought to live in healthy and well ventilated rooms. Dr. Lennox Browne would say that a singer ought "to live on a hill." Well, that is scarcely practicable, for it is not every one that can live on a hill. And unfortunately there are no hills in Madras. But every singer ought to avoid the vicinity of foul smelling drains and other insanitary surroundings. For the throat of a voice user is always more or less in a state of congestion and therefore always more liable than that of ordinary persons to receive the injurious impressions of any insanitary exhalations.

Ablutions.—We touch this subject only to correct one false impression that seems to exist in the minds of some singers. There is an idea prevalent that a singer ought to go about with a muffler round his neck to protect his throat, and that he ought not to take a cold bath for fear of catching a cold. In this respect there is no special rule for the singer. Absolute cleanliness and frequent ablutions of the whole body is good for all, and the singer is no exception to the rule. And as for the muffler its owner is likely to derive greater benefit by putting the muffler into the fire and bathing the outside of his throat with cold water or cold salt water twice or three times a day. A pack of ice applied to the throat externally will do more good to a singer's throat than all the mufflers in the world.

Clothing.—We will not say any thing on this subject here because we are quite convinced that not even twenty articles on this subject will have enough influence to make some of our Southern India singers dress comfortably.

Diet.—The diet of a voice user is a very important consideration. It ought to be very nourishing and at the same time ought to contain the minimum of ingredient likely to produce fat. Considering that the average singer has no occasion to put forth much of muscular efforts, meat should be eaten more sparingly and a vegetarian diet is more suited to him. The large majority of our Indian singers are vegetarians, which is

a point in their favour. But over-indulgence in saccharine articles ought to be avoided. Over-eating and other causes that lead to dyspepsia ought also to be avoided, for dyspepsia in a singer is highly injurious to the singing voice. The most important consideration under this head is undoubtedly the question of drinking. Should the singer use alcoholic drinks or not is a question which has often been discussed. We should unhesitatingly answer the question in the negative. Habitual use of alcoholic drinks—and especially strong spirit like whisky and brandy—is most ruinous to the singer's voice, and when a singer contracts the alcoholic habit it may safely be presumed that his singing days are numbered. But there may be exceptions. There may be bodily conditions which may be benefitted by a moderate use of stimulants. In such cases we are not bigoted enough to deny the use of stimulant to a singer. When the necessity has been recognized by the medical attendant a small quantity of mariani wine may be allowed. While we are on this subject we may also mention that both tobacco smoking and snuff-taking act injuriously on the singing voice and ought to be avoided by singers.

Exercise.—This again is as important to the singer as to the non-singer. Want of exercise develops a general enfeeblement of the muscles of the body, with slowness of the circulation and engorgement of the internal organs, exercising a directly injurious influence on the organ of voice. Neglect of exercise is also likely to develop a tendency to corpulence which leads to a diminution of the respiratory and vocal powers. At the same time it must be admitted that violent exercise like football, cricket, etc., may exert a deteriorating effect on the singing voice. Exercise in moderation and short of fatigue ought to be the habit of the voice-user.

Amusements.—Amusements are very good in their way. But when they degenerate into dissipation, they are harmful, and especially so to the singer's voice. Exhausting dissipation and shortened hours of rest are certain to detract from functional activity, ease, and purity of tone of the singer.

These are only a few stray hints which may be of interest to our many singers in Madras. Perhaps they may not care to trouble themselves about these "scientific fads." But we hope that some of them at least will recognize the fact that music—however scientific it may be—ceases to be a pleasure when the voice that conveys it is like that of a buffalo or a rhinoceros.

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Original Articles.

* AFFECTIONS OF THE CORNEA.

BY

E. LUCAS HUGHES, M. R. C. S. (ENG.) L. R. C. P. (LOND.)

Ophthalmic Surgeon, Liverpool, England.

CORNEAL injuries and diseases occur with great frequency.

It is important, therefore, that Medical men should know about them and the best way in which they may be treated.

The correct methods of examination are our first consideration on approaching this subject, and it is well also to bear in mind, while doing so, the four chief ways given by FUCHS in which a cornea may be altered. These are alterations in size and form, surface, transparency and in its natural conditions of sensitiveness.

Mere inspection is only enough as to size and form. In this way we may detect at once a congenital peculiarity or defect, and even, in some cases, a morbid process, but, as a rule, a more exhaustive examination is necessary, except a lesion be a gross one it will be overlooked by mere inspection. It is possible for a minute ulcer, smaller than pin's head, to destroy the eye in twenty hours. Accurate methods of investigation, and with these, correct diagnosis and treatment, are of the utmost importance.

An Ophthalmic Hospital should have a corneal microscope with electric illumination, but this is a luxury in private practice that only rich enthusiasts can afford to indulge in.

A drop of Fluorescin solution is harmless and often extremely useful in diagnosis. It does not, in the slightest degree, interfere with the healing, and it shows up the ulcer by staining its denuded surface a bright

* Specially contributed to *The Antiseptic*.

green. It is not necessary that actual loss of epithelium should have yet taken place for this staining to be seen; diseased epithelium, prior to ulceration, immediately above an infiltrated area will also take the stain, thus giving warning that ulceration is impending. The solution is sterilised and contains about one grain of Fluorescin to a drachm of distilled water, rendered slightly alkaline by the addition of about half a grain of carbonate of soda.

One proceeds to examine the cornea systematically by four different methods of observation. Firstly, by diffuse day light; secondly by focusing the daylight upon the cornea with a strong convex lens (about 14 D); thirdly in the dark room with a lamp by the method known as Oblique or Focal Illumination; fourthly by means of the Ophthalmoscope. With the first of these procedures the surgeon carefully notices the reflection of the window-pane squares on the cornea while the patient moves his eyes upwards, downwards to the right and left and looking straight in front, whether there be any break in continuity, loss of brightness, etc. With the lens the whole substance and surface of the cornea is examined. Should there be blepharospasm a few drops of cocaine will greatly assist the examination.

It is nearly always in children necessary to examine in the following way.—The nurse or mother takes the child in her lap, the back of the child's head being opposite to the surgeon, who is seated facing the nurse. The child's head is brought down so as to be between the surgeon's knees, where it is fixed as in a vice. Using great care the surgeon now opens the lids. In doing this the difficulty is the avoidance of the lids everting, which in unpractised hands they invariably do. DESMARRE'S lid retractors may be used, or the tips of the fingers gently pressing in such a way as if trying to invert them while separating them. Great care should be taken as it would be easy to rupture an ulcer on the point of perforating. The nurse, of course, firmly holds the child's limbs. A little patience overcomes the obstinate blepharospasm. For a few seconds only the conjunctiva below the cornea may be seen, the eyeballs being turned up away from the light, owing to the photophobia usually present, but after a short time fatigue compels them to come down and the cornea may be adequately examined. Here also a few drops of cocaine greatly assists.

For Oblique Illumination the light should be in front and slightly to the side about 2 feet away from the patient. The +14 D. lens is used, held between the lamp and the eye so as to focus the light on to the cornea. While the right hand is focussing the lens, another strong lens may be used to examine the details more minutely, this being held between the thumb and index of the left hand some inches directly in front of the eye.

under examination. A special kind of lens for this latter purpose is the "corneal loupe." The final procedure is direct inspection with the Ophthalmoscope using a +18 or 20 lens behind the slight hole of the mirror, the surgeon proceeding as if he were about to examine the fundus in the erect image. The systematic habit of going through all these four manoeuvres, when necessary, will take up very little time and will prevent any lesion of the cornea being overlooked.

Affections of the Cornea may conveniently be divided into:—

(1) Inflammations (a) Ulcerative, (b) Non-ulcerative; (2) Ectasies (i.e., bulgings); (3) Tumours; (4) Opacities; (5) Injuries.

1. (a) *Ulcerative Inflammations*—These are brought about by the entrance into the cornea of such micro-organisms as the diplobacillus of Morax, the pneumococcus, the staphylococcus, streptococcus, bacillus subtilis, etc. Every ulcerative process begins as a cellular infiltration somewhere near the surface, recognized as a cloudy spot with a dull appearance of the surface immediately above it. The epithelium and anterior layers, including a part of BOWMAN'S membrane, become necrosed and fall away, thus an ulcer is formed. The pathology is exactly the same as any ulcerative process elsewhere on skin or mucous membrane. Corneal ulcers, however, vary clinically in numerous ways; some are much more amenable to treatment, while others are almost incurable; some go deeply into the cornea and cause perforation, while others only spread superficially; with some the progress is extremely rapid, while with others it is excessively chronic; some ulcers are situated in the centre of the cornea, while others confine themselves to the margin. Then the accompanying symptoms vary greatly; with some ulcers, both the objective and subjective symptoms are severe; blepharospasm, photophobia, pain, circumcorneal injection, lachrymation, etc., are all or some of them intensely in evidence, while again, none of these symptoms, or only one or two of them, and that slightly, are apparent, from first to last, in the course of serious and in fact extremely dangerous ulcerative processes. Some ulcers are purulent, others never show any pus on the surface, etc. The explanation given for all this is that there are different micro-organisms and they react in a variety of ways.

With regard to the chief symptoms of corneal ulceration we may say, speaking generally, although there are many exceptions, that photophobia and blepharospasm are more pronounced in children than in adults, and that ciliary injection is more marked in adults than in children; there is more pain the more acute the ulcer, and more intolerance of light when the ulcer is superficial than when it is deep. Ulcers are either primary or

secondary. A primary ulcer is one in which the diseased process has originated in the cornea itself, while a secondary ulcer results from disease generally in the conjunctiva, in the case of acute blenorrhœa or of diphtheritic conjunctivitis.

Ulceration of the cornea always means deficient vitality; in some instances a corneal abscess has broken down or the nutrition of the cornea has in some way or other been interfered with; some are the result, especially in children, of phlyctenular keratitis, while with many cases of corneal ulceration traumatism has been the originating etiological factor. Corneal ulcerations are much more common in the poorer classes than amongst the well-to-do. The working classes are more likely to meet with injury in the course of their daily employment; the poor quality of and insufficiency of their food, their unhygienic surroundings, the vitiated atmosphere in which they live, etc., all these help towards impoverished trophic conditions of a structure that normally has no blood vessels of its own and that is entirely dependent on the circumferential blood supply of its immediate neighbourhood. Age is an important factor from several points of view. In a healthy child a traumatic lesion would quickly heal with little or no ulceration, *i.e.*, necrosis of surface structures, whereas in an unhealthy ill-fed, strumous child, a slight trauma would light up severe phlyctenular keratitis with the characteristic type of ulceration, even a little dust being sufficient to start it. As primary ulceration in childhood phlyctenular disease of the cornea is the common type, indeed one scarcely ever meets with any other. Secondary ulceration of cornea occurs in infants as the result of conjunctival xerosis and blenorrhœa neonatorum. Because of decreasing vitality corneal ulceration becomes more common as years advance. In an old person even a slight conjunctival catarrh may form the starting point of an intractable ulcer. Age is of importance in prognosis. The opacities left after corneal ulcers have healed vary according to the depth of the ulcer and the tissues involved. If the *substantia propria* beneath BOWMAN'S membrane be involved, there will always be an opacity. When there is central ulceration, always remember to tell your patient at his first visit that the vision of that eye will, in all probability, be impaired for life. Guard yourself against his expecting too much. A bluish opacity is more likely to disappear in time than a white one, as it means that there has not been such a depth of involved tissue. The technical term for a bluish white or bluish grey opacity is "macula" whereas a very marked white scar is called a "leucoma." A faint cloudy appearance from quite a superficial ulcer is termed a "nebula." These latter nearly always disappear, but even here vision may be impaired through the occurrence of astigmatism.

A far more serious danger in ulceration of the cornea is that of perforation with the occurrence of prolapse of the iris and as a result of this anterior synechiæ, adherent leucoma, or staphyloma of the cornea, also fistula of the cornea. These conditions are all more or less serious, a total staphyloma meaning complete loss of the eye.

Hypopyon (or pus under the cornea) occurs almost invariably in certain kinds of corneal ulcer, such as the deep ulcer and the serpiginous ulcer. It is a deposit of pus in the anterior chamber and may be seen to be free pus in that situation by the fact that it gravitates to the lower part when the patient is standing, and will change its position towards the temporal or nasal side according as the patient places his head on one or other side. Sometimes the pus is so small in amount as to be detected with difficulty. It is a mistake to suppose that this pus comes from the ulcerated surface. The membrane of DESCÊMET which lines the posterior surface of the cornea effectually prevents any pus cells passing through, and there is often copious hypopyon when the ulcer itself is quite small and non-purulent. From whence comes this pus in the anterior chamber? These pus cells are perfectly sterile, they come from the iris in accordance with the well known pathological law concerning inflammation, that leucocytes wander out of the blood-vessels near an inflammatory focus and make their way towards that focus. The membrane of DESCÊMET serves as a barrier to their further progress and they collect as pus in the anterior chamber.

Pathologically all ulcers of the cornea, irrespective of their almost innumerable sub-divisions, take place in much the same way, the variation of the different types being only as to the rapidity, extent or amount of the tissue involved. There is first the infiltration into the corneal lamellæ beneath BOWMAN'S membrane. Then there is the breaking down, necrosis of tissue above this infiltration and resulting ulcer; then the base of the ulcer is seen to be covered with pus, its walls are ragged and the surrounding tissue is filled with round cells. As soon as cure commences, the base of the ulcer begins to clear. It loses its pus gradually, and along with this the surrounding infiltration becomes absorbed. Epithelium grows in from the margin and gradually carpets the floor or base of the ulcer, and underneath this epithelium ordinary connective tissue forms, and the amount of opacity will depend upon the amount of this connective tissue that nature finds necessary to repair the damage. BOWMAN'S membrane never becomes restored over the cicatrix. Supposing this reparative process does not take place and the ulcer extends, there is grave danger of perforation, especially if the ulcer is of a type likely to extend deeply into the tissue. As the tissue is destroyed and the ulcer

deepens the process is checked by meeting with the resistance of DESCHEMET'S membrane. This tough membrane is the last to give way, and before it does so it protrudes into the ulcer, forming a convexity on its floor termed "keratocele." This causes for a time a diminished resistance to the intraocular pressure, but sooner or later perforation suddenly occurs with prolapse of the iris into the corneal wound and probably attachment of this same into the wound, either being, if small, what is termed an anterior synechia, or if large, a true prolapse of the iris which acts as a sort of plug, filling up the loss of substance and keeping back the contents of the globe.

(To be continued).

• INFANTILE SCURVY.

BY

FREDERICK LANGMEAD, M. D., M. R. C. P.
Physician to the Outpatients, Paddington Green Children's
Hospital, Medical Registrar to St. Mary's Hospital, etc.

Infant life pays a large toll to the business methods of twentieth century pushfulness. Many an up-to-date mother, trained and educated for all manner of occupations, save only that of maternity, is unable or unwilling to nourish her offspring at "Nature's twin founts" and gladly catches at any apparent method of substitution. Perhaps she has been nursing the baby for a short time and then her milk fails, or the allurements of society are too strong for her resolution, and she straightway casts about for some method of evasion, some other way of feeding the baby, because "her own milk disagrees." It is now that a patent food looms large in her horizon: some humorous or gruesome picture advertisement claims her attention on hoardings, or perhaps on one of the end pages of a so-called religious magazine. Or it may be that the nurse, more insistent than observant, loudly chants the praises of one of the "perfect substitutes for mother's milk." A tin of "Dr." So and So's food is procured and the baby enters upon a new life fraught with all the dangers which follow in the train of artificial feeding. There is no perfect substitute for the mother's breast milk, and any baby unnecessarily deprived of that, its natural food, is as surely robbed of its *birthright* by its mother, as ever was Esau by Jacob.

Infantile scurvy is an artificial food disease. Out of 61 cases recorded by DR. CHEADLE, "in the great majority no fresh food had been given for a considerable period before the attack; in the majority of these none at

Specially contributed to *The Antiseptic*.

any period of feeding, and in the rest only at the commencement of the hand feeding; in the remaining cases very small quantities only had been given, and in some of these for a few weeks only." Formerly described as acute rickets or acute hæmorrhagic periostitis, its nature was unrecognised until the true significance of the symptoms were first realised by DR. CHEADLE, who, in November 1878 and again in July 1882, pointed out the identity of this disease with the scurvy of adults.

SIR THOMAS BARLOW later made an exhaustive study of the morbid anatomy which clearly demonstrated the truth of this opinion, and hence, in Germany and America, this condition goes by the name of "Barlow's Disease."

Symptoms.—The age most commonly affected is between six and eighteen months. It is rare to find scorbutic symptoms either before or after this period, although instances do occur. As we approach the bed, the baby begins to cry loudly, associating our coming with the acute pain, which it has experienced at the hands of those who have nursed or previously examined it. When we look at the patient, we see usually, a fat, pale, flabby infant, with a shining almost transparent skin, crying or shrieking, but not tossing about. If we turn down the bed clothes we may find the legs fixed in the characteristic position of scorbutic pseudo-paralysis. When this is so, they will be abducted and externally rotated, the thighs being flexed slightly upon the abdomen and the legs upon the thighs. Perhaps there is œdema over the legs or arms. Manipulation causes great pain and reveals the presence of subperiosteal hæmorrhages, which are situated chiefly about the ends of the long bones, more often of those of the legs than of the arms, and are identified as tense, hard fusiform swellings stretching from the epiphyses along the end of the diaphyses and ending above in a sharply shelving edge. More rarely hæmorrhages occur beneath the periosteum of the short or flat bones, including those of the skull, where they give rise to cephalhæmatomata. In some of the more severe cases, a peculiar soft crepitus may be felt in the region of the epiphysis, due to transverse fracture of the bone.

Perhaps equal in importance as a characteristic manifestation of infantile scurvy, is the condition of the gums. They are soft and spongy and about the erupting teeth are raised into purplish, tumid swellings. In more severe cases they are so swollen and congested that they form bleeding beefy masses, in which are imbedded the partly hidden teeth. DR. CHEADLE records a case, where large purple masses having all the appearance of raw flesh, protruded between the lips, and had been partly excised to allow of feeding. In patients who have no teeth the gums may be quite normal in appearance. Hæmorrhages may

occur from other mucous membranes, producing hæmatemesis, and malaria. Purpuric rashes or large subcutaneous hæmorrhages in the form of bruises are common, whilst hæmaturia is almost invariably present. In many cases blood is in sufficient amount in the urine, to be easily detectable, by the unaided eye; in others centrifugalisation and examination of the deposit reveals the presence of red blood cells. Hæmorrhage into the orbits may produce a rather sudden proptosis, and at the same time ecchymoses of the eyelids, and occasionally of the conjunctivæ. In a case I have recently seen, of a patient in whom scurvy was complicated by whooping cough, a very marked proptosis occurred which the mother was sure had taken place within about a quarter of an hour, during a fit of coughing. Another startling manifestation of infantile scurvy is a bodily sinking into the chest of the sternum and rib cartilages, so that as DR. COLMAN has aptly expressed it, the chest looks like that of a cadaver, on which a *post mortem* examination has been made. The temperature may or may not be raised, and seldoms gets higher than 102° F. The highest and most persistent temperatures occur during the absorption of large periosteal hæmorrhages.

Diagnosis.—In well marked cases, the history of patent food dieting, the spongy gums, the periosteal swellings, and the characteristic pseudoparalysis leave us in little doubt of the nature of the disease. It is in the slighter cases where difficulty arises, and in such, the result of antiscorbutic treatment may alone settle the diagnosis.

There are many cases of unexplained hæmaturia in infants, without other symptoms or physical signs of disease, which get well only after being given fresh foods.

Especially difficult of diagnosis are examples of scurvy occurring in infants who have no teeth, for these patients generally show no affection of the gums. Sometimes doubt arises as to whether a child is suffering from the pseudoparalysis of infantile scurvy or that of congenital syphilitic epiphysitis, but, as a rule, the tenderness is not so marked in syphilis, and there may be other evidence in the shape of rhagades, rashes, snuffles, etc. A distinguishing point of great value is the age, syphilitic epiphysitis usually occurring before six months, scurvy after that period.

Another condition with which scurvy is sometimes confused is deep-seated suppuration, such as occurs in connection with septic osteomyelitis, especially when situated about the upper third of the femur. In both cases a tense painful swelling is found near the epiphysis, and the patient is irritable, anæmic, and feverish. Here the degree of fever is of value, since it seldom ranges so high in infantile scurvy as in sepsis. Occasionally,

however, the diagnosis is impossible and incisions have been made over the periosteal hæmorrhages, whilst abscesses have been allowed to point before being recognised.

Between rickets and scurvy, there is one point of resemblance, which is, that both are the result of improper feeding. Remembering that a dried food, is also one which is likely to be wanting in fat, we must expect these two conditions to be frequently associated, and so indeed they are; but, there is no proportion between the degree of rickets and that of scurvy. Extreme rickets are often unaccompanied by scurvy, whilst conversely scurvy is occasionally present without rickets. It is unfortunate that so definite a disease should have ever been known by the compound name "scurvy rickets," for it has led to a false understanding, by many, of its true pathology, and the contrast between the treatment suitable for rickets and that for scurvy, has been imperfectly appreciated in consequence.

Morbid Anatomy.—The condition found *post mortem* is chiefly due to hæmorrhages. These may be found in the skin, in the muscles, in the loose areolar spaces, such as the orbit, in viscera, such as the lungs, spleen, kidney, in the serous or mucous membranes, and beneath the periosteum or within the medullary cavity of bones. If we cut down upon one of the periosteal tumours, we encounter on our way, pale, flabby muscles, sodden often with serous exudation, and perhaps showing also hæmorrhages. The subperiosteal blood we find generally about the ends of the long bones, and although the periosteum may be stripped off the bone for the whole of its extent, so that the diaphysis lies imbedded in blood, yet necrosis of bone rarely occurs. Fractures may be seen situated a little above the epiphyseal bones. New bone is not often formed by the separated periosteum, and if at all, only as a few inconsequent spicules. With recovery it would appear that the extravasated blood is slowly absorbed, end to end union of bone takes place, and very little of any deformity results. More rarely hæmorrhage is found under the periosteum of the skull bones or scapulæ. The morbid appearances of rickets may be present, as well as those of scurvy.

Treatment.—If there were no artificial feeding, there would be no infantile scurvy. This fact gives into our hands at once the greatest and the simplest measure, which it is in our power to use, for the prevention of this disease, I mean, breast feeding. There is no uncontrovertible instance of a baby at the breast having acquired it, unless the mother herself was scorbutic.

What precise change food undergoes at the hands of the manufacturing chemist, we do not know, but its effect is expressed when we say

that it has lost its "freshness." This somewhat intangible quality is akin to antiscorbutic power, and if we would prevent scurvy, we must either give milk unaltered or add other fresh animal or vegetable matter. Antiscorbutic power is lost especially by desiccation, so, all desiccated foods, whether of animal or vegetable origin, which are intended to be mixed with water only, to fit them for use, must be avoided. The same applies to condensed foods, but here, happily, to a less extent, I say "happily" advisedly, remembering the large number of infants of the poor, who are reared on condensed milk. The people have to pay the manufacturers for abstracting the water which they themselves have to put back, but even so, the cost is much less than that of the various dessicated and malted milks and cereal preparations. Herein lies the cause for the greater prevalence of scurvy among the well-to-do. Prolonged sterilisation and the predigestion of milk, by peptonising or pancreatising it, also diminish its antiscorbutic power, but to a still smaller degree, yet sufficiently to produce scurvy if milk so changed is given for a prolonged period.

On what the antiscorbutic power which is present in fresh food depends, we are not, at present, able to say. Some believe that an active principle is abstracted during the course of preparation, which is therefore lacking in the artificial food; others think that a toxin is added in the process of preparation or preservation in tins.

The treatment of infantile scurvy which has developed is almost entirely dietetic. We must administer those foods which contain antiscorbutic properties to a high degree and cease giving the patent food which has caused it.

The baby should be given unboiled cows' milk and the fresh juices of either the animal or the vegetable world. Especially valuable is the juice of fresh fruits such as the lemon, orange, lime or grape. The juice of half an orange night and morning, or a teaspoonful with each food, is readily taken and has a very powerful curative effect. I have found the potato cream recommended by DR. CHREADLE extremely useful, since it can be taken by quite young infants. His prescription is as follows:—"Reduce a well steamed floury potato to finest powder, by rubbing it through a fine sieve. The powder should then be well beaten up with a little boiled milk until it is of the consistency of thin cream. This should be added to the food that the child is taking—in very small quantities at first—half a teaspoonful to each bottle. If this agrees, the amount may be gradually increased to a dessert-spoonful or even a tablespoonful, if the child is of a good age."

Raw meat juice is valuable because it contains iron and its hæmaturic property is efficacious for the anæmia, but it, like milk, has only weak

antiscorbutic power, and so it ranks as an accessory measure. The danger, too, of administering the ova of tapeworms, has been shown to be far from remote.

By this line of treatment we can cure scurvy and so constantly and quickly that it compares favourably with the use of mercury and iodide for syphilis, thyroid for myxoedema, quinine for malaria, and iron for chlorosis, and yield the palm of successful therapy to none of them.

Our Contemporaries.

MEDICINE.

The Etiology, Pathology and Treatment of Pneumonia.*

BY

WILLIAM HENRY PORTER, M.D.

Professor of Pathology and General Medicine at the New York Post-Graduate Medical School and Hospital; Attending physician to the New York Post-Graduate Hospital, etc.

In pneumonia, as in all other diseased conditions, therapeutics to be scientifically accurate, must be based upon a clear conception of its etiology and pathology. The chief aim of the therapist must be, firstly, to dissipate as rapidly as possible the causative factors entering into the production of the disease; and secondly, to remove or rather assist nature as much as possible to remove the pathological lesions. This accomplished, the system is placed in the best possible position to shorten the duration and decrease the intensity of all self-limited processes.

The primary causative factor entering into the production of every infectious inflammatory process is a lowering of the nutritive activity in general, to such an extent that all the structures in the body fall well below the normal nutritive standard. Following the general depression, there must be some point in the body where the nutritive activity falls to a still lower ebb, until a soil is developed which is suitable for the bacterial growth characteristic of the disease in question. And, finally, there must be an inoculation with a specific form of micro-organism. In other words, the following etiologic factors must be developed in every instance in sequential order before a fibrinous inflammation of the lungs or a pneumonia can be developed:

1. A general lowering of the nutritive activity of the system at large taken as a whole;

* A clinical lecture delivered at the New York Post-Graduate Medical School.

2. A lowering of the nutritive activity localized in one or the other lung, with a disturbance of the circulation, in consequence of which a soil is developed suitable to the growth of the specific bacteria which stamp the pneumonic process;

3. Inoculation with the specific bacteria—the pneumococcus—in this suitable soil.

These three conditions fully developed, the pathologic changes that have long been known under the name of croupous or lobar pneumonia, or pathologically more correct, an exudative fibrinous inflammation of the lung—are produced. All this accomplished, we have the three etiologic factors at work, followed by the typical pathological changes known clinically as pneumonia. It is not, however, until all these conditions are fully established that the term pneumonia should be applied.

Going a little more deeply into the subject, we find that the injurious effects of the bacteria and their toxic products upon this particular nutritive condition result primarily in a spasmodic contraction of the congested blood vessel. This is speedily followed by a progressive expansion of the blood vessels which progresses for from twelve to twenty-four hours. At the end of this time the physiological tonicity of the vascular wall is lost, and there is a discharge of all the constituents of the blood from the blood vessels into the air sacs; and these are simply the characteristic vascular changes which occur in all true inflammations.

The first change in the development of the pathologic process is spasmodic contraction of the capillary blood vessels in the pulmonary structures; then progressive expansion until the vessels can no longer withstand the abnormal pressure from within. The capillary vessels then cease to perform their natural functions and they now allow all the constituents of the blood to flow from the lumina of the vessels into the air spaces. When this occurs throughout a whole lobe in the adult lung, or in a lobule of a small child, we have a typical croupous or fibrinous inflammation of the lung; and this essentially is the pathologic condition that we have to deal with in connection with every pneumonic process.

In the adult this infectious type of pneumonia involves the greater portion of a whole lobe or the whole lung; but in children this same infectious inflammatory process due to the pneumococcus is not infrequently limited to one or more lobules. This difference in the adult and the child led to the assumption at one time that children did not have the same type of pneumonia as adults. This was before the disease was perfectly understood etiologically and pathologically as it is to-day.

When a single lobule in an adult is the seat of an inflammatory process, it may be due to a variety of causes—causes that act locally upon

this limited area of the lung. It is always a process which is the result of the lodgement of a foreign body in a terminal bronchus, or in the air sac attached thereto. The foreign element may be tubercle bacilli, staphylococci, streptococci, the descent of exudates of all kinds from the larger bronchi, and any and all forms of foreign bodies that, perchance, may gain access to the air passages. The abnormal element, whatever it may be, acts as an irritant to the bronchus or air sac and causes a pronounced congestion of that part, accompanied by an active cellular proliferation, together with some serous exudation, but without any fibrinous elements, thus differentiating the process from the croupous or fibrinous inflammatory exudate. This catarrhal or cellular proliferating process is one of nature's methods for resisting the injurious effects of the foreign bodies lodged in these limited zones. With this form of inflammatory action there is incomplete resolution, while with the fibrinous form the resolution is usually complete. After recovery from a catarrhal inflammation there is always a certain amount of damage to the structures involved, but with the fibrinous forms the reverse is the rule.

When the inflammatory process in the lung is limited to a single and isolated lobule, it has been called a lobular, broncho-insular, disseminated or catarrhal pneumonia. All but the latter are macroscopic anatomical terms, which simply differentiate the involvement of a small from a larger portion of the lung. Neither term, lobular or lobar pneumonia, is suggestive of the inherent nature of the process or its causation. Hence, they should be dropped from our nomenclature. The essential thing to know in reference to disease is its etiology and the distinctive and distinguishing characteristics of the pathologic processes.

A discussion of the subject of pneumonia always raises the question as to whether or not pneumonia can be aborted. In my opinion, pneumonia cannot be aborted, because we have not a complete pneumonia until we have all these pathological processes at work; it is not a pneumonia until the inflammatory exudate has been poured into the air sacs; and when we have all these phenomena developed, they cannot be stopped and the lung cannot at once revert to its normal condition.

The direct removal of the etiologic factors is a very difficult problem in connection with all infectious processes. The general nutritive activity can be augmented only by the most careful attention to the diet, the digestion, circulation and oxidation processes in general. The food used should be of the most economic type. In this connection alcohol, as will be described in detail later, is of consummate therapeutic value, acting not as a direct food, but as a valuable substitute. In so far as we succeed

in augmenting the general nutritive activity, we increase the nutrition in the local or inflamed zone and thus tend to destroy the nutritive media which support the growth of the special micro-organism connected with the disease—the pneumococcus—in pneumonia.

The direct removal or destruction of the bacteria and their toxins is largely brought about by a destruction of the soil suitable for their growth, and by the development of a more active glandular excretory activity. Numerous antitoxins and antitoxin theories have been advanced for the destruction of the bacteria and their toxins and for their final removal from the system. None of these, however, has been thoroughly elucidated or gained an absolutely scientific position in practical therapy. One of the latest advanced for the removal of the bacteria is through the action of the so-called opsonin substances as described first by WRIGHT and DOUGLAS*; the contention being that the blood contains these peculiar substances, which first act upon the bacteria in such a manner, that the phagocytes can more readily take up the bacteria and destroy them. It is also asserted that the phagocytes cannot act upon the bacteria until they have first been influenced by the opsonins; that the blood serum always contains opsonins; that their presence rises and falls, and that by augmenting them in the blood the phagocytic action can be greatly increased. The exact chemical composition, however, of the opsonin substances is still an unknown quantity.

The whole problem, however, resolves itself into one of augmented nutritive activity, both general and local. This is followed by a higher state of resistance on the part of the system, and especially so against those abnormal conditions, or infections, imposed upon the animal economy when, for any reason, it has fallen below the normal physiological standard.

the threatened tendency to pneumonia, and not the pneumonia itself, because the patient has not a pneumonia until all the factors are at work; and when they are fully in motion the process has gone beyond the point where we can prevent the transudation of all the constituents of the blood into the air spaces.

The specimens before you to-day illustrate very perfectly a typical fibrous thickening of the pleura, with all the changes characteristic of chronic pleurisy; and also a carnification of the inferior portion of the lung as the result of a long-continued compression of the lung, and a small zone of acute fibrinous pneumonia. The acute inflammation in the lung was the final lesion, and was the determining factor in the patient's death. At this point it may not be amiss to say a few words in reference to the treatment of pneumonia based upon its pathology.

The important thing, therefore, to be understood and appreciated in the management of disease is the etiology and the pathological condition that we are to treat, and the method of its development. This accomplished, our therapy becomes scientific and we are then more certain of our results. It is more satisfactory to both the physician and the patient.

We find that this pathologic process in the lung is the result of a lowered nutritive vitality, general and localized, and the result of an intrinsic injury brought to bear from within by the micro-organism and the accompanying toxin upon the pulmonary capillary blood vessels at a particular point; and as a result of this injury there is progressive expansion of these blood vessels for from twelve to twenty-four hours, possibly forty-eight hours. If we were able to appreciate and diagnosticate the development of the changes in the first twenty-four hours of a pneumonic process, the natural treatment from a physiologic and pathologic standpoint would be to resort to that class of remedial agents which dilate the general circulatory apparatus, and in that way withdraw the pressure from the localized zone of congestion in which the inflammation is developing.

But, as a rule, we do not see the case at this early stage. The individual attacked develops a chill; he thinks he is going to have a so-called cold; he goes home and treats himself usually for 24 or 48 hours, until he becomes too sick to take care of himself; he then sends for a physician, and when the physician reaches what now is a pneumonic case this stage of progressive dilatation of the blood vessels has passed, the blood vessels have largely emptied themselves into the air sacs and have again contracted, and the exudate has been transformed into a semi-solid mass which has more or less completely filled the air sacs. Therefore, the use of vascular depressants is contraindicated unless we see the case in the

very beginning before all these changes have been fully established; then, if we bleed the patient well—as was done in olden times—or if we bleed him as we do now by giving him full doses of aconite, veratrum viride, or antimony, or some one of those depressants which will open the general arterial system and in that way withdraw the pressure from the lung, we have just so much less exudate to contend with. We do not arrest the exudation, but we do draw away a considerable quantity of blood which otherwise would be making an effort to get through these congested and abnormal vessels into the air sacs. But, as we are rarely given an opportunity to reach the individual even in this early stage, it seems that this kind of treatment is seldom called for.

Under these circumstances the natural question is, how then are we going to deal with this exudate, this exuded fluid blood that has become semi-solid and is in the air sacs? We know that we can get rid of it in only one of two ways—by the process of liquefaction and absorption, or by a discharge through the air passages as by expectoration. Sometimes a certain amount of it is brought up through the air passages and coughed up, but the great mass is liquefied, taken up from the air sacs through the lymphatics, passed through them to the blood channels, and on into the general circulation to reach the excretory glands and through their action finally eliminated. When a man has a fully developed pneumonic process, the air sac becomes filled with the inflammatory exudate from the blood vessels that are scattered or entwined around the outside of the air sac. Just so soon as the height of the exudation stage is reached there is a tendency to contraction of these blood vessels in the inflammatory zone, and that tends to leave a little space, as it were, around the air sac between the blood vessels and the inflammatory exudate within the sac. The inflammatory exudate also, from the absorption of the contained water, and the further solidification of its proteid constituents, tends to contract. As a result of this peculiar phenomenon there is a tendency to form a vacuum as it were, between the exudation and the capillary blood vessels covering and forming the air sacs, and into this little vacuum fluid, alkaline in character, flows from the surrounding vessels.

We know from physiological chemistry that for rapid liquefaction and absorption we must have an active interchange of this alkaline fluid; hence, to secure the most rapid liquefaction of this exudate in the air sac we must keep up as rapid a circulation as possible through this vacuum-like space in the lungs after the first twenty-four or forty-eight hours have passed. We therefore need free stimulation to secure an active circulation in the pulmonary structures; and, accordingly, early stimulation of the

circulation always gives the best result. If we use circulatory depressants after the early stage, we draw the blood away from the exudate, decrease the amount of fluid circulating through this would-be vacuum which is absolutely essential for rapid liquefaction. If we stimulate the heart and secure as rapid a circulation through the inflamed lung, as is practicable, we will produce the most rapid liquefaction of the inflammatory exudate.

If in pneumonia we keep the liver, kidneys, and all the glands of the body acting freely, we more rapidly eliminate the toxins, aid in augmenting nutritive activity, and thus we can shorten the duration of the pneumonia and secure resolution just so much earlier. This fact was learned by the author as a student in Bellevue Hospital in the winter of 1874, though he did not at that time understand how it was effected. DR. ALONZO CLARK, the professor of medicine at the College of Physicians and Surgeons at that time, had a very peculiar notion with reference to stimulation. His rule was never to use alcoholic stimulation until there was a diminution in the strength of the first sound of the heart. The author remembers well that winter, in which there was almost an epidemic of pneumonia, and that during DR. CLARK'S service as attending physician there were many deaths in his ward. DR. JACOBI came on duty as attending after DR. CLARK, and he permitted the free and almost unlimited use of cardiac stimulation, and especially alcohol, early in the disease. The result was that in the same wards where two or three persons had been dying each day from pneumonia, several days would pass without losing a case of pneumonia—showing that free stimulation early in pneumonia gave a much better result and saved a much larger number of cases. This fact the author has many times had occasion to verify during the past 30 years.

The reason for this difference in result is simply that with free stimulation we augment the flow of alkaline fluid around and through the exudate in the air sacs, and hence cause a much more rapid liquefaction. It is a question just how this liquefaction is brought about. We were formerly taught that it was the result of a fatty degeneration and emulsification; then the theory was advanced that it was due to the exudation and action of a ferment body. There has been no end of theorization as to what the exact factor is that causes the liquefaction. In my opinion, no one knows absolutely, but there is something in the circulating medium or the protoplasmic structures exude possibly some form of enzyme, which is essentially to the transformation of these inflammatory exudates into the condition of fluidity. In my opinion, the inflammatory exudate, which is largely albuminous in composition, undergoes—so far as its molecular structure is concerned—hydrolytic

transformation which is followed by oxidation reduction with the formation of fat droplets, and various nitrogenous catabolic products, as the essential product, thus forming an emulsion. That this emulsion is taken up by the lymphatics, after which its contained fat droplets are ultimately oxidized in the various glands of the body into carbon dioxide and water and thus finally leave the body, the remaining nitrogen-bearing molecules being converted into urea, uric acid, etc.

This greatly augmented process of oxidation which produces the fatty transformation, liquefaction and emulsification of the inflammatory exudate, is one great cause for the high temperature during the early resolution stage of the pneumonia. It also explains the value of oxygen inhalations during the critical period of a pneumonia, furnishing, as it does artificially, active oxygen to the cavity of the air sacs, and which nature cannot supply in sufficient amount at this time when the system most needs oxygen in abundance to hasten the oxidation reduction.

If we understand the law of isomeric transmutation, hydrolytic and oxidation reduction which the proteid molecule undergoes from its entrance as food until its elimination as an excretion, we can understand a great deal in relation to the pathologic changes which can be explained in no other way. By isomeric transmutation we mean the rearrangement of the atoms so that the molecule is changed from solid to semi-solid or liquid, or *vice versa*. When the semi-solid inflammatory products are liquefied by this process of oxidation they pass into the lymphatics as an emulsion and then into the blood channels, and are carried on to the excretory glands, where they are taken up with oxygen and oxidized into the various excretory products that we find in the excreta.

If we accept the theory that liquefaction is due to fatty degeneration and emulsification of the proteid molecules, we must assume the discharge of free oxygen into the air sac, the oxidation of the exudation, and the formation of fat molecules and less complex nitrogen-bearing molecules therefrom. It is possible also that a part of this inflammatory exudate undergoes an isomeric rearrangement of its molecules, changing from the semi-solid to the liquid, and that it is then drawn in through the membranes forming the air sacs into the lymphatic channels, and carried to and through the vascular channels, thus ultimately reaching the kidney where it is thrown out of the system as just described. Both methods are in accord with what we know of physiological chemistry. The larger part of the exudation, however, is removed by the oxidation process; hence the great value of oxygen inhalations.

If we start with the albuminous molecule as we take it at the mouth, it goes into the stomach and is there after a series of intricate changes

converted into a peptone. When it reaches that state it can be taken up by the cells of the alimentary canal and discharged into the enterohepatic circulation. This isomerically changed molecule does not, as a rule, appear as a peptone in the enterohepatic circulation, but is again changed in the intestinal canal or in passing through the intestinal wall and appears in the blood as so-called serum-albumin fibrinogen, etc., and no one knows how many more isomeric forms of proteid are to be found in the circulating blood. Then it goes on to the various structures of the body and is rearranged, forming the different cells and various structures and tissues of the body simply and wholly by this isomeric rearrangement of its atoms, so that it presents different physical and chemical properties—particularly physical properties, macroscopically speaking. These proteid molecules are piled up mechanically, and that is the way we grow—simply by the mechanical piling up of these frequently transmuted proteid molecules. After they have served their purpose throughout the body, they drop back into the lymphatic channels, and then reach the blood. They are still proteid in structure all the way through and are not as yet oxidation reduction products. There is the same number of atoms all the way through, but after the proteid body has become a used-up and worthless molecule, either physiologically or pathologically, it comes around to the liver, or to the kidneys, or any of the excretory organs, and there it is drawn into the epithelial cells constituting the gland, with oxygen, where it is oxidized and broken up into the lower products of oxidation, and finally is eliminated from the system. In this pneumonic process the oxidation of the exudate begins in the air sac.

Therefore, in this pneumonic process, first as the result of the inflammatory action the proteid molecules are so transmuted that the molecule gets out of its regular channel, passes out of the capillary blood vessels of the lung into the air sac, where it appears as a semi-solid substance or exudate, after which—as we have already learned—it is converted from the solid into the liquid state. Then it reaches the lymphatic channels and by them is carried to the blood, and finally around to the excretory organs.

The form of stimulation used in these pneumonic processes is always a matter of personal opinion—strychnin, carbonate of ammonia, alcohol in some form, caffeine, benzoic acid, and camphor are the most valuable. I begin the treatment of a pneumonia with strychnin, caffeine, carbonate of ammonia, and with whisky, and reserve the camphor until the last, or when the crisis comes. If the stomach will bear it, two or three grains of fresh carbonate of ammonia are given every two or three hours, also sufficient whisky—in conjunction with the carbonate of ammonia—to soften

the pulse, and equalize the circulation. One cannot say that a man should have one ounce, or two ounces, or four ounces of whisky a day, but it should be taken at short intervals and in sufficient quantities to produce a softening of the pulse. The high tension of the pulse is the thing which interferes with the nutrition, and therefore we want to lower the high tension if we can, and thus spread out the blood a little more evenly. Some old toppers will require enormous quantities of alcohol to pull them through—it will take one or two quarts of whisky a day to keep them going, in some instances. When an interne in the Presbyterian Hospital, my attending physician said, "These men have been accustomed to two ounces of whisky six times a day; if you want to stimulate them you must begin with a much larger quantity of whisky, that is if you expect to save your patient." When these large quantities are used they often make phenomenal recoveries. There are two points which should guide us in regard to the quantity of alcohol required,—not only the relief in the tension of the pulse, but the odor of the alcohol in the breath. It is astonishing how little alcoholic odor we get in these cases where a large amount of alcohol is required. If the alimentary tract will take up the alcohol and oxidize it by its being rapidly drawn into the cells of the alimentary canal with oxygen and there yield up its heat with the production of CO_2 and water, we get no odor of alcohol in the breath. But just so soon as you have overtaxed the ability of the system to oxidize the alcohol, then the natural evaporation of it through the esophagus gives rise to the alcoholic breath. I do not believe, as some do, that the alcohol breath is due to the absorption of the alcohol and its elimination through the lungs; for, if physiological chemistry is true, we cannot have a large amount of alcohol in the blood, because we know that the introduction of alcohol in considerable quantity into an albuminous solution results in a precipitation of the proteid constituents; therefore, if we had much alcohol in the blood we would have coagulation of the proteid substances, in the blood, and multiple emboli, and we would all of necessity become permanent prohibitionists. Therefore, to talk about alcohol, as such, in the blood in any considerable quantity, is an absurdity. The assertion that alcohol can be present in the blood rests largely upon the experiments made by the French school and the erroneous deduction therefrom. They tested for alcohol by the chromic acid test, which will reveal the presence of a very minute quantity of alcohol in many gallons of fluid. Hence, when a trace of alcohol was found in the urine by this very delicate test, it was assumed by some that all the alcohol taken passed through the kidneys. To offset this series of experiments, the late Dr. ANSTIE, of London, a very close and accurate observer, took a dog and kept it

saturated with alcohol for several days. Half an hour or so before he killed the animal, he introduced a large quantity of whisky into the stomach through an esophageal tube; then, in a short time, he cut the dog up and placed everything belonging to the animal in a retort, distilled the dog, and secured a half dram of alcohol as the result—which pretty conclusively proves that the alcohol rapidly loses its identity and disproves the idea that we could have very much alcohol, as such, in the blood. It is destroyed by oxidation, yielding heat, water, and carbon dioxide; the heat thus generated is essential to stimulate the nerve centres and reflexly the various organs and structures of the body. Under such circumstances alcohol acts as a substitute for food, especially when sufficient food cannot be digested and utilized to maintain the amount of heat energy required to excite into action the various functions of the body which are essential for the maintenance of animal life.

Quite recently it has been shown conclusively, not only in pneumonia, but in connection with many other forms of disturbances in metabolism, in fact with all, that failure to recognize the necessity of maintaining sufficient heat production has been alone the cause for failure in the management of many cases. Consequently many deaths have occurred that might have been averted had this fact been correctly interpreted and scientifically applied in our therapeutics.

Alcohol is especially valuable when the digestive powers are enfeebled and at a low ebb, because it can often be taken up and oxidized in the epithelial cells of the alimentary tract without the expenditure of any digestive energy. When this is the case, it yields directly, but in an artificial manner, the heat energy which must be supplied to the system if life is to be maintained during the progress of the infectious process, or until nature can throw off the damaging effect of the toxemia. The caffeine, benzoic acid, etc., should be used alternately. By so doing nature is greatly assisted.

You will probably have noticed that the stimulants thus far referred to, with the single exception of the strychnia, are decidedly of the heat producing variety, which is true also in a measure of strychnia. The reason for the use of this class to the exclusion of all others, is this recently elucidated principle, that heat production within the animal economy must be maintained, artificially, not alone to excite nerve enervation, but to enable the system to more perfectly utilize the proteid elements and thus augment nutritive activity both general and local. Nature must be assisted in this artificial manner during the severe strain of an infectious process, so that she can maintain actively the isomeric, hydrolytic and oxidation reduction changes which are absolutely essential to bring

about a higher metabolic activity. Without such aid, in accord with these well defined chemico-physiological principles, the resistance of the animal economy cannot be augmented, and death must and often does speedily ensue.

Changing from one heat producing stimulant to another gives far better results than the continued use of any single one, no matter how good that one may be. In fact, it is always well to alternate them through the course of the pathologic process. Camphor, which from its peculiar molecular structure, yields large volumes of heat stimulation for the amount used, is of great value as the crisis is approached. This is especially so in connection with the treatment of pneumonia in children.

Strychnia should be given in pretty full doses $\frac{1}{10}$ of a grain every 3 hours or $\frac{1}{20}$ of a grain every 6 hours, throughout the whole course of the disease, as it tends to maintain nerve enervation to the various structures of the body and especially so as regards the heart and glandular system.

The open-air treatment of pneumonia is especially good in that it tends to furnish the largest possible supply of free and active oxygen, which, as we have already seen, is so much needed in this class of pathological lesions.

While the mortality from pneumonia is generally given as very high, this is due to the fact that the infectious inflammatory process constituting the disease is usually developed in connection with some pre-existing and very profound disturbances in metabolism. When this is not the case, and the infectious process is managed in accord with the fixed principles of chemico-physiology, the natural tendency is to recovery.—*The Post-Graduate*.

The Character and Treatment of Membranous Enteritis (Colica Mucosa).

Albu (*Therapie der Gegenwart*, June, 1906). The designation "membranous enteritis" as a rule includes two different diseased conditions, namely, membranous colitis in the restricted sense, and so-called colica mucosa. Both these pathological conditions have in common the chronic constipation and discharge of tubular masses of mucus, but colica mucosa presents another symptom which is absent in true membranous enteritis, namely, the appearance of intermittent abdominal colics. The pathogenesis of the two affections likewise has a very important distinction, membranous enteritis being, as a rule, caused by atony of the large intestine, whereas colica mucosa is due to tonic spasms of the bowel wall. The

latter disease accordingly constitutes an irritative neurosis of the bowel, based upon a primary purely nervous spasm of the colon.

The treatment must, therefore, vary with the conditions present. Colica mucosa requires, in the first place, the control of the intestinal spasms. This is accomplished by:

1. Application of warmth, in shape of hot compresses (linseed poultices, hot plates or bottles, etc.) and hot half or full baths.
2. Narcotics, in shape of suppositories and belladonna (0.01 to 0.02 pro dose), to which may be added the same amount of codein. The author objects to the use of opium in any of its preparations, because its sedative value is upset by the occurrence of intestinal paralysis under its prolonged employment, resulting in increase of the existing constipation and in aggravation of the intestinal weakness. Morphine is indicated only in the presence of severe paroxysms.

Attention must be chiefly directed towards the removal of the tonic contractions of the bowel. These indications are met with by:

1. Prolonged half or full baths, warm, lasting from 20 to 25 minutes, three times weekly.
2. Warm enemata with oil (one-half to one pint linseed oil, etc.), or oil mixed with soapy water, to be introduced very slowly and under low pressure, to remain for a long time.
3. For nutrition, a milk and vegetable diet, in form of porridges, meaning the exclusion of all husks, shells and cellulose constituents in general. The vegetables are, therefore, to be served "mashed" and the fruit in shape of "jams." The food must be very carefully prepared, so as to avoid the irritation of the bowel wall caused by indigestible vegetable constituents, which results in contraction. At the same time, the food should be bulky, so as to advance of its own accord, maintaining the bowel in constant gentle motion. The internal administration of the bromides and other nerve tonics is useless. Permanent results in the treatment of neurasthenia can be looked for only from physico-dietetic methods.

The treatment of membranous colitis is not the same. The atony of the bowel is here best improved and relieved by the following measures:

1. Careful massage of the large intestine with the hand or a vibratory apparatus, preferably when the bowel is empty.
2. Faradisation of the large intestine in frequent brief shocks (in relaxation of the abdominal coverings).
3. A more or less coarse vegetable diet, under simultaneous use of buttermilk, kefir, honey, jams, dried fruit, grapes, gingerbread, graham bread, milk, sugar, etc.

4. Glycerine enemata and suppositories; cold water enemata.

The employment of astringent injections is strictly contra-indicated in either of these conditions, because they serve to increase the irritation of the bowel, and with it the formation of mucus. Moreover, they actually provoke intestinal contractions. On the other hand, it is advisable to remove the mucous membranes by regular lukewarm injections of soda water or oil enemata. In case of failure, a mild laxative, such as castor oil, may be administered. The longer the mucous membranes are permitted to remain in the bowel the greater is the danger of the appearance of colics.—F. R.—*The Medical Review of Reviews*.

Diagnostic Value of Sounds Produced by Percussion of Vertebrae.

PROFESSOR KORANYI, of Budapest, who, as early as 1897, made public his discovery of this so-called paravertebral triangle of dullness found at the base of the unaffected lung in pleuritic effusions—known as Grocco's sign—has now classified the sounds produced by striking the spines of the vertebrae at different levels. KORANYI has located five zones along the normal spine. Percussion is performed by using the finger as hammer, or with a hammer, or with hammer and ivory plessimeter. The stroke must be light as a heavy blow sets in motion sound waves over too large an area. Two divisions in the normal individual are especially noted for their definite and constant note: one is from the fifth to the tenth or eleventh dorsal vertebra—this section giving out, on percussion, a full, clear, non-tympanitic sound. Another division is the seventh cervical vertebra, which gives forth a flat note. Of the various zones he says: "If one begins to percuss from the upper part of the spine, an almost completely flat note is obtained, which, however, on stronger percussion is slightly tympanitic. This reaches to the seventh cervical vertebra. From there on the note is quite dull from the first to the third dorsal vertebra, finally at the fifth vertebra becoming clear. From the fifth, which in some cases gives a somewhat dull sound, to the eleventh the note is full, clear, nontympanitic. At the twelfth dorsal vertebra the note is quite dull. This dullness reaches to the fourth lumbar spine, but as one percusses downward the note becomes slightly clearer. At the fifth, and also at the fourth, lumbar spine, when the intestines are much distended, the tympanitic note is elicited. Over the sacrum, especially if the vertebral column is not too strongly bent, there is a moderately clear tympanitic note, which is loudest over the coccyx." To obtain the best results, KORANYI advises that patients should sit comfortably on a stool,

the hands in the lap. Conclusions drawn from this study in percussion are summarized as follows: "The resulting percussion note is determined by the anatomical relations of the organs lying in point of the vertebrae, and especially of those organs lying near the vertebrae to which the spines belong. Further, the spine possesses as a percussion area a certain independence, and the percussion note is quite different from, and independent of, the same neighbouring region—intercostal space, abdominal region. Consequently any pathological change in the organs near the spine makes itself known by a change of the percussion note."—*The Medical Notes and Queries*.

SURGERY.

A Comparative Study of Drugs Commonly Used in Urethral and Bladder Irrigation.

BY

J. W. MILLER, M.D., CINCINNATI, O.

Irrigation of the urinary tract has now become so firmly established a method in the treatment of diseased conditions that it is of interest to review the various drugs most commonly used. "Irrigation has a two-fold object; to cleanse the urethra and bladder of bacteria and secretions of pus adherent to its walls, and to stimulate the superficial layer of the urethra and vesical walls to exfoliation, so that a healthy surface from which regeneration of the tissue will take place may remain."—(CASPER). It is almost farcical when we investigate the subject and see the number of drugs recommended; hence it is well to limit ourselves to the study of a few remedies that time and experience have taught us are of inestimable value in urinary disease. From constant use we soon learn what to expect from a given preparation, and can thereby select with nicety the drug suitable for each individual case. We may divide the drugs used in making solutions for irrigating into three classes:

1. Cleansing and mildly antiseptic.
2. Antiseptic.
3. Strongly antiseptic.

In the first class we have isotonic salt solution, boracic acid, sodium benzoate and fluid extract of hydrastis, non-alcoholic. Under antiseptic solutions: Potassium permanganate, nitrate of silver, and the organic silver compounds such as protargol, argyrol, largin, etc. The strongly antiseptic drugs would include bichloride of mercury, formaldehyde and carbolic acid.

"Normal salt solution (0.6 per cent.) is one of our most valuable therapeutic agents used for irrigating."—(HEINECK). It is non-toxic and the question of cost does not have to be considered. "It does not coagulate albuminous fluids and has a mild hemostatic action."—(HAYEM). It can be prepared with reasonable accuracy, by dissolving a teaspoonful of salt in a pint of boiled and filtered water. The indications for the use of this valuable remedy are many. Probably its most valuable use in urology is as a preliminary douche in subacute and chronic cystitis. It is preferable that it be warmed. It can be employed to advantage for irrigating the urethra according to the JANET or the DIDAY methods in acute and subacute gonorrhoea. In acute retention from prostatic enlargement and catheterization the residuum is generally to be replaced by a mild antiseptic, preferably normal salt solution.

Boric acid. This well-known and commonly used drug is feebly germicidal. "Bacteriological experiments show that it has little more effect in killing germs than has salt and water."—(WHITE and MARTIN). It has a soothing effect on mucous membranes, and as a wash for the bladder it gives great relief in cases of cystitis. "It holds a place in bladder lavage from which it will not be easily dislodged."—(KEYES). It rarely causes toxic symptoms. Sometimes even in dilute solutions it is decidedly irritating. When the mucous membrane will not receive the solution kindly, as denoted by pain immediately after irrigating or after the act of urination, it would suggest to us to stop all local treatment or change our solution as to strength or preparation. As pulverized boracic acid dissolves very slowly, it is better to use the granular form. It is one of the safest preparations to place in the hands of the patient when we instruct him in the technic of auto-irrigation. In the diagnosis of chronic posterior urethritis, a warm saturated solution (4 per cent.) is used to wash out the anterior urethra and also for the recovery of shreds.

Benzoate of Soda. The uniformly good results obtained with this salt given internally in inflammations of the genito-urinary tract led to its use locally, it having replaced salicylic acid to some extent. It is an efficient disinfectant and germicide. I am of the opinion, however, that the chief value of these mild antiseptics in the treatment of specific urethritis depends more upon their action as general cleansing agents than upon any destructive action upon the gonococcus.

Hydrastis Canadensis. The non-alcoholic preparation having mildly astringent and hemostatic action when properly diluted, may be applied to the most delicate surfaces without irritation. It is excellent in all forms of catarrh, and is very soothing to all inflamed mucous membranes. In acute and chronic cystitis, with frequency of micturition and pain, in

often entirely relieved after the use of hydrastis. When combined with other medicinal substances, such as zinc sulphate or lead acetate, it will be found to be exceedingly useful in cases of chronic gonorrhoea where localized areas of mucous membrane of the urethra are in a state of chronic catarrhal or granular inflammation often spoken of as "gleet."

We must not expect too much in diseased conditions that have extended over a long period from the drugs mentioned under "mildly antiseptic." They are merely forerunners of the more active preparations to be mentioned later. Few of us would think of using silver nitrate or formaldehyde in the urinary bladder before first testing the sensibility of the mucous membrane of our patient with one of the cleansing solutions herein mentioned. "Disregarding the patient's sensitiveness and causing him to suffer, cannot be too strongly condemned."—(KEYES). This flushing with a mild solution is always indicated as a preliminary when concentrated applications are to be made, in order that full benefit will be derived.

Antiseptics. This is the most important class to consider.

Potassium Permanganate. JANET'S irrigation treatment has stood the test of years, and though he has changed the details of his method of procedure many times, he still continues the use of permanganate. A solution of this salt in urethral and bladder infection by reason of its oxidizing power, is largely employed as an antiseptic to destroy the pathogenic cocci. Permanganate in solution rapidly disintegrates; therefore it is better to purchase the drug in tablet form and make a fresh solution with distilled water when needed. It is an energetic disinfectant of the mucous membrane, and by removing mechanically and washing away accumulated secretions, makes a less favourable medium for the growth of the coccus. This drug meets the indications in the treatment of acute gonorrhoea in that it is unirritating and antiseptic; does not coagulate albumin; is capable of a certain power of penetration and nearly free from astringent properties in the strength of 1 to 10,000. "Permanganate also causes an edematous swelling of the epithelial cells, which inhabits the growth of colonies of bacteria."—(MORTON). It is therefore useful in treating nonspecific and septic urethritis. "This drug is to the urethra what the silver salts are to the bladder."—(KEYES). It may produce complications, but in my experience not more so than other drugs mentioned under antiseptics. This, I believe, is usually due to mechanical irritation. Either the technic of irrigation followed is wrong, or we have dropped into a routine and have not been sufficiently careful in the selection of cases for this method.

Nitrate of silver. The remedy *par excellence* in disinfecting the urethra and bladder and lessening suppuration is nitrate of silver. Its

action on mucous membranes is astringent and antiseptic. "Its astringent action is attributed to the contraction of the blood vessels and also to the formation of a protective layer of coagulated albumin: its antiseptic properties to its action in coagulating the proteids of the microorganisms, and partly from the specific effects of the metal."—(CUSHNY). It is sometimes resorted to as a preventive of acute gonorrhoeal urethritis. "Next to the use of a protection, the best prophylactic is a solution of silver nitrate."—(KOPP). About one drachm of a 1 in 30 solution is injected and is left for some little time in contact with the urethral walls. This procedure is attended with such intense pain and ardor urinae that the nitrate has largely been replaced by the use of the newer silver compounds. In the abortive treatment, as in prophylaxis, it is advisable, in all cases to employ a less irritating drug. In acute gonorrhoea after inflammatory symptoms have abated under the use of boracic acid or normal salt solution the use of silver nitrate may be instituted. The most convenient manner to make solutions is to have a definite quantity of the salt in solution, so that one grain is contained in every drachm of distilled water. This stock solution is to be kept in an amber-colored bottle. Beginning with a solution of 1 to 10,000, the strength may be cautiously increased, being graduated according to the sensitiveness of the patient. Other conditions in which the nitrate will be found to be one of the most trustworthy agents in urology are: Chronic urethritis, prostatitis, spermato-cystitis (after massage), and the general cystitis of enlarged prostate, stone and tumor. We generally employ a solution in the strength of 1 to 5,000 to 1 to 500 in cystitis. No drug mentioned will prove as satisfactory in this condition. As long as the urine is rendered clearer and symptoms are diminishing we know our treatment is effective. Any evidence of irritation is a signal that the dose is too strong or too frequently repeated; or it may be best to change to another remedy, or to desist from all local treatment.

Organic Silver Compounds. These new non-irritating remedies have assumed a place in urology which has long ceased to be an experiment. They are now regarded as specifics in the treatment of urethritis. These organic silver salts are not precipitated by chlorides nor by albumin. They have the power of penetrating into the submucosa and are non-corrosive. The bactericidal power varies, and the amount of silver which a compound contains does not indicate its activity (Therapeutic Committee, British Medical Association, August 18, 1906), and therefore we may clinically disregard this point. DERBY'S comparison (*Boston Medical and Surgical Journal*, September 29, 1906) shows "the bacterial action of protargol is efficient, though not so efficient as silver nitrate." MARGIN

silver protalbin, is an efficient bactericide. The bactericidal power of argyrol is weak." As before mentioned, the bactericidal power of these remedies has little to do with their clinical value. With the microscope it is easy to demonstrate their great value in specific urethritis, confirming the reports and comments of many observers. They are important acquisitions to modern therapy as prophylactics, and in the so-called "abortive" treatment of gonorrhoea have almost replaced silver nitrate, principally because they do not cause irritation and thereby tend to aggravate the disease and damage the urethra. As preventives of gonorrhoea about one drachm of a 1 per cent. solution of protargol or a 20 per cent. solution of argyrol is injected and held in the urethra five or ten minutes. If the use of these solutions is begun at the very onset, the disease will be well under control within a few days. Organic silver salts may be used in the bladder when silver nitrate is found too irritating. Protargol is employed for irrigating in the strength of 1 to 1,000, argyrol 0.5 to 5 per cent. Always use fresh solutions.

We now come to that class of drugs listed under "strongly antiseptic." These drugs have a place in urology, but as several cases of poisoning have been recorded from the use of even the most dilute solutions their popularity for irrigating purposes is on the wane.

Bichloride of Mercury. This is probably the most active germicide. As this salt of mercury often produces a painful reaction, we make it less irritating by adding one drachm of sodium chloride to each pint of water. It was formerly largely employed in specific urethritis in the strength of 1 to 20,000, gradually increased to 1 to 12,000 to 1 to 3,000. Its use now is largely limited to cases of non-specific and septic urethritis which are relatively few in comparison. "It is a sovereign remedy in tuberculosis of the bladder" (CASPER). In the beginning very small amounts are used, about 50 c. c.; later this quantity is increased as the bladder becomes tolerant. In these cases it is advised to keep the patient under the influence of morphin for the first few days of treatment.

Formaldehyde. Commercially known as formalin, is an aqueous solution containing not less than 37 per cent. by weight of absolute formaldehyde. "It is a powerful antiseptic and disinfectant, ranking next to mercuric chloride as a germicide."—(POTTER). Like mercury it is irritating and caution is advised. "Formalin solutions in the strength of 1 to 16,000 to 1 to 8,000 make an excellent medium for irrigating the bladder in preparing patients for cystoscopy."—(O'CROWLEY).

Carbolic Acid. Phenol being one of the first antiseptic agents suggested, was at one time employed. It has now been almost abandoned in favor of other agents. A moderately weak solution has produced very

severe constitutional results. This drug is used for urethral and bladder irrigations in the strength of 1 in 500.

We have reviewed hastily the drugs in most common use for irrigating purposes by the urologist in his practice today. More necessarily than the selection of a remedy is the study of our case. Individualize, for in this way only can we do justice to our patient. Having determined on a given drug, it is well to persist in its use and not to change without good reason. Patience and persistence are as important in this line of work as pure drugs and proper technic.—*The International Journal of Surgery*.

Renal Hæmaturia, Adrenalin In Unilateral.

A case of unilateral renal hæmaturia, of supposed traumatic origin, of sixteen months' duration, and without evidence of nephritis, cured by adrenalin. Pain was constant on the right side, the side of the injury, but the hæmorrhage was from the left kidney. The adrenalin was injected through the urethral catheter; only one injection of 6 cubic centimeters of a solution of 2 cubic centimeters of adrenalin in 8 cubic centimeters of sterile water was given. Some pain was caused at first, but soon disappeared, and the urine cleared up entirely in about ten days, and there was a general improvement in the patient's condition. Three months after the treatment the man was in almost perfect health, having only occasional slight pains in the back and headaches much less severe than those formerly troubling him.

Bilateral catheterization should always be performed. The case reported, he thinks, demonstrates the importance of attempting to stop the hæmorrhage by the injection of adrenalin through the ureteral catheter, and the excellent result in this case proves conclusively its therapeutic value in certain cases. Even with definite lesions present, it would appear not to be contraindicated, and it may be of great diagnostic value. The weakening effect of the hæmaturia would be abolished and a more careful study of the urine facilitated. If in this way a cure can be effected, as in the case reported, the patient would be saved the ordeal of a cutting operation. In case of an ulceration of a tumor into the urinary passages, the use of adrenalin would not necessarily delay an exploratory operation if indicated. The author is convinced that the intraureteral injection of adrenalin is practically free from danger.—H. H. YOUNG. —*Journal of the American Medical Association*.

Paraphimosis.

It is not always easy to reduce paraphimosis. Dr. HEINERY employs a mixture of equal parts of a solution of adrenaline (1—1,000), and cocaine

(1—10). A thin layer of absorbent wool, moistened with the mixture, is applied to the glans and maintained by a light bandage. In a quarter of an hour the oedema disappears almost completely, and the reduction is effected automatically.—*Ibid*.

OBSTETRICS AND GYNÆCOLOGY.

Angular Pregnancy and its Relation to Ectopic Gestation.

LEQUEUX (P). *Revue de Gynecol. et de Chirurg. Abdom.*, September-October, 1906.—Under the name Angular Pregnancy the author describes the pregnancy resulting from the implantation of the ovum in a uterine cornu, intermediate in position between an interstitial pregnancy and an intra-uterine pregnancy. He declares this to be not uncommon but seldom to cause symptoms which lead to its recognition. VINEBERG ascribes its occurrence to metritis during development of the uterus. BAR assigns it to the attachment of the ovum in the neighbourhood of the tubal opening into the uterus, which entails a more rapid development of that uterine cornu and more marked modifications in its consistence. BRAUN and PUECH support this explanation, and the latter has found the placental site in that position after labour in these cases. PISCACEK and VELLUET also explain it in this way. It can only be recognized during the first three months of pregnancy. During this time the gravid cornu can be differentiated from the rest of the uterus by palpation, and there is often surprisingly little softening of the cervix. HEGAR'S sign appears later than usual (generally during the fourth month), and an oblique furrow can be felt marking off the gravid cornu from the rest of the uterus. The condition can be confused with ectopic gestation, but only during the first three months of pregnancy. After that date the signs rapidly become those of a normal pregnancy. Occasionally, but not usually, pain is felt in the affected uterine cornu, which may radiate down the corresponding thigh, and may be so severe as to simulate exactly an ectopic gestation threatening rupture. A case of this kind is reported by BRINDEAU. Again, hæmorrhages occasionally occur apart from abortion. Abortion is uncommon, and, if it occurs, there is nothing distinctive about it. Another complication, though an extremely rare one, is rupture of the uterus, occurring in the same way as rupture of a gravid tube. Angular pregnancy is said to be a cause of retention of the placenta and of the formation of a placenta bordé. The condition has often led to laparotomy for a supposed tumour near the uterus. BAR says that the tumour formed by an ectopic gestation is always either fluctuating or hard, never soft, but that the tumour of an angular pregnancy is always soft and exhibits

occasional contractions. Again, the latter tumour is never in Douglas's pouch, but is always unmistakably lateral throughout and very close to the uterus. The position of the round ligament, if that can be felt, is of course enough to distinguish it definitely from a tubal gestation. Under two circumstances the diagnosis of angular pregnancy is said to be impossible, viz., (1) when the uterus is retroverted and the gravid cornu lies in front; in this case the diagnosis can be cleared up by replacing the uterus under an anæsthetic, but if there are adhesions and the gravid cornu is on the side of the adhesions, diagnosis is impossible (BAR); (2) when the angular pregnancy approaches so nearly to an interstitial pregnancy as to be in diagnosis quite indistinguishable and in anatomical situation almost identical. The suggestion is thrown out that abortion in such cases has been described as tubo-uterine abortion of an interstitial pregnancy. Where angular pregnancy is certainly diagnosed, the author recommends that the case be watched; where the diagnosis between interstitial and angular pregnancy is uncertain, the surgeon must be prepared for operative interference.—G. F. DARWALL SMITH.—*The Journal of Obstetrics and Gynecology*.

The Toxæmia of Pregnancy.

WELLS (W. H.), Philadelphia. *Therapeutic Gazette*, April, 1907.—The toxæmia of pregnancy is apparently an auto-intoxication arising from incomplete metabolism of certain food elements, but pressure on the kidneys and ureters, micro-organisms, syncytial growths, thyroid, hepatic, renal or intestinal intoxications may, no doubt, act as factors in its etiology, and it seems probable that the foetus, or its appendages, or both, may have some relation to the condition. Predisposing causes may be found in gastro-intestinal indigestion, gout, overfeeding or the reverse, the abuse of alcoholic stimulants, tea or coffee, grief or mental worry; or its starting point may be a sudden chilling of the skin of a pregnant woman whose excretion has been imperfect. Toxæmia is most frequent from the middle of the seventh to that of the eighth month. Headache, usually frontal but of very different intensity, is present in the majority of cases, and may be accompanied by disturbances of vision, or even by hallucinations; there is usually some disturbance in the mental or general nervous state. The skin is apt to be dry and muddy, or even slightly jaundicial in colour. Many patients complain of constant burning distress beneath the sternum. There is generally much constipation, and flatulence may cause pain suggesting the onset of labour. The amount of urine in the 24 hours is not diminished, but its specific gravity and the total solids excreted is decreased. Albumin is frequently found in varying

quantities, but occasionally a patient, though distinctly toxæmic, may show no albumin at all. If casts are persistently present with dropsy and other nephritic symptoms, the kidneys are suffering from poisonous blood or nephritis may have preceded the pregnancy. Sugar, unless a trace of lactose, is seldom present except in diabetes. In the study of the amount of urea excreted, many things must be taken into account: the diet, the amount of fluids taken, the normal index of excretion of the individual. A fair average normal for a pregnant woman would be 1.25 per cent.; a sudden fall below 1 per cent. would suggest danger, and probably the amount of free ammonia would be found increased (v. FOULKROD and HIRST *infra*). The heart's action, and the tension of the pulse are almost always increased in toxæmia.

Toxæmia of pregnancy is, in fact, a pathological condition which, when unrelieved by treatment, is dangerous to both mother and child. It is a cause of eclampsia, of pernicious nausea, occasionally of acute maniacal seizures, or it may lead to a chronic intoxication, with fever but without convulsions, difficult to differentiate from septicæmia. The essential treatment is to increase elimination by free purgation, and by promoting diaphoresis and diuresis; to quiet the circulation by bromides, chloral or veratrum viride, and at the same time the diet must be restricted, plenty of fresh air is essential; massage and passive movements and, later, regulated exercises, are of use. In toxæmia manifesting itself in pernicious nausea in the early months it may be necessary to empty the uterus promptly but, when the condition does not come on until late in pregnancy, the induction of labour should not be considered until other means have failed.—*The Journal of Obstetrics and Gynecology*.

The Urine in Toxæmia and Eclampsia.

FOULKROD (COLLIN). *Therapeutic Gazette*, April, 1907, p. 223.—Repeated comparison of urinary examinations with *post mortem* findings have convinced FOULKROD that the classical readings of pathological urine, especially in regard to casts, are not so serious as has been supposed. We do not know that the kidneys may not produce an internal secretion of more import to the economy of the body than their excretory function, or whether the renal cells are, or are not, more than secondarily responsible for the functional disturbance in their albumin-splitting or secretory functions: or whether such disturbance may be primarily in the liver, placenta, thyroid or other gland, or even in the cells of the uterine mucosa. Urine analysis must be studied side by side with the ingestion, present symptomatology and previous history of the patient. Toxæmic symptoms demand the determination of the total sugar, albumin, and urea,

passed during the 24 hours, as well as the specific gravity of the urine, and the presence of casts. Moreover, the urine should be filtered for the determination of urea, ammonia and serum albumin, and the albumin should be thrown down and filtered out for the determination of sugar.

Even allowing for the diminished nitrogenous intake, the excretion of urea in a normal patient is lessened during pregnancy, and its ratio to the specific gravity of the urine is also less. Usually the excretion of urea is in the same patient less after than before the symptoms of toxæmia have appeared. Serum albumin is seldom present in the urine of normal pregnant women, and unless there has been pre-existing kidney disease is unusual rather than usual, early in toxæmia, whereas later on, or when there is eclampsia, albuminuria is generally present. For the early diagnosis, prophylaxis and treatment of the toxæmia of pregnancy, the study of the nitrogen excreted in the urine is of vital importance and the estimation of the albumin and the presence of casts must be determined in all cases of progressive toxæmia tending towards eclampsia. When the diet is restricted, a very low or persistently low excretion of nitrogen must be carefully watched in relation to the clinical symptoms. The nitrogen is eliminated as urea, ammonia, purin bodies (xanthin, hypoxanthin, or nuclein bodies) and as uric acid. Of the total amount 85—87 per cent. is urea, 4—6 per cent. ammonia, and these are the more important forms. In pernicious nausea other than neurotic, the total excretion is normal, but the ammonia may rise to 10, 20 or even 40 per cent. at the expense of the urea. WILLIAMS, of the Johns Hopkins Hospital, considered a rise of the ammonia above 10 per cent. as a relative indication to interrupt the pregnancy. Any infection such as influenza may cause a storm of eclamptic convulsions in a toxæmic case. The study of the urea excretion is of prophylactic import even after convulsions are controlled and until the patient is entirely well.—*The Journal of Obstetrics and Gynecology*.

OPHTHALMOLOGY.

On the Production of a Filtering Cicatrix in Chronic Glaucoma.*

BY

DR. FELIX LAGRANGE.

Professeur Agrégé A La Faculté De Médecine De Bordeaux, France.

It is scarcely necessary here to discuss and to establish the utility of the filtering cicatrix in the cure of chronic glaucoma. After the work that has been done on the subject, in England notably by CRITCHETT and

* Communication made to the Oxford Ophthalmological Congress, July, 1907.

PRINSTLEY SMITH, and in France by DR. WECKER, the necessity of providing free exit for the intraocular fluids can hardly be disputed.

In recent communications in the *Archives d'Ophthalmologie** (August, 1906) and in the *Annales d'Oculistique* (February, 1907) I have tried to place in order of merit the various methods of treatment employed in glaucoma. There is no present need to re-open this discussion, as the result of which I concluded that, in order to arrest and cure glaucoma, it was vital to free the excretory paths.

It is in vain that one endeavours to obtain a filtering cicatrix by means of iridectomy and sclerotomy. On the one hand, when the operation is performed correctly, filtration does not take place, while, on the other, it occurs only when the surgeon, despite himself, has allowed the iris to become entangled in the wound. The fragment of prolapsed iris makes the wound gape, prevents adhesion of the lips of the incision, and thus gives rise to a cicatrix capable of allowing the intra-ocular fluids to escape from the eyeball.

A cicatrix obtained in this way presents many drawbacks. It has, however, an undoubted action upon the tension of the globe, and I have often seen patients suffering from glaucoma benefit from the accidental and involuntary entanglement of the iris resulting from iridectomy. Indeed, certain of our English confreres, as H. Herbert,† have not hesitated to endeavour to obtain systematically a filtering cicatrix by operation.

In my opinion, this accidental entanglement of the iris presents inconveniences, and that is the reason why I have endeavoured to obtain a filtering cicatrix without including the iris in the lips of the wound. This I have succeeded in doing by an operation that may be called "combined iridectomy and sclerectomy" (*Iridectomie et Sclerectomie combinées*).

Before operation, besides the ordinary antiseptic and aseptic precautions, a few drops of eserine are instilled into the eye. The pupil must be contracted for two reasons; first, because contraction renders the filtration angle freer, and this facilitates the exact passage of the knife; and, secondly, because contraction of the sphincter keeps the iris in the anterior chamber and thus away from the wound. The eserine should be applied to the eye about half an hour before operation. Shortly before operation, cocaine and adrenaline should be dropped into the eye several times with the object of producing complete insensibility of the iris and obvious anaemia of the mucous membrane. The instruments include those ordi-

* For abstract, see THE OPHTHALMOSCOPE, 1906, p. 574.

† For Herbert's original communication, see THE OPHTHALMOSCOPE, June, 1907.

narly employed for iridectomy, with the addition of a small pair of curved scissors, * which should be in excellent cutting order.

In order to conform with classical usage, the operation may be described in three steps:—

First stage.—The sclera is punctured at a distance of 1 mm. from the limbus, and the counter-puncture is made at a corresponding point. The sclera is divided in the irido-corneal angle. In terminating the incision, the cutting edge of the blade is directed backwards in such a way as to bevel the sclera, like the mouthpiece of a flute. When the knife is beneath the conjunctiva, a large conjunctival flap is made, such as was practised by von Graefe in his linear extraction of cataract.

Second stage.—The conjunctival flap is raised by means of fine-toothed forceps, and without interfering with the mucous flap, a sufficiently large piece of the sclera is resected from the exterior lip of the incision. For this latter purpose the scissors must be extremely sharp, inasmuch as the sclera is a resistant structure. The conjunctival flap, as already stated, is not cut in any way.

Third stage.—Iridectomy is now performed in the usual way. Finally, the flap of conjunctiva detached in the first stage of the operation is used to cover the wound.

The illustrations which accompany this communication will render it simple to follow the several steps of my operation. The first three represent the stages of the operation, while the fourth shows the appearance of the eye when the operation is finished.

The results that have been obtained may be discussed under two heads: (1) the formation of the cicatrix, and (2) the clinical results.

(1) THE FORMATION OF THE CICATRIX.—As regards the filtering cicatrix, I have the honour of presenting to the Congress twelve diagrams which represent faithfully the various kinds of cicatrices that result from my operation. The variations depend upon the condition of the eye, and notably upon its degree of hypertension. When the intra-ocular pressure is moderate, the cicatrix is scarcely raised, and it then appears as a small dark line corresponding to the loss of sclera. When tension is considerable, liquid in passing into the subconjunctival space elevates the mucous membrane, which becomes prominent, tomentous, and ampulliform, and sometimes recalls the button of oedema obtained by histologists by injecting liquid into the cellular tissue.

Moreover, in the same patient the appearance of the cicatrix varies, according to the moment when it is examined. Thus, when the glauco-

* Made by Lâer, of Paris.

matous eye is not the seat of recurrent hyperdistension, the cicatrix remains flat, although it is always visible as a brownish line. On the contrary, if the tension be raised at the moment of examination, the mucous membrane at the level of the cicatrix is raised, and the appearance of a cystoid cicatrix results. One point is clear from the drawings I show, namely, that in no single instance is there any entanglement of the iris.

(2) THE CLINICAL RESULTS.—As regards the results of my operation I have already published three communications which contain twenty-seven cases watched for periods of longer than six months. Of these cases, four were not followed and three remained without result, because I failed to obtain a filtering cicatrix, owing to timidity in existing too small a piece of sclera. There remain, however, twenty good results among a total of twenty-seven operated on. As to these twenty cases—in twelve the vision was considerably improved, and in eight it was maintained. These modest figures represent only the beginning of a more important body of statistics. At the same time, these results in chronic glaucoma are of a nature to encourage us in the belief that we can obtain, without entanglement of the iris, and, for that matter, any inconvenience, the filtering cicatrix which has been desired for so long a time.

The results I have obtained since my first publication (*Société Française d'Ophthalmologie*, May, 1907) merely confirm those given above, and I am able to add to the twenty-seven observations six others, already watched for some time, in which tension has fallen to normal as the consequence of the intervention.—SYDNEY STEPHENSON.—*The Ophthalmoscope*.

Ocular Injuries.

Morrison (*Medical Fortnightly*) gives some suggestions in the form of axioms to the general practitioner called to take care of eye injuries.

An immediate loss or great impairment of vision following a violent blow about the eye without external injury points to intraocular hæmorrhage, detachment of the retina or dislocation of the lens.

A gradual painless failure of vision with grayish pupil after perforation of the cornea [or without perforation, Ed.] is highly diagnostic of traumatic cataract.

A rather rapid loss of vision with a grayish pupil, neuralgic pain and a pinkish zone about the cornea coming on after a perforating wound of the cornea suggests traumatic cataract with rapid swelling of the lens substance, and may lead to secondary glaucoma or sympathetic ophthalmia. Redness and tenderness of an injured eye, with haziness of its fellow, even without pain in the latter, makes one apprehensive of commencing sympathetic ophthalmia.

Foreign bodies retained inside the ball call for enucleation.

Aching pain in an eye after injury is rarely neuralgic.

A pinkish zone about the cornea, with tenderness of the ball to pressure, and aching pain points to deepseated inflammation, uveitis or incipient panophthalmitis, and should cause the practitioner to be on his guard concerning sympathetic inflammation of the other eye.

Cold applications are best in wounds of the conjunctiva, orbital tissues or complete ruptures of the globe. Hot applications are best in deepseated inflammations of the ball and of the cornea. If in doubt it is safer to use hot.

Poultices should never be used in eye injuries.

Atropine is generally useful in eye injuries, and has a sedative influence upon the deeper tissues of the eye.

Cocaine acts superficially, and should not be long continued.

All solutions, even antiseptics, should be freshly sterilized before being used in the eye after injury.

DERMATOLOGY.

Eighty Cases of Lupus Vulgaris.*

BY

W. KENNETH WILLS, M.D.,

Physician in charge of the Skin Department, Bristol General Hospital.

One of the most difficult problems in medicine is the correct estimation of the value of any new method of treatment which is not absolutely specific. Not only is enthusiasm liable to run riot at the incidence of a series of successful cases, but the reverse may also occur, and undue depreciation of the value of a useful method be engendered by an initial series of unsuccessful cases.

In attempting to make a personal estimate of the value of radio-therapeutic methods in the treatment of lupus vulgaris, several difficulties presented themselves at the offset.

It was claimed for the Finsen Light treatment that the rays which were curative in property were those rays of short but rapid wave-length in the blue and violet, and beyond the violet end of the spectrum. But it was soon shown that the penetration of these rays was of the smallest character, while I myself have shown that rays of the less therapeutic value in the spectrum pass with ease through the body. The first difficulty I met with was in choosing the cases which would be best suited

* Read before the Bristol Medico-Chirurgical Society, December 12th, 1905.

for the treatment, out of the numerous cases which presented themselves at the department. For the most part these were of the most unpromising nature for any new method of treatment—the subjects of old-standing disease, in some cases over forty years in duration, with a history of numerous operations, many of whom presented deep and extensively scarred lupus of the integument with free involvement of mucous membranes.

Secondly, it soon became obvious that there were nearly as many types of the disease as there were patients to suffer from them. And success or failure in one case could hardly be claimed as experience in the next.

Thirdly, the patients were largely of the "night-bird" order, creeping out after night-fall or swathing up their disfigurements in light-proof veils and wraps, leading thus an unhealthy and unnatural existence, often in great want owing to the inability to obtain even the scantiest livelihood.

As an instance of how this factor has a bearing on the estimation of value of the treatment, I may cite the case of a man who was obtaining the scantiest livelihood by selling newspapers—his face always hidden under a scarf—poor to destitution, but independent. I attempted his relief by means of radio-therapy with no good result. Some years after I happened to meet him, and urged him again to come for treatment. He came, and in order to do so, went into the workhouse, and obtained there better diet, regime and attention. Instantly we obtained a most promising effect, and the amelioration is continuing in a most remarkable way.

Although aware of these difficulties, I thought that I would at first restrict the treatment of the exterior at any rate to the radio-therapeutic methods alone, and attempt to estimate the value *per se* of the radio-therapeutics as a specific. If some cases seem to have been a very long while under treatment, it must be remembered that until quite recently no other treatment was used in conjunction with the light, that many of these were old scarred cases, and some of them cases on which the Finsen treatment was merely wasted.

The first case of lupus was treated in the department in December, 1901. Up till the end of 1905 we have a record of over eighty cases of lupus. Besides these there have been not a few instances of other manifestations of cutaneous tubercular disease, such as scrofuloderma, tubercular abscesses, verruca necrogenica and the allied verrucous condition on the hands of butchers, which is in all probability tubercular. These might very well form a separate note, since they have been extremely ready to respond to radio-therapy, more so than lupus vulgaris, but I have omitted them from this collection.

The variations in type of lupus are numerous but not always well defined, one type merging into another according to the reaction of the patient to the disease. I have divided off the following:—

1. Extensive erythematous forms, spreading widely and rapidly at intervals, sometimes more or less symmetrical in position, depending upon unknown factors for their delimitation. Perhaps nerve areas are roughly mapped out; certainly the hairy areas seem to offer great resistance.
2. Nodular forms, with very slight erythema occupying one or more areas, with no suggestion of nerve area or symmetry; no tendency to ulceration, and of very slow growth.
3. Hypertrophic forms (*lupus exedens*), with high-raised granulation tissue, of rapid development and spread.
4. Ulcerative forms, where ulceration is the chief feature of the case, not merely an incident in the case.
5. Verrucous forms, indolent in growth, very chronic and resistant.
6. Oedematous forms, with lymph-stasis out of all proportion to the amount of disease, but the cutaneous exanthem showing definite "apple-jelly" nodules.
7. Sclerodermic forms.

As I have said, these types may overlap, it being difficult to classify some cases under any of these headings. But in general the case is true to its own type, whatever that type may be. If it is hypertrophic on the face, it will be hypertrophic on the hand; if nodular on the thigh, it will be nodular on the ear; and so on. It is rare to find also lupus in one patch while there is some indefinite scrofuloderma elsewhere. It would appear that the type of disease is the expression of the tissue resistance rather than the virulence of the strain. At the same time it is quite rare to find phthisis in a lupus patient. It is present in a very chronic fibroid form in three out of our eighty cases—3.75 per cent. Other forms of tubercle may be present, though not commonly. Tubercular dactylitis in three cases—3.25 per cent. Hip-disease (old) in one—1.25 per cent. Enlarged glands in several.

Lachrymal dacryocystitis and abscess is fairly frequent when the nasal mucous membrane is attacked. It is of interest to note how many patients with lupus of the face have attending infection of the nasal mucous membrane. Indeed it is not infrequent for the patient to admit having had a liability to epistaxis and coryza or blocked nostril for a long period before lupus has developed externally.

The various types behave differently to the radio-therapeutic measures. The extensive erythematous forms are very difficult to treat. It requires

long-continued patient care to make any headway at all with the light and with the X-rays many and frequent applications are necessary before the erythema dies away and scar tissue is revealed.

As soon as this paling of the area is observed, it will be noticed that broad bands of white supple scar tissue leave between them islands of erythematous material, which gives the diffuse staining characteristic of this kind of lupus through the diascope. The X-ray treatment must be continued for a long while after this, and it is this feature which opens up an avenue of danger in persons past the middle age. Long-continued X-ray treatment in a case where scarring is extensive, and is cutting off islands of inflammatory material, may be followed by the development of carcinoma. It is recognised that carcinoma may develop on an untreated lupus, the reparative processes of nature pursuing the same course, but there is obviously a danger of raising these undesirable statistics by the too rapid encouragement of this healing process. Epithelioma developed on the lip in one very extensive case of this form of the disease, and in spite of extensive removal, which Mr. Hey Groves was good enough to undertake, the patient went from bad to worse and died.

It is jumping to conclusions to state with any degree of definiteness that this was produced by the ray-treatment, but having watched the case for years there is a haunting conviction that the treatment was a contributory cause.

Perhaps one attempted to do too much. In the initial stages of the treatment the light produced a great amelioration of his distressing condition. Later, as the light did not seem to be curing any part, I added the X-rays. Improvement and the scarring of large areas was soon observed, and I was tempted to pursue the disease wherever any recent erythema showed itself, with this disastrous result.

On these cases an advancing edge of more resistant lupus is seen as a rule. In this edge most of the recurrences will be seen in cases which have done well, and it is necessary to treat again and again until no fresh developments arise. On this account it is impossible to call a case cured until years have elapsed.

The nodular forms without much erythema do well with the light as a rule. In some cases, however, the good results are slower to arrive than in others, and I have observed that the factor of general health is a large one. It would seem that the reaction to the disease in these cases is not sufficient to produce the desirable erythema, which is undoubtedly reparative. Even when this is artificially supplied the

leucocytic invasion is not sufficient. One case of this order was of a very delicate strumous type, while a second had phthisis. In the first, relief of the disease was produced with some tendency to recur in spots, in the second very little could be done. One spot only seems to have disappeared, while others were removed surgically, being in places where the scars would not show. In cases where the general health is satisfactory what erythema is present at first dies away on the subsidence of that caused by the treatment, and the nodules pale till they are no more than the colour of freckles, and many disappear from view altogether. But it is not infrequent that nodules are left behind, inveterate and persistent, and which only the longest course of treatment might be expected to relieve. On the other hand, the nodules are clearly demonstrated as the focus of the disease, and the simple and not very painful process of stabbing them with a pointed match-stick dipped in pure carbolic acid will get rid of them, even if it leaves behind small pitted scars. This is the course I adopt now when I have to deal with any of these inveterate and chronic cases. It may certainly be claimed for radio-therapy that it decreases the amount of the area to be treated with caustics eventually, while in many cases of these inveterate forms it relieves without resort to caustics at all.

In the hypertrophic forms it is seen at once what an enormous advantage radio-therapy can offer. With the large masses of granulation tissue exuberant, foul and greatly disfiguring, the temptation to remove the whole with the sharp spoon is almost irresistible. If this is performed great loss of tissue with irregular deep scarring will occur, whereas the X-rays soon have a marked effect upon the granulations, levelling them down to the skin, and leaving a scar in no way particularly noticeable except for occasional development of telangiectatic vessels, which have in a few cases made a permanently red colouration of the scar. This is possible after any prolonged X-ray treatment, and not dependent on the kind of disease treated.

After the X-rays have reduced the hypertrophied granulation masses, there may appear ordinary lupus nodules which persist. These are not as a rule difficult to deal with, either by continuing the rays or with the light lamp.

The good effect of a course of the rays will continue for a long while after the rays are stopped. It is my practice to go very slowly in these cases, to prevent, if possible, the development of telangiectases by too rapid treatment. The result, as proved by time, seems to be very satisfactory as far as my experience goes; but if ever any part begins to develop, for instance at the edge of a patch or in a fresh part of the body.

the production of granulation material is extraordinary in its rapidity and amount.

In the ulcerated forms we have again an opportunity for the X-rays to show an advance in therapeutic methods. Large, deep, and very chronic ulcers yield to their influence without added loss of tissue or the contractures which might be expected. Not only do they heal, but they remain healed. In very extensive cases of the disease, where little else could be accomplished, the complete healing of the sores has led to comfort and material well-being of the patients. This good result can be obtained on the mucous membranes as well as on the skin, provided the parts can be reached by the rays without an undue exposure of nearer parts. It is not advisable to treat the recesses of the nose with the rays from an X-ray tube, as the tip and alæ of the nose will show evidences of an overdose before good results can be obtained internally. The common site of perforation and ulceration within reach of the finger can be so treated and effectually. For internal use X-rays can be applied by means of high frequency vacuum tubes, which emit X-rays. I have tried this method with only partial success.

In verrucous forms there is a hard, warty growth of the corneous layer over each of the lupus nodules. The rays cause the corneous layer to shed, and the nodules exposed thereby are more easily dealt with, by other methods if desired, or by the continuation of radio-therapy. Some very good results have occurred from X-rays alone.

In cedematous forms the X-rays cause the œdema to subside, and in this particular I think they supersede all other forms of treatment. Occasionally the lymphstasis is out of all proportion to the apparent amount of lupus present. The lips, if involved, hang pendulous and unprotected; they ulcerate and become useless. The leg, if involved, looks as if the subject of elephantiasis; but the œdema subsides, and lupus nodules, which previously were not obvious, become visible and can be treated.

In sclerodermic, hard and indurated forms, the X-rays soften the induration, heal any incidental ulcers, and, as far as my experience goes, the results are lasting.

Conclusions.—For the most part I have obtained better results with the X-rays than with light; but I believe that the Finsen lamp is the better radio-therapeutic agent for nodular lupus, while the X-rays are better for hypertrophic, ulcerated, verrucous and sclerodermic forms.

Recurrences occur in this as in other treatments, and the cases must be jealously watched at intervals after they are discharged as relieved. But

it can be claimed that there is not the loss of tissue attendant upon the other treatments, and consequently not a tithe of the disfigurement resulting. On the parts of the body beneath the clothing, where possible, excision is probably the best available as well as the most rapid method. On the parts that show, radio-therapeutic measures, supplemented by carbolic acid puncture if required, will give slow but the best results.—*The Bristol Medico-Chirurgical Journal*.

LARYNGOLOGY.

A case of Perichondritis of the Larynx, occurring during the course of Typhoid Fever.*

BY

H. S. BIRKETT, M.D.,

Oto-Laryngologist, Royal Victoria Hospital,

AND

H. S. MUCKLESTON, M.A., M.D.,

Resident Laryngologist, Royal Victoria Hospital.

This case presents an unusual and serious complication of typhoid fever.

The patient, K. B., is a labourer, aged 21 years; he is a native of Austrian Poland, and has been in this country for a little over one year.

He was admitted to the medical ward of the Royal Victoria Hospital with typhoid fever, on October 31st of last year, in Dr. Martin's service.

The disease ran a severe course. His respiratory tract seemed highly vulnerable. In addition to the usual bronchitis, he suffered from repeated attacks of epistaxis, and twice developed broncho-pneumonia. Other complications were intestinal hæmorrhages, and subcutaneous abscesses. He was delirious for one week.

Laryngeal symptoms began to manifest themselves early in December; his voice became hoarse, and his breathing noisy. Examination of the larynx, three days after onset of the condition, showed an acute perichondritis with involvement of the cricoarytenoid joints; the left cord was fixed and ulcerated, the right limited in movements of abduction and adduction; both false cords were œdematous.

By the use of steam and the vapour of the compound tincture of benzoin, he gained temporary relief from his symptoms.

* Presented before the Montreal Medico-Chirurgical Society.

1907.]

On the sixth day of his laryngitis, he began to show inspiratory distress, his breathing becoming stertorous, his pulse rapid; his facial expression was one of great anxiety. These symptoms developed between three and five o'clock in the morning. A rapidly deepening cyanosis forbade further delay, and a tracheotomy was performed in the ward by one of us (H. S. M.).

The after course was wholly satisfactory. Although the wound edges sloughed a little, there was no cellulitis. The patient could swallow easily, and soon accommodated himself to the altered method of breathing.

This was the last complication he developed. After its relief, his recovery was steady. In two weeks he could sit up in a chair. The necessary tracheal dressings kept him in the ward longer than would otherwise have been the case. He was discharged on February 26th, 116 days after admission.

He attended the laryngological out-patient department more or less regularly after his discharge. Early in April he presented this picture: the true cords were fixed in adduction, but hidden in their posterior half by a smooth, globular mass, grey in colour, apparently adherent to the left arytenoid cartilage. His voice was very hoarse, but his articulation intelligible.

In the course of six weeks this mass underwent a slow change, gradually decreasing in size and uncovering the previously hidden part of the rima.

Repeated attempts at dilatation were made under local anæsthesia. Nothing larger than a laryngeal probe could be passed.

The patient was re-admitted to the hospital on May 20th. It was his own urgent wish to be rid of the tube.

His condition on admission was as follows: Except for a small button of granulation in front of the left arytenoid, the laryngeal mucosa was clear; the vocal cords were adherent in their anterior half, but movable to a limited degree posteriorly; through the narrowed rima the subglottic portion of the larynx appeared narrowed by a symmetrical thickening of the mucosa on each side.

Exploration of the trachea, under a general anæsthetic, showed a considerable narrowing of the lumen from granulations along the track of the tracheotomy tube.

All things considered, and notwithstanding the patient's own wishes, it is felt that further operative treatment for the relief of the stenosis is not justified.

His voice is much stronger than it was two months ago, and he should be able to do light work without embarrassment. He is advised, for the present, at least, to reconcile himself to wearing the tube.—*The Montreal Medical Journal*.

PÆDIATRICS.

Examination of the Rectum of Children.*

BY

KENNETH KRITH MACALPINE, M. D.,

Instructor in Diseases of the Rectum, New York Post-Graduate Medical School and Hospital.

When a child is born one of the first duties of the doctor attending is, among other examinations, to make an examination of the anus and rectum, to find out if these parts are normal or if there is any malformation present, for if there is a malformation such as imperforate anus or rectum, the child will very soon begin to have various general symptoms which arise from obstruction such as: (1) absence of movements; (2) distention of abdomen from dilatation of the sigmoid, and colon followed by vomiting, although the latter may not take place for several days, whereas if the obstruction is in the small intestine the vomiting begins earlier, usually the second or third day, and is persistent, and the child may have discharges from the rectum, at first meconium and afterwards nothing but a little mucous, while the child with the imperforate anus or rectum will have no discharges from the rectum whatever. Again, if the child has symptoms of partial obstruction it is always well to examine the rectum for stenosis.

Prolapse of the rectum is more often met with in children than with adults, and may be the result of marasmus causing a scant amount of ischio-rectal fat, or may be caused from lack of support of the levator ani muscles, or from a loose mucous membrane, which may be forced out by straining from constipation or diarrhoea, from whooping cough, from phimosis, urethral stricture or stone in the bladder.

Fissure may be caused by constipation and also the constipation with its accompanying symptoms may be aggravated by the fissure. The fissure may be caused by introducing the nozzle of a syringe for the purpose of giving the child enemata.

If a child has a fissure from scratching or digging at the anus the rectum should be examined for pin worms. The small laceration or fissure

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1907.]

will usually heal quickly if treated at once, but sometimes takes a long time to heal if neglected, or the irritation which caused it is allowed to continue.

A fresh fissure looks like a tear at any other muco-cutaneous orifice, while one of longer standing has a gray base, slightly indurated edges, often bleeds a drop or two when the bowels move, and usually discharges a small amount of pus.

The most constant symptom of fissure is pain on defecation, and continuing for some time afterwards, causing a fear of defecation, thereby causing constipation. The pain is often referred to other parts of the body and unless the rectum is examined and other causes of the pain are eliminated, a wrong diagnosis may be made.

Proctitis as usually found in children may be divided into catarrhal membranous, and ulcerative.

The catarrhal variety may be caused by irritating injections, or nutritive enemata, or suppositories, or accumulations of hard fecal masses.

In catarrhal proctitis the mucous membrane is swollen and red and bleeds easily, with abundant secretion of mucous, and the skin around the margin of the anus is usually irritated by the discharges.

The membranous variety usually occurs with diphtheria, and the rectum may be infected from the intestine above or it may be infected from below, in which case the rectum alone may be involved. The stools contain pieces of pseudo-membrane, and if the mucous membrane prolapses the patches of pseudo-membrane may be seen on the same.

Ulcerative proctitis may be the result of a catarrhal condition or may be of tuberculous origin. The principal symptoms are pain and bleeding, and if the ulceration is low down there may be considerable tenesmus. The amount of bleeding may be small or again may be great enough to cause general symptoms. The stool usually contains more or less mucous and pus.

Likewise an ischio-rectal abscess may be caused by traumatism, as the introduction of a syringe nozzle, etc., but is usually caused by an infection through the lymph channels. When present they will cause a slight chill and a more or less elevation of temperature depending upon the extent of the abscess; although, in children, the abscess is usually small, circumscribed and superficial, and therefore not so apt to leave a fistula as in the case of an adult, as they usually heal readily after being opened and treated locally.

Hemorrhoids in children are rare although they may be present at birth, or be caused by constipation, and appear as small tumours, usually externally, and may sometimes cause pain and slight bleeding on defecation.

Digital examination of the rectum may not only afford valuable information from a diagnostic standpoint with reference to the cause of certain general conditions, but also may aid in confirming the diagnosis of some local lesions, such as impaction of feces or foreign bodies, the tumour of appendicitis or the tumour of intussusception.—*The Post-Graduate*.

Method of Examination of a Child's Eyes.*

BY

A. EDWARD DAVIS, M.D.,

Professor of Diseases of the Eye, New York Post-Graduate Medical School and Hospital.

The Lids.—While the child is held on the lap by mother or nurse, examine the outer surface of lids for ulcers, phlyctenules or abrasions; also the edges of the lids for ulcers, crusts, matting of the lashes and for so-called wild hairs, all of which can be done usually without touching the child. Make note also if there is any drooping of the lids.

The Lacrymal Apparatus.—Examine for closure of the puncta, also make pressure over the tear sac with the finger to see if there is a collection of mucus or pus in it.

The Conjunctiva.—To examine the conjunctiva thoroughly, the child's head must be placed between the surgeon's knees, while the attendant holds the child firmly on her lap. Eversion of the lower eyelid is easily accomplished by placing the thumb or forefinger on the lid just below the eye and pulling downward. Eversion of the upper lid is more difficult. Catch the lashes between the thumb and forefinger with one hand, pull the lid slightly down and away from the eye and then make sudden pressure downward at the upper portion of the cartilage with the tip of the forefinger of the other hand, when the lid is everted. This is not always so easily done as said. With the lids everted, inspection of the conjunctiva is easily made. If the lids are greatly swollen it is often impossible to evert them. When a retractor must be used in order to properly inspect the eye, place the tip of the forefinger on the upper lid at the upper margin of the cartilage and retract it slightly, then gently insert edge of retractor under the margin of the lid, being careful not to touch the cornea, when traction can be made and the cornea brought into view.

illumination; daylight, gas or electricity may be used, or a candle may be used, which is a very good light indeed, if surrounded with a hood and a condenser is used, as suggested by PRIESTLY SMITH. If an electric light is used the globe should be frosted. While the light is focussed on the cornea with one lens, another magnifying lens may be used to enlarge the view, as when searching for small foreign bodies on the cornea.

The Iris.—This should be examined as to its color, activity, the size of the pupils noted, and if they react to direct light and to accommodation and to convergence; also note if there is any irregularity of the pupils, or if adhesions of the iris to the lens capsule or cornea are present. Observe carefully for inequality in the size of the pupils, for, if present, it usually indicates some deeper lesion either in the eye itself, the motor nerves to the eye or the brain.

The Lens, Vitreous and Fundus of the Eye.—In young children it is necessary to dilate the pupils widely and occasionally to put them under the influence of a general anesthetic in order to examine the interior of the eyes. With the pupils widely dilated the lens and interior part of the vitreous can be examined for foreign bodies, opacities, exudates, etc., and even tumors in interior half of the eye observed by means of oblique illumination. Transillumination by means of the transilluminator (SACH or WÖRDERMANN) is of the greatest value in detecting foreign bodies, opacities and tumors in the anterior half of the eye; and even when the lens is opaque by means of shadows cast, the presence of tumors or foreign bodies may be definitely decided. Transillumination or diaphanoscopy is of the greatest diagnostic value in these cases.

If cataract is not present the ophthalmoscope enables us to examine the interior of the eye. Either the *direct* or *indirect* method may be employed for the examination. In the direct method an erect image of the fundus is obtained, while with the indirect method, where a magnifying lens is held between the observer and the eye observed, an *inverted* image of the fundus is seen. This point should be kept in mind by the observer. The electric or self-luminous ophthalmoscope is most valuable in the examination of a child's eye, because it can be used as accurately with the child laying down as when in the erect position; and it is easily used even by the general practitioner because it carries its own light and no attention has to be paid to the source of light. Next to the electric ophthalmoscope the ordinary ophthalmoscope with the aid of a drop electric light with a frosted globe is best, because here the examination can be made with the patient in recumbent position. If electricity is not to be had, then gas, oil or candle light may be used as the source of illumination. I

would strongly advise the use of the electric ophthalmoscope with storage battery to the general practitioner, as it is easily used even by the inexperienced observer.

In cases of meningitis, tumors, abscesses, atrophy of the optic nerve, glioma, etc., a knowledge of the use of the ophthalmoscope is invaluable to the general practitioner in arriving at a correct diagnosis.

Squint or Strabismus.—This is easily detected by direct observation; while faulty motility can be observed by having the child try and follow with the eyes some bright object held in different positions.

Examination for Glasses.—In children a cyclopegic must be used and the objective tests employed, as with the ophthalmometer, the retinoscope and the ophthalmoscope.—*The Post-Graduate.*

Examination of the Ears.*

BY

WENDELL C. PHILLIPS, M.D.,

Professor of Diseases of the Ear, New York Post-Graduate Medical School and Hospital; Surgeon, Manhattan Eye and Ear Hospital, Ear Department.

In the examination of the ear of the young infant the method of procedure is very simple. The infant must be held tightly and closely by the attendant, so that there will be no opportunity for the head to move. This always leads to rebellion on the part of the infant, chiefly because of its objection to being firmly and immovably held. A trained attendant soon learns to accomplish this with but little difficulty.

The anatomy of the external auditory canal in the young infant differs materially from that in the adult, in that the bony portion of the canal is absent at birth, the fibrous or cartilaginous portion only being present explains the fact that the infant's auricle lays so close to the head. There being no bony portion, the canal, as a whole, is practically horizontal to the side of the head, whereas in the adult the cartilaginous portion assumes a slightly upward direction and the bony portion a slightly downward direction. This fact makes the examination of the infant's ear, barring the small size of the canal, really less difficult than that of the adult. The smallest size aural speculum should be employed, and it is not necessary to elevate the auricle. At the end of the first year the bony portion of the canal is somewhat developed, and goes on developing from that

The membrana tympani is practically as large at birth as at adolescence, but it is much more loosely attached at the upper portion than in the adult and is therefore more movable. The color of the membrane does not differ materially from that of the normal adult membrane. As a rule, however, it is slightly more translucent. When diseased it assumes a congested or inflamed appearance much more quickly than in adult life.

It must be remembered that any operative procedure upon the membrana tympani or the external auditory canal is attended with great pain, no less in the infant than in the adult. The excision of a furuncle or a paracentesis should be done under a general anesthetic, local anesthetics being practically inert in these locations. These operations are performed in exactly the same manner as upon the adult.

When it becomes necessary to do a major operation, especially upon the mastoid, the anatomical conditions will be found at marked variance with those in the adult. Instead of a large mastoid process filled with pneumatic cells, and an especially large cell at the tip, there are no cells, the mastoid tip is practically undeveloped, the only cavities present being a rather large mastoid antrum and an aditus ad antrum, the remaining portion being the solid parts of the mastoid process. However, the excavation, even under these circumstances, is surprisingly large, and one wonders that so much diseased space can be found.

It is never necessary to perform the so-called radical operation upon a young infant, inasmuch as no prolonged purulent process, resulting in extensive necrosis, has been present. In my own experiences an infant of four months has been the youngest upon whom a mastoid operation has been performed. In one instance a double mastoid operation was performed at this age, with full recovery and perfect hearing. In infancy all these structures are extremely soft, and it is rarely necessary to use the chisel beyond the first small opening in the cortex. The remainder of the operation is easily accomplished by means of curettes and small rongeur forceps. Extreme care is necessary to avoid injury to the lateral sinus, to the dura covering the middle cerebral fossa, and to the facial nerve.

As to the etiology, especially in purulent conditions, the causes must be the same in the infant as in the adult. The Eustachian tube is relatively large, and a greater tendency at this age to make on a purulent process must also be considered. To one commonly accepted cause of purulent otitis media I must take exception. I refer to dentition. To this subject I have given much study, and am firmly convinced that the eruption of teeth is never productive of purulent otitis media. A purulent process presupposes the introduction of purulent material, and in the case of the ear, in a large percentage of cases, the purulent material enters

the tympanic cavity only through the Eustachian tube; so that a purulent process going on in the nose or nasopharynx may easily find its way through the Eustachian tube into the middle ear. There is no purulent process connected with the eruption of teeth. Lymphoid or adenoid tissue in the vault of the pharynx is extremely rare in early infancy, but, when present, must be considered as a strong etiological factor in the development of otitis media purulenta.

Symptomatology.—In the young infant the obtainable symptoms must be practically objective. Subjective symptoms cannot be obtained on account of the infant's inability to speak. The only positive way to determine the presence of infection in the infant's ear is by visual examination and such examination should always be undertaken whenever an infant is screaming with pain. A form of subjective symptom is always obtainable in the presence of pain, inasmuch as crying will always be noted. Ear-ache in an infant is sometimes difficult to determine, while in many instances the rolling of the head or the movement of the hand upon the affected side may be noted; these are not constant symptoms. It is always significant in an otherwise healthy infant when it screams continuously. This symptom alone should lead the attending physician to make a careful inspection of the ear drums. Every physician should be able to make an examination of the ear and to know the condition of the membrana tympani, and we try in this school to teach men to make intelligent examinations of the ear and to know both the normal and pathological conditions. Unfortunately the elasticity of the drum membrane in the infant is nearly as great as in the adult, and it is surprising how long a purulent process will continue before spontaneous rupture will take place. It will, of course, occur in time. It is often necessary to perform paracentesis. Usually these attacks are preceded by symptoms of cold in the head. Pain in the stomach or other portions of the body is rarely as excruciating as that in the middle ear during a suppurative process previous to the escape of pus.—*The Post-Graduate.*

the criminal insane. Among these questions was an inquiry for the comprehensive literature on the subject so far as the State of New York was concerned. This particular question, so far as I am aware, has not been treated in any single paper. It has been my effort to put practically the whole subject into condensed form for the use and information of medical men who may be appointed to various commissions in lunacy dealing with criminal cases. It is to be regretted that New York State, in common with most other States of the country, adheres to the old legal definition of insanity. The status of the criminal lunatic is therefore easily defined. Before the courts any man who is able to understand the nature and quality of the act and to distinguish between right and wrong is considered sane and responsible. If he is unable to distinguish between right and wrong and to understand the nature and quality of the act, he is insane and irresponsible in the eyes of the law. To show the possible evil in this system, I shall quote a single case wherein limited responsibility was more than probable. Last July it became my duty to examine, by direction of the Governor, a man under sentence of death. To be brief, the records of the court showed the man to have been drunk and irresponsible at 1 o'clock in the afternoon, and again drunk and irresponsible at between 3 and 3-30 o'clock on the same day. The Courts make allowance for chronic alcoholism and treat it as an organic mental disease. But for acute alcoholism, which produces temporarily a mental alienation equally irresponsible, no legal allowance is made. The court found that the man above referred to was sane and responsible at the time of the murder and he was sentenced to death. Careful examination failed to show any signs whatever of insanity at the time of the examination, which was less than a month previous to the date fixed for his electrocution. My report to the Governor so stated, and furthermore the opinion was offered that it was extremely doubtful whether a man could be drunk and irresponsible at 1 o'clock, drunk and irresponsible at 3 o'clock, and sane and responsible during the intervening two hours. On the strength of the report the man's sentence was commuted to imprisonment for life, which seems an equitable solution of the case.

classification of the criminal insane than any other State or country in the world. Let us see how it is done.

Up to 1900 the criminal and convict insane were housed in a single building. Their characteristics are so radically different that efforts for separation were made during their detention under a single roof. The criminal classes were kept on one side of the hospital, the convict class on the other. Naturally, when the one hospital became crowded beyond its capacity, provision was at once made for the permanent separation of the two classes. The criminal lunatics, those who had never gone to trial or who are convicted misdemeanants, are now received at Matteawan. The convicted lunatics, those who have been convicted of felonies and are serving sentences, are cared for at the Dannemora State Hospital. Commitments to Matteawan State Hospital are made:

First, by the court direct.

Second, by transfer from penitentiaries of misdemeanor lunatics.

Third, by transfer from civil hospitals.

The courts commit practically three classes of cases to the Matteawan State Hospital: First, those adjudged insane at the time of trial and who are found insane before the case is submitted to a jury. Second, those found insane by verdict of the jury and who are deemed dangerous to the public peace and safety. Third, those under sentence of death who are committed by the Governor direct, he having all powers of the courts for this particular purpose.

In addition to these classes committed by the courts, there are received at Matteawan all cases of insanity which appear in the county penitentiaries and who are under sentence for petty crimes and misdemeanors, the sentence for which is one year or less. If any patient be received in a State hospital for the civil insane, and it can be satisfactorily shown that criminal tendencies are present or that the man has ever been convicted of crime, he may be transferred to the Matteawan State Hospital upon order of the State Commission in Lunacy. Commitments to general State hospitals and of the misdemeanor class to Matteawan are made by a judge of a court of record on the certificate of two physicians qualified to examine in lunacy. Commitments to the Dannemora State Hospital are made upon the order of the warden or superintendent of the prison, penitentiary or reformatory, the prison physician having first certified to the insanity of the prisoner.

both Matteawan and Dannemora, the time served in the Hospital counts exactly as if it had been served in the penal institution from which the man was received. At Matteawan the superintendent is legally authorized to detain prisoners whose sentences have expired until they recover or become safe. At Dannemora when a prisoner's sentence expires and he is still insane, the superintendent so certifies to a judge, who appoints two medical examiners to ascertain if this be true. On their report, the judge orders his detention, or not, as the mental condition of the prisoner warrants.

It is a common belief that the plea of insanity is often made as a shield for crime. I say to you that ten insane persons pass through the courts and are made convicts where one sane rascal successfully interposes the plea of insanity. During the year past only twenty-seven cases were committed to Matteawan direct from the court, and only in a single instance was there any question about the correctness of the commitment. As much cannot be said for the convicts received at the various prisons of the State, though it is a lamentable fact that little or no effort is made to correctly analyze the mental capacity of the convict. There is no clause in the present law which makes requisite for the prison physician any training whatever in the diagnosis of mental disease. In certain foreign countries this is a present requirement. The example appears worthy of emulation. It is my belief based on experience that lunatics constantly pass in and out of prisons without detection; or, if the detection is made, no asylum or hospital commitment follows so long as the prisoner causes no trouble to the prison authorities. A great number of commitments of the insane on the part of any one prison is regarded as evidence of bad administration. As a matter of fact, when the truth is known, it is evidence to the contrary. A good administrator studies his men as individuals and classifies them accordingly. If he finds lunatics, they are promptly separated from the prison population and placed in proper custody for treatment. The confined man, has, therefore, the same medical advantage that is given his free brother. Some states transfer their criminal insane to civil hospitals. Others care for them in a detached portion of the prison. But a civil hospital cannot properly be made a prison, neither can a prison satisfactorily be made a hospital for the housing of lunatics. It is on a medium ground that New York has solved the problem of caring for this class. She has constructed a hospital sufficiently secure to provide the strong custody requisite for the criminal lunatic. At the same time she has removed him from the rigid discipline of the prison which it is quite impossible for him to successfully meet. Dannemora State Hospital becomes, therefore, an

adjunct to the prison. The Matteawan State Hospital serves in a like relation to the courts. Patients committed to the Matteawan State Hospital by a court may not be discharged except by order of the court, no matter what their mental condition is, be it recovered, improved or unimproved. The mental condition of the patient is the sole guide as to the time he shall stay. He is under no definite sentence whatever, but remains until, in the opinion of the court, he is mentally fit to assume the social relation. If he be recovered, the medical superintendent of the hospital so certifies to the court, whereupon the court and district attorney may place him on trial or otherwise proceed as circumstances dictate. The legal processes which lead to an actual determination of lunacy in criminal cases are far from satisfactory. When expert medical evidence is obtained by the court on its own initiative the results are good. A commission thus constituted has no grounds for bias. When expert evidence offered by the two sides in controversy is heard, only limited credence is given it. The medical expert involuntarily becomes partisan to the side which retains him.

Moreover, the average lay jury is not competent to sift and weigh the technical evidence offered by the experts. When in deliberation the jury in many cases disregard it in its entirety. It would appear far more satisfactory if when the plea of insanity as a defence for the criminal act is made, the court appoint a commission composed of experts who should be allowed suitable fees by the court itself. The evidence of these gentlemen should be final with the court and their report should be included as a part of the charge to the jury. In questions of law the presiding judge is supreme. In a question of medicine, competent medical authorities designated by law should hold equal power. As a matter of fact, a man may be made a criminal lunatic without any medical evidence whatever (Sec. 658, Penal Code). The law provides that if a defendant is under indictment, either before or after conviction (except under sentence of death) the court in which the indictment is pending may appoint a commission of not more than three disinterested persons to examine him and to report to the court as to his sanity at the time of commission of his crime. This entire law (Sec. 658, Criminal Procedure Code) fails to designate the composition of the commission. It may be made up without a medical man on it if the court so elects. It is impossible to so make a civil lunatic, the certificate of two qualified examiners in lunacy being necessary. In capital cases the Governor of the State has all the powers and discretions of the courts. The present system which permits consideration of lunacy cases by lay juries proves in actual practice but little short of a failure. This is particularly true when lunatics in confinement in the

various State hospitals are brought into court on writs of habeas corpus. The problem presented is how to make an untrained lay jury see with trained medical eyes. Very likely many of the jurymen have never seen a lunatic to know him. Yet they hold power and jurisdiction over men trained in the observance and analysis of symptoms of mental disease.

Few men of average intelligence would undertake to pass on a question of internal medicine, such as disease of the heart or lung. They would show the same hesitancy in passing on mental disease, were the privilege allowed them. But they are drawn on the jury and must serve. Finally, the responsibility is so minutely divided that the part that each man takes to himself is small. So, at the rate of one per month, they go on releasing men who have been declared dangerous to the public peace and safety. The single redeeming feature of it all is the marked display of real sympathy which the jury has for the lunatic and its wish to give him every opportunity. In many cases the sympathy is far from well placed and would more rightly be given to those who shall care for the patient when he comes from the hospital.

In summarizing briefly we find the following conclusions are not wholly unwarranted :

First, that the present legal definition of insanity does not include cases of diminished responsibility, be the condition inherited or acquired.

Second, that a study, classification and report on the mentality of convicts would be a valuable contribution.

Third, that the State makes liberal and adequate provision for the care of the criminal insane once their status is determined.

Fourth, that the methods of determining lunacy in such cases are not fair and convincing to either the medical profession or to the public.

Fifth, that the consideration of medical questions by juries of laymen is neither wise nor just to either the lunatic or society.—*New York State Journal of Medicine.*

THE ANTISEPTIC.

OCTOBER, 1907.

Combating Plague in Japan.

FOR the last 11 years we have been doing our best to combat plague in India. Plague is still with us, and, in all probability, we shall have to go on for many more years fighting against its attacks. It will, therefore, not be uninteresting to Medical men in India to know how other countries which have also to combat plague carry on their plague preventive measures. Dr. Kitasato of Tokyo contributes an article on "Combating Plague in Japan" to the Interstate Medical Journal of St. Louis.

Anything about plague from the pen of Dr. Kitasato, the discoverer of *Bacillus pestis*, ought to be interesting. And when he gives the details of plague preventive work in Japan in the pages of a Medical journal, his article demands the earnest study of every student of Tropical diseases.

"The origin of the epidemics in Japan," says Dr. Kitasato, "has been located not in the patient but in inanimate objects. Incoming vessels from the infected regions—that is from Bombay and Hongkong—began to introduce into the country the plague germ mingled with their freight, which principally consisted of cotton." Here is a very important and interesting fact. In examining passengers from infected parts we are apt to lay too much stress on the passenger with febrile symptoms and too little on his baggage whose capacity for carrying plague bacillus must be enormous. If no passenger exhibits any suspicious symptoms all the arrivals from infected localities are allowed freely to go into healthy cities and mix with the population in them. No doubt the passengers are all passported and are kept under observation for ten days. But in the meantime some of their baggages may land their precious cargo of plague bacilli which may readily be taken up by the rat population of the town and a virulent epidemic of plague may rage among rats absolutely unknown to the plague inspector. "And by the time man receives the contagion from the rat, the ravages of an epidemic have already reached serious proportions."

1907.]

THE ANTISEPTIC.

605

among these animals, so that the outbreak soon assumes a character which renders control difficult; the infection therefore spreads far and wide, affecting both men and animals." So says Dr. Kitasato, and we entirely agree with him. Sir Patrick Manson has a homely comparison between a fire grate laid ready for lighting a fire and a city about to be attacked with plague. The coals in the grate he compares to the human beings in the city; the pieces of wood and paper to the rat population; and the lighted match to the plague bacillus. If the lighted match is placed on the top of the coals the match burns itself out without setting fire to the coals. But if it is applied to the paper and wood they burn and set fire to the coals and you have a blazing fire in a short time. The simile is excellent. Its details are corroborated by Dr. Kitasato. According to him the plague germs were brought to Japan from India and China by steamers which brought in cargoes of cotton. And the plague germ which thus got into the Japanese ports did not immediately attack men. It first infected the rats, and by the time the first human victims were discovered the epidemic had assumed a well advanced form. So far as to the method of infection. As to preventive measures Dr. Kitasato describes these in detail as they are carried on in Japan. "When a ship is found to have plague infection on board, all communication with the land is stopped, and measures are taken to destroy the rats, and other sanitary precautions are taken. In order to provide the means for killing rats on board ships, auxiliary vessels especially fitted for that purpose and similar to those used in Hamburg, Germany, are recommended." Dr. Kitasato's description of the arrangement and division of work among plague preventive officials is both interesting and instructive, and it indicates that perfect system which is so characteristic of the Japanese and a demonstration of which they gave to the world at large during their late war with Russia. His remarks about the Institute of Infectious Diseases are particularly interesting. Says Dr. Kitasato:—"The Institute of Infectious Diseases acts as Councillor to the Government in matters relating to health, and it especially advises in regard to the preventive and sanitary measures which are to be taken against infectious diseases. When a plague epidemic exists, our Institute, through Governmental appointments, furnishes those officials and commissioners who are to take charge of the preventive and sanitary measures. It has a plague laboratory constructed in conformity with the most advanced methods, and in this place pest serum and vaccine are prepared for the use of the entire country. As a part of its work the Institute gathers a number of physicians and surgeons throughout Japan in order to give them instruction in bacteriology and epidemiology. The number who have finished this course at present amounts to 1,293, and these physicians

are scattered throughout the country. At least a portion of them is now actually engaged in important work in hygiene and preventive medicine. As these specially educated physicians and surgeons are distributed throughout Japan, it is a matter of ease in an emergency at once to gather several hundreds of commissioners. *To fight plague successfully requires a large number of trained men, and the country owes its thanks to the Institute for rendering so many available.*" (The italics are ours).

These remarks are most instructive. So far as the plague preventive measures are concerned the Institute of Infectious Diseases in Japan is evidently acting as the central nervous system for the whole country. The system is excellent, and the result—well, let Dr. Kitasato's figures speak for themselves. The following are the figures of attacks and deaths for the whole of Japan:—

Year.	Attacks.	Deaths.
1899	62	45
1900	168	153
1901	2	2
1902	14	9
1903	57	49
1904	1	1
1905	297	257
Total	601	516

If in seven years they had only altogether 601 attacks in the whole country then we may congratulate the Japanese plague preventive establishment on the most successful manner in which they have done their work. Such excellent work is likely to be costly. In 1902 and 1905 the city of Tokyo alone spent 320,000 yen, although the number of patients there only numbered 15. That works out something like 21,333 yen for every patient. That is a large sum, no doubt, but who can say that it is ill spent?

Dr. Kitasato's description of the details of "sanitary work" is very instructive reading, and gives us an idea of what plague preventive measures *ought* to be. But alas! recollection of the plague preventive measures as carried on in this country hurries us back to despair.

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Original Articles.

•DISEASES OF THE CORNEA.

BY

E. LUCAS HUGHES, M. R. C. S. (ENG.) L. R. C. P. (LOND.)
Ophthalmic Surgeon, Liverpool, England.

(Continued from Page 552, "The Antiseptic," VOL. IV, No. 10).

PART II.

THE first thing to determine in a case of corneal opacity with or without ulcerations is whether it is recent or of long standing, and also whether it is progressing or in a quiescent and healing condition. If the surface is dull without loss of substance it is a recent infiltration which will probably soon break down into ulceration; if there is loss of substance it is a progressive ulcer. If, however, the surface is bright with loss of substance, it is an ulcer that is healing, covered with recent epithelium, and if there is no loss of substance, the opacity showing a bright reflex, this speaks of old standing ulcerative inflammation which has recovered by the formation of scar tissue.* Scar tissue always forms in the place of the clear corneal tissue, as I have already explained, in all cases of ulceration involving a certain depth, with destruction of part of Bowman's membrane.

In considering all inflammatory affections of the cornea one should always bear in mind the part that is played by the circumcorneal blood-vessels. The cornea is an extravascular structure, that is to say, in its healthy normal condition no blood vessels exist in it, but during and after inflammatory processes more or less vascularisation, of a superficial or deep character, is seen to exist. A rich network of vessels in the conjunctiva around the corneal limbus send in branches. If minute vessels are clearly made out going towards the margins of an ulcer this is a favourable sign

* Specially contributed to *The Antiseptic*.

especially if the ulcer is beginning to show a clean healthy appearance. The object of these vessels is to furnish the necessary material for the cicatrization which is to fill in the loss of substance. At the spots where these minute vessels have reached the ulcer we need not fear any further extension of the ulcerative process. After their part has been played in the filling in of the ulcer the vessels gradually disappear, except that it is usual to see even in very old scars, that are of large extent, one or two vessels remaining for an exceedingly long time; indeed they are said by some authorities never to entirely disappear. These vessels for the purpose of healing the ulcer are situated in the more superficial layers of the cornea, but they are actually in the corneal substance and are not so superficial as the vessels that constitute pannus, an altogether different type of vascularisation.

Another type of vascularisation is that which occurs in parenchymatous keratitis; the vessels are deeply situated; they come from the sclera; they are not distinctly recognizable, being veiled by the opaque tissue which is in front of them, so that they only show through as a dense dull greyish red or salmon colour patch. If these vessels are made out at all, they appear as parallel branches running towards the corneal centre, described as being something like a crossing sweeper's besom. They abruptly disappear at the limbus behind which they enter the sclerotic.

The superficial vascularisation of pannus and these deeper forms of keratitis differ from the vascularisation seen in the healing of ulcers in that they denote a progressive advance of the inflammatory disease. It is therefore of importance from a prognostic, as well as from a diagnostic point of view, that we should know the character of the vessels and their situation, whether it is superficial or deep.

Before speaking generally of the treatment of corneal ulceration it will be well to consider the various clinical types of ulcers commonly met with. The best, or at least the clearest classification, I believe to be that of Swanzy. He divides corneal ulcers into (a) simple, (b) deep, (c) serpiginous ulcer, (d) the diplobacillus ulcer, (e) rodent ulcer, (f) marginal ring ulcer, and (g) absorption ulcer. Along with the deep ulcer we may consider the serious affection, fistula of the cornea. Simple ulcer is the result of a slight injury or the breaking down of a phlyctenule. It is often accompanied by pain, lachrymation and photophobia. It presents the appearance of a minute shallow depression with a grey floor on the corneal surface. There is considerable circumcorneal vascularity, especially that part which is nearest the ulcer, and although the case is not complicated with any of the above, the pupil is very contracted. The deep ulcer, is a septic or infected ulcer, and commences in a septic infiltration of the cornea. This

is a very serious form of ulcer as it is apt to lead to perforation and is by far the most common cause of fistula of the cornea. It never spreads very much over the surface of the cornea, but it shows rather a tendency to go deeper and deeper in a funnel-shaped manner until the centre of its floor reaches the membrane of Descemet, where for a time, before perforation occurs, its progress is arrested. There is nearly always iritis, and hypopyon is almost invariably present. The floor of the ulcer has a layer of purulent matter and detritus, and the surrounding area is infiltrated with pus. The ulcer is generally round but may be of any shape. There is usually intense pain of a severe neuralgic character. The perforation results, as a rule, in a small adherent leucoma and seldom causes complete loss of the eye. The cause is generally gonorrhœal ophthalmia, also in infants blenorrhœa neonotorum. It may also be caused by the entrance of septic matter associated with foreign bodies and other injuries of the cornea.

Fistula of the cornea may be due either to the fact that the perforation is unusually large with extensive iris-prolapse, the pressure of the aqueous humour causing a tear of the prolapsed iris which does not heal, or it may be a small perforation but exactly in the centre of the cornea, so that the prolapsed iris does not properly close it. Aqueous humor is constantly trickling through the opening. There is practically no anterior chamber or it is extremely shallow. The globe alternates between glaucomatous hardness while the fistula is closed for a time, and softness through it again rupturing by the high tension. Detachment of the retina, hæmorrhage, or severe uveitis, occurs, and vision becomes completely lost.

Serpiginous ulcer, or *ulcus serpens*, is always a serious condition. It results invariably from an injury and the entrance, it is believed, of some more or less virulent micro-organism such as the pneumococcus—the usual microbe of chronic dacryocystitis—the diplobacillus liquifaciens, streptococcus, etc. It more frequently occurs in warm weather. In about 50 % chronic dacryocystitis is present. It can be readily seen from this description of its causation that it is a purulent ulcer with usually more or less accompanying pain and irritation. This, however, greatly varies, sometimes being almost absent while at other times it is intense. The characteristic thing, clinically, about the ulcer is its tendency to creep over the surface of the cornea in one or more directions and where this creeping is going on is shown by one or more closely packed clean cut curves, hence the name serpiginous, the outline of these curves being compared to the form of a serpent (*serpere*—to creep). The ulcer does not strike very deeply into the corneal tissue, but a line of pus sometimes is seen to extend down to a hypopyon, which latter is almost always present. This formerly gave the idea that hypopyon was the result of direct transmission

of the pus corpuscles of a purulent ulcer, but this is now known not to be the case. Iritis or irido-cyclitis is the cause of hypopyon, and the presence of hypopyon shows that this complication frequently occurs. The pus in the anterior chamber is sterile and is proved to have come through the pupil from the inflamed ciliary region. The membrane of Descemet effectually prevents any septic pus from coming to the anterior chamber. The position of a serpent ulcer is usually central; it has a greyish floor and the surrounding area is infiltrated especially where the ulcer is advancing. Perforation takes place sooner or later, if the process be unchecked, and the result of the perforation varies according to whether it be a large or small one; if large, panophthalmitis follows, but if the inflammation be not so severe and only a small perforation follows an adherent leucoma results with some amount of useful vision which may be improved by an optical iridectomy.

The prognosis both as regards vision and even retention of the eyeball depends entirely upon the rapidity and severity of the inflammatory process. Cases of a mild type, however, leave invariably a central cicatrix, although this may not necessarily be very opaque. The treatment will be considered later on. The diplobacillus ulcer is a variety that has been differentiated for us by bacteriological research. Clinically it resembles the *ulcus serpens*, but it is less rapid in its progress, less destructive and more amenable to treatment. The diplobacillus of Morax is present and it is accompanied by some amount of catarrhal (angular) conjunctivitis. The diagnosis is made by a bacteriological examination. Like the serpent ulcer it occurs from an injury, but it differs, in dacryocystitis being absent. There is no curved margin, its edges are slightly raised and may be undermined. There is marked pericorneal injection. The epithelium has a stippled appearance round the ulcer and the corneal tissue in the immediate neighbourhood is opaque. It more usually extends equally in all directions round its margin, although sometimes it is like the serpent ulcer in extending more in one direction than another. Hypopyon and iritis are nearly always present. The catarrhal character of the conjunctivitis soon changes owing to the severity of the ulceration. Neglected cases of this form of ulceration lead on to the occurrence of panophthalmitis.

ulcer. The chief characteristic about the ulcer is that its edges are so undermined that one can pass under them a fine probe. The disease generally begins at the corneal margin. The infiltrations are generally multiple and the ulcers formed by their breaking down rapidly coalesce, so that the cornea becomes after a time completely eaten away and cicatricial tissue substituted for it. Each ulcer shows a narrow whitish line of partially necrosed tissue overhanging the real margin of advancing ulceration. The part of the cornea not yet attached by this necrotic process is quite clear. There is great pain and photophobia in most cases, but in other rapid cases the cornea is devoid of sensation through early anæsthesia of the nerve endings. There is marked injection of the eyeball. The oldest part of the ulcer heals by cicatrization while another part is breaking down, the healing portion showing minute blood vessels advancing towards it. Wherever this cicatrization takes place a dense white opacity results (leucoma). This form of ulceration seldom perforates, and the disease, although rapid at its onset and of a necrotic character, when once it is established is slow in its progression. It sometimes takes weeks or months for the whole cornea to become a large dense white leucoma. The ulceration sometimes becomes stationary for a considerable time and then it will go on ulcerating without any apparent cause. A fairly large number of cases are attacked in both eyes, but this rarely occurs simultaneously; usually there is an interval of weeks or months before the second eye becomes involved.

In a few cases the process comes to a standstill leaving a small portion of the cornea uninvolved and perhaps a little useful vision may be saved. It is a disease of decrepit elderly people, although it has been known to occur in young persons without apparent cause. The undermined edge and the steady advance of the ulceration, more than one ulcer coalescing, towards the centre of the cornea and around the edge, these are the principal characteristics. It is fortunately not a common form of ulceration.

nourished children who are the subjects of phlyctenular keratitis and conjunctivitis. The ulcer presents the appearance of a shallow pit or facet at or near the centre of the cornea. There is very little opacity and no vascularisation. Every now and then by cold winds, etc., the eye becomes irritated and lachrymation, photophobia, circumcorneal injection, etc., make their appearance. It takes months for this to heal and sometimes a small facet remains behind covered over with epithelium, the cornea being clear, but vision interfered with from this having caused some amount of irregular astigmatism. This condition also occurs in granular ophthalmia with and without pannus.

(To be continued.)

*THE TREATMENT OF TUBERCULAR LUPUS.

BY

A. WINKELRIED WILLIAMS, M.B., C.M. (EDIN.), D.P.H. LOND.

Physician to Skin Department, Royal Alexandra Hospital, Brighton;

Physician to St. Mary's Dispensary, Brighton.

The most notable innovations in the treatment of Lupus during the last decade are—

1st. The improvement in the vaccine treatment following Sir A.E. Wright's investigations on opsonins, etc.

2nd. The introduction and improvements on various Radio-Therapeutic methods.

I. *Vaccine Treatment.*—Like all other constitutional treatments of Lupus the Vaccine treatment is advisably combined with various local treatments.

The term "Vaccine" has acquired in recent years a much wider meaning than its etymology indicates. Wright's definition may be quoted in this respect :—

"A Vaccine is any chemical substance, which when introduced into the body causes an elaboration of protective substances."

end of this paper. The vaccine treatment of Lupus has a great number of advocates and the number of cases recorded cured or vastly improved by this treatment emphasize its value. Unfortunately it involves the expenditure of a great deal of time, and requires special bacteriological training and is therefore expensive.

Some of the readers of 'The Antiseptic' may not be familiar with the methods of determining the Opsonic Index of the blood, and it is thus necessary to describe these tedious and valuable processes which at all events in Lupus and tubercular diseases are essential to successful vaccine treatment. A short explanation of the methods will be given; detailed directions are given at the end of this paper.

The power of the leucocytes to ingest and destroy bacteria is in nearly all organisms dependant upon some chemical substance in the liquids of the body. These chemical substances are generally specific for each different organism; some are of the nature of stimulins, *i.e.*, they stimulate the leucocytes to devour the organisms, they stimulate their appetite, and are comparable to the administration of bitters or physical exercise stimulating the appetite of man and making him hungry for food. Others are of the nature of opsonins, *i.e.*, they act upon the bacteria and make them more palatable to the leucocytes who thereupon devour them; they are comparable to good caterers, cooks and sauces making an attractive dinner and thus stimulating a man's desire to feed.

The substances in the serous fluids attracting the leucocytes to devour tubercle bacilli are opsonins. In preparing the bacilli for the leucocytes they are used up and unless the body makes a fresh supply its power of resisting tubercular infection or of removing existing tubercular lesions is diminished. The body has a limited power of producing opsonins; this power may be increased by judicious introduction into the circulating fluids of the body of carefully measured doses of dead organisms or certain preparations made from the dead organisms containing the chemical bodies which stimulate the production of opsonins. In the case of tubercle the most convenient and easily obtainable substance is Koch's New Tuberculin (T.R.), minute doses of which constitute the vaccine used in Lupus treatment.

The immediate effect of administering a dose of Tuberculin is a period of intoxication with a decline of antibacterial power. If the dose is a big one this period may have distinct febrile and other objectionable symptoms, but with a small dose this should not happen; there may, however, be a feeling of depression. This is known as the *Negative Phase*; examination of the blood shows a decided reduction in its opsonic power;

consequently the patient has at this stage a reduced power of resistance to infection and the disease may advance.

The negative phase is followed by the *Positive Phase* in which there is an increase in the antibacterial power. Blood examination reveals an increased opsonic power. This rise after the negative phase is frequently rapid, followed quietly by a fall, but the fall is much less than the rise, and then for a variable number of days or weeks the opsonic power remains fairly high but gradually falls. During this positive phase the patient feels better, his power of resistance to infection is high, and improvement takes place in the diseased tissues.

It is obviously the ideal of treatment to reduce the negative phase to its minimum both in degree and time, and to increase the positive phase to its maximum. This is brought about by a careful regulation of the quantity of the vaccine given and the length of the interval between the doses. If the doses are too large or administered too frequently the negative phase is increased in degree, prolonged in duration or even perpetuated, and the unfortunate patient hurried in his down-hill journey.

The proper dosage of the vaccine should be guided by frequent examination and calculation of the opsonic index of the patient's blood.

The opsonic index indicates the relation of quantity of opsonins in the patient's blood to that of a person free from tubercle. In each estimation it is necessary to make a preparation containing normal serum as well as the patient's. This is necessary because it is absolutely essential to have exactly equal quantities of bacilli, etc., in each preparation. The following materials are required:—

Preparation I.

- (a) Some clear blood serum of patient.
- (b) Some well washed living white blood corpuscles.
- (c) Some well made emulsion of dead tubercle bacilli.

Preparation II.

- (a) Some clear blood serum of normal person.
- (b) Some well washed living white blood corpuscles.
- (c) Some well made emulsion of dead tubercle bacilli.

Exactly same proportion of each constituent in each preparation which must be well and equally mixed.

Example. In the preparation with normal serum 228 tubercle bacilli are found in 80 polynuclear leucocytes. In the preparation made with patient's serum 108 tubercle bacilli are found in 80 polynuclear leucocytes.

The average per cell in normal is 2.8, in the patients 1.3. This indicates the greater quantity of opsonins in the normal serum.

The opsonic index is obtained by dividing the number of tubercle bacilli counted in patient's serum preparation by the number counted in normal serum:—

$$\frac{108}{228} = 0.47.$$

The calculation of the opsonic indices of a large number of normal persons show variations from about 1.2 to 0.8.

Patients suffering from tuberculosis generally have an opsonic index either above or below these limits; in Lupus it is usually low.

The efficient opsonic treatment of a case of Lupus means the frequent estimation of the opsonic index, preferably daily, at all events for the first few injections of vaccine. The following is what should be obtained:—

A patient suffering from Lupus Vulgaris is found to have an opsonic index of 0.6. A dose of $\frac{1}{1000}$ of a milligram of the solid matter in the R. Tuberculin is given with aseptic precautions subcutaneously; the next day the opsonic index is 0.2 and remains low a variable time during which the patient is kept at rest in pure air. Then a rise takes place and the opsonic index is 1.4; the patient feels better; local treatment is adopted to congest the Lupus (hot fomentations, &c.) so as to bring many leucocytes and much opsonic rich serum to the part. In a short time a rapid fall to 1.1 occurs and it then remains about this level for some time and then gradually falls to 0.7. When the index gets below 1.0 the active congestive treatments are checked and another dose of tuberculin may be given; this is again followed by a negative phase, the opsonic index falling but not quite so low as in the first injection, reaching 0.4, and it lasts a shorter time than the first. The succeeding positive phase is more steady and more prolonged than the first; as it passes off a third injection may be given, and, if the results are still good, a fourth. Then a period of rest from injections may follow, and in a couple of months they may be recommended again guarded by frequent estimations of the opsonic index.

A bad result may happen; after the first injection there may be no positive phase—the dose was too big. In such a case it is well to wait, say two months, and then begin again giving say $\frac{1}{2000}$ m.g. instead of $\frac{1}{1000}$.

Another bad result may be that after the second dose the negative phase is greater instead of less than after the first dose; in such a case the dose has probably been given too quickly and a longer interval must elapse between the doses. If the positive phase is wanting and another dose is given before the negative phase has passed away, great harm will be done to the patient.

The general experience shows that the length of the negative and positive phases is very variable in the case of tubercle vaccines, and therefore, unless the opsonic index is taken, the treatment may do harm. The author's practice now, in cases where he is unable to take (or get reliably taken) the opsonic index, is to allow at least a month to go by between each injection. It is preferable to allow too long rather than too short an interval between the doses.

It is generally found that if $\frac{1}{100}$ of a milligram is exceeded, harm instead of good is done; $\frac{1}{1000}$ or less is usually sufficient to bring about the maximum positive phase.

Doses of tuberculin insufficient to produce any febrile reaction may still be excessive and produce an unduly prolonged or excessive negative phase; a negative temperature reaction is thus of no value whatever in estimating sufficiency of a dose.

The opsonic index is a good practical guide as to the most suitable time to operate, especially when the operative treatment is combined with vaccine treatment.

Operations are apt to set free some vaccine matter from the tissues operated upon and thus act like a vaccine. They should thus never be attempted during a negative phase. If no vaccine is given, but it is found the patient has an irregular opsonic index, at one time well below normal, at another time above, it is an indication that doses of vaccine are being auto-diffused from the site of the disease, and the most suitable time to operate is just after a high opsonic index has been reached, the time to avoid being after a sudden fall to a point below normal.

I. *Finsen Light Treatment*:—Finsen showed (and practically devised apparatus for the purpose) that the concentrated light of an arc lamp or of the sun's rays has a distinct curative effect upon lupus. The light of a powerful arc lamp, collected by quartz lenses (quartz being transparent to the ultra-violet rays) are focussed upon a part of the lupus area. As the blood circulating through this part would prevent the deeper penetration of the curative rays, it is compressed by a quartz compressor kept cool by a stream of water flowing through it.

Cheaper modifications of Finsen's original lamp are known as the Lortet-Genoud Arc Lamp (and its various modifications) and the Finsen-Reyn Lamp. The former is more rapid in its action, but less penetrating than the latter. The Box Lupus Lamp is a half way arrangement between the above two.

The results of the Finsen treatment are excellent, but the sittings required are long (from 15 to 60 minutes) and numerous, and only very small areas can be treated at a time. Consequently the treatment is expensive and tedious to the patient. Relapses as in other Lupus treatments are not uncommon.

Lamps constructed on a new principle are now being tried. They are known as the mercury vapour lamps (Cooper-Hewitt Lamp and its modification the Uviol Lamp). Whether they will replace the Arc Light lamps is doubtful.

The relative value of Iron and Carbon Arc light is practically settled in favour of the Carbon.

Finsen's lens for using sunlight is biconvex lens filled with a weak solution of sulphate of copper to occlude the heating ultra-red, red and yellow rays.

Preliminary have been recommended to increase the reaction produced by the light, e.g., Pyrogallie acid, Permanganate of Potash, Iodine in Acetic acid, etc.

The Finsen light is distinctly bactericidal much more so than the X-rays. Drs. J. E. Barnard and H. de R. Morgan have, however, shown that the water cooling appliances in use do considerably diminish the bactericidal action. Undoubtedly the congestive reaction and some other not understood physical factors are concerned in the improvement.

The details of application vary so much according to the apparatus, etc., used that it is hardly worth while going into the matter. Each operator knows his own apparatus and what it can do. Generally speaking from 15 to 60 minutes according to the lamp and current are sufficient to produce a reaction, and in about a week another exposure must be given.

II. *X-ray Treatment*.—There is no question as to the great value of these rays in the treatment of the Lupus Vulgaris. Some cases are perfectly cured with excellent cosmetic effect; other cases are much improved but require additional treatment. Unfortunately it is possible to have cases despite the utmost care in treatment in which the reaction may go too far and telangiectatic scars and pigmentation result. Pigmentation is more likely to develop in dark people; it may soon pass off or it may last a very long time. Cases have also been reported in which epithelioma has followed X-ray treatment, but this has happened in many other treatments. There are not enough cases to form reliable statistics as to whether epithelioma is more liable to occur after X-ray than after other treatments. The evidence brought by Norman Walker that post-lupus epithelioma start after scraping by mechanically included epithelial tissue, in the deeper parts of the cicatrix indicates that this treatment is more often a cause of such disaster than X-rays.

Some authorities state the beneficial results of X-rays are merely a sequence of congestion of the Lupus tissue, but against this view is the fact that it is quite possible to get great improvement from X-rays without exciting any visible erythema. If the rays are pushed to produce an erythema or an exacerbation of pre-existing congestion this will help if the opsonic index of the patient is high; so when such massive doses of the rays are given it is well to excite a high opsonic index by combining vaccine treatment.

The method of application varies much with the circumstances of the case, the views of the operator and the special form of apparatus he employs.

The author prefers giving frequent small doses. He estimates the dose by keeping a record of the number of interruptions of the primary current, by keeping his tube at a fairly level degree of hardness (between 4.5 and 6 Benoist) and having all matter of pressure and quantity of current recorded. He knows the quantity of rays emitted from the tube by the previous measurement with the same tube used in a ringworm case treated by single exposure guided by Sabourand's radiometer and a record

a very valuable addition; and also in cases where palliative treatment is the aim. Further information on the relative value of these treatments should be obtained from Malcolm Morris's and Dore's most valuable paper (*British Medical Journal*, June 6, 1903).

Hall Edwards has recently called attention to the advantage of spraying Lupus injected mucous membrane with a solution of adrenalin in order to render it anæmic before X-raying.

II a. *Radium Treatment, etc.*—The results of radium treatment have varied much in different hands, some investigators being as enthusiastic as others are pessimistic over their results. This is not surprising, considering the varying qualities and quantities of radium preparations used and the different ways in which it is enclosed in its capsule. Radium, as is well known, emits various kinds of rays—these rays, moreover are absorbed in varying degrees according to the character of the pathological tissue under treatment.

The effect of the enclosure of the radium capsule is very marked, if as in the work of some investigators the radium salt is enclosed in an aluminium-covered metal capsule; the so-called X-rays are cut off, and the less penetrating X-rays are alone active; the result is an acute reaction of the surface tissue before the deeper parts are sufficiently affected; extreme surface ulceration may be produced without removing or improving the deeper tissue. If the Lupus is quite of the superficial type the results are, of course, better. Other investigators have enclosed the capsule in rubber tissue and then placed several layers of paper between the capsule and the skin. By this method the less penetrating rays are obstructed and the more penetrating rays allowed to enter. This method, a comparatively new one, is on trial, it appears, to remove the greater changes of radium treatment, but whether it will seriously interfere with its beneficial results is not yet proved. It is claimed that 5 m.g. of Radium Bromide may, by this method, be employed for as long as 2 hours continuously with the result of an erythema in 6 days, formalin of crusts complete in 12 days, and healing up about a fortnight. Subsequent applications may be made without danger. It seems highly probable that the adoption of this method will greatly improve the radium treatment.

The quality of radium and the kind of salts used are also to be considered. The general results appear to show that pure Radium Bromide is decidedly better than Radium-Barium Bromide.

Other Cheaper Radio-active Substances have been used with benefit in Lupus thus:—Dr. Norman Walker of Edinburgh devised a method of incorporating Oxide of Uranium with bees-wax spread on leather.

plaster thus made is applied at night and removed in the morning. The cost of a plaster is about one shilling and it retains radio-active property for over 4 months. A slight reaction followed its use for 24 hours in some cases; in others it was worn continuously for 3 days and nights without reaction.

III. Fluorescent Light.—This is the simplest, safest and easiest method of radio-therapeutic applications to Lupus. Moreover, it is one that in the author's opinion is not so much used as might with great advantage be done, at all events in places favoured with plentiful sunlight unobstructed by a smoke-laden atmosphere.

It is, however, not a complete cure for deep-seated Lupus, but in the author's experience it results in all cases in great improvement, and effectually stops all tendency of the disease to spread. The cosmetic effects in cured areas are excellent and could not be better.

The technique is simple. A 0.5 per cent. watery solution of eosin is swabbed over the skin until it is stained a distinct but not too deep pink. The patient then exposes the surface to sunlight for an hour or two a day if possible. One of the author's patients exposed for four to six hours on several successive days. In these long exposures it is advisable to protect the unaffected skin by a mask or other covering. Improvement occurs when only diffuse daylight is used. These exposures were all made in the south of England. Indian doctors would, of course, have to modify the exposure according to their experience as to what exposure to intense tropical light the patient can stand. The author would be very glad to know what is the experience of those who have tried this treatment in the Tropics.

Other fluorescent substances may be used, but in the author's experience eosin is the best. If the color is greatly objected, solutions of quinine are effectual, but are apt, after continued use, to be followed by roughness and catarrhal reactions of the surface skin. A convenient method is to incorporate the eosin in glycerine jelly. If not more than equal parts of water are used to hydrate the gelatine it can be peeled or washed off the skin without any deep staining of the epidermis.

The following selection of two of a series of cases reported by the author in the *British Journal of Dermatology*, February 1907, illustrates its value in two types of lupus:—

'When a child a very small place came on my face and arm; a local doctor saw it, but made light of it, and for many years I felt no inconvenience. Then it was troublesome, itching and burning, and I was advised to consult Dr. Erasmus Wilson (about thirty years ago). I was under his treatment some time for the face. He said the arm could wait. It was better, but seemed to spread faster, but never became ulcerated until I had been living in Brighton about two years. Dr. Mabel Jones, who was my doctor, treated it and it healed. I then, at her suggestion, had the X-rays at Mr. Paynes', and it appeared to be getting better. In spring of 1903 it became painful and ulcerated, worse than ever, and Dr. Jones consulted Dr. Williams. Under his treatment it healed nicely, but as it had got so near the eye he advised me to go to the London Hospital for the Finsen-light treatment. I went up in September, 1903, and had one course of twenty-four treatments near the eye; my health would not permit my having more. It became ulcerated a little again in 1904, but healed under Dr. Williams' treatment. This spring and summer it became bad again, and I have been under his new treatment (eosin and light) since the beginning of June except one month when I was ill. It has certainly done wonders and has not been so comfortable for years. I feel most grateful to him for advising me to try it.'

"CASE.—*Lupus Vulgaris Erythematoides (Leloir) with Erythema induratum (Bazin).*—Mrs. A.—Patches of erythematous and infiltrated areas existed on forehead, sides of nose, and cheek. The centres of patches were depressed with some atrophic scarring, the borders were raised and covered with numerous scales with stalactite projections visible on removal. Scattered over the patches were distinct isolated nodules, most marked near the border; on using the diascopé they showed distinct apple-jelly, Lupus tissue, but the disease was quite superficial. The condition had lasted over six years. I at first treated her with calamine lotion and occasional dabbing with weak tar lotion and washing with 3 per cent. biniodide soap. She improved for a time and then relapsed, so I advised her to go to London and have Finsen light. This was done very thoroughly, with the result that all the vulgaris part of the disease was apparently cured, but the erythema remained. About a year later she again consulted me, and I found the apple-jelly nodules had all returned and the erythematous part was more swollen than before.

N.B.—The patient had been motoring extensively in very cold and bad weather. I suggested she should have another course of Finsen, but she was most unwilling to do so, and asked me if I could suggest any alternative, so I decided to use the fluorescent light. The patient then showed me lumps on her arms and legs which were typical non-ulcerating

Erythema induratum (Bazin). These were treated with a weak hydrarg. bisulphuret. ointment. At this time I took the opsonic index of the patient's blood to tubercle and found it 0.5. The eosin treatment was thoroughly carried out, and combined with complete rest and full diet; the patient was often four or five hours daily in the bright sun. In a month the condition had vastly improved, the erythematous condition greatly reduced, fine white scarring taking its place. The greater part of the vulgaris nodules had gone and the remainder much reduced excepting one side of the nose, *i.e.*, where the shadow prevented the prolonged action of sun-rays. The Erythema Induratum had flattened down somewhat. Her opsonic index was 0.8. Four months later I saw her again; eosin treatment had been occasionally but not regularly used. The Lupus Vulgaris nodules had practically all gone; with the diascopé and lens I fancied I could detect in the exact centre of some of the spots of white scar-tissue a small pin-point of apple-jelly tissue, but I could not be quite sure of it. The erythematous lupus was also practically cured. The patient was delighted with the result, which, in her opinion, was very much better than the Finsen light, and the treatment much more pleasant though rather more prolonged. Her opsonic index was now just below 0.9. Most of the Erythema Induratum nodules had flattened to the surface, and some were quite well."

Even if a complete cure is not obtained (very few Lupus treatments can claim this) it is an enormous boon to have a simple painless treatment with no special apparatus or skill in its application.

This boon is greater to country patients, who have plenty of opportunities of unsmoked sunlight, and who cannot afford time and money requiring to go to town, etc., for other special treatment."

Many workers have obtained good results by combining fluorescent substances with X-rays of Finsen Light.

IV. Iontophoresis.—This new term has been suggested as a substitute for the older Cataphoresis, as it describes the process according to the present view of the subject. It is the method by which a galvanic current according to its pressure is able to drive active drugs through the epithelium. Sir B.W. Richardson was the first to describe it as a means of local anaesthesia as long ago as 1859 under the term Voltaic Narcotism (*Medical Times & Gazette* Feb. 12, June 25, 1859) and then for over 30 years the process was lost in a haze of scepticism and forgetfulness. During the past 20 years in America, France and Germany, and more recently in England, a good deal of work has been done upon this subject. More good has resulted in Rodent Ulcer than in Lupus, but the clearer understanding

of the process that now obtains will, without doubt, introduce into Lupus Therapeutics much helpful treatment.

An example of the process consists of having a pad soaked say in a solution of salt of zinc covering a zinc electrode attached to the positive pole of a galvanic battery; the current then forces zinc ions into the tissues when the negative pole is applied to another area of the skin.

Care must be taken in choice of an electrode as ionizable metals liberate ions which join those of the solution.

If alkaloids are to be administered by iontophoresis a positive electrode must be chosen which will not liberate metallic ions, *e.g.*, pure carbon or platinum. The difficulty is the dose; it must be remembered that considerable doses of active alkaloids may be passed into the system by this method. A rabbit can be killed by strychnine in a few minutes by iontophoresis.

The dosology may be limited by dropping a known dose of the alkaloid on linen or filtering paper fitting the surface of the electrode and placed between it and the skin. Writers on cataphoresis describe using the current until the paper is quite dry, but the process of iontophoresis is not driving in an intact solution but the ions of the solution. Another method is to incorporate the substance to be used in gelatine discs.

Before adopting iontophoresis it is customary to cleanse the skin from fat by ether.

High Frequency.

This method also has been praised by its advocates as a cure for lupus as for very many other affections. It certainly has been of benefit in some cases.

Unfortunately space will not permit the description of other methods employed in Lupus treatment in the present paper. A short description of some of the principal treatments recommended by different authorities will be given in a subsequent paper.

APPENDIX I.

Opsonic Index Technique.

(a) *Making the Emulsion of Bacilli.* (1) Take a small mass of the dead tubercle bacilli (residue from filtré used in preparing old tuberculin) and place in a small agate mortar and rub it down into a paste. This requires to be well done. Then add drop by drop a 0.1 % sol. of NaCl, the trituration being continued all the while. In this way a milky fluid is produced which is diluted with more salt solution and then centrifugalized until all the bacilli are precipitated. The clear liquid is repelled off, the deposit again triturated and then centrifugalized again

until a faintly opalescent fluid results. Some of this is examined and if no clumps exist a trial specimen is made with normal serum and if not more than 3 bacilli per leucocyte are found with the dilution used, *i.e.*, 1 emulsion, 2 serum, 3 leucocytes (in proportion the author generally uses) the emulsion is suitable for use. After a little practice the eye can detect when an emulsion is thin enough for use.

(b) *Preparing the serums.*—Prick the ear lobe or back of finger and collect a few drops of blood in small bent blood tube, seal and centrifugalize to obtain a clear serum. A tube from patient and normal person (*e.g.*, preferably the investigator,) is required.

(c) *The Corpuscles.*—Prepare some citrated salt solution by dissolving one of Burroughs Welcome's soloids (made for the purpose in 10 cc. of boiling distilled water.)

Some cooled solution is used to fill one-third of a centrifugal tube and blood from the finger or ear is allowed to drop into it; 7 or 8 drops of blood should be used. The tube is well shaken up and centrifuged. The matter in the tube is then in 3 layers, (1) a clear liquid; (2) a thin greyish film (the leucocytes); (3) a red layer (the red blood corpuscles). A pipette with teat is taken in the right hand, the centrifuged tube held in left hand is slanted, and the grey layer slides down to the lower level. The pipette is introduced to just above the red layer, the point being close to the upper side of the tube; nearly all the clear liquid is drawn off and thrown away. The pipette is then introduced, dipped so as to be near the lower wall of the slanted tube, *i.e.*, just touching the grey layer which together with a little of the red layer is drawn into the pipette. The contents of pipette are then transferred to another centrifugal tube of salt solution well shaken up and again centrifuged and treated as before. The grey layer with some red forms the leucocyte mixture used; it is transferred to a covered watch glass. The above precautions will remove a difficulty which the beginners often experience of obtaining sufficient leucocytes in their preparations.

(d) *Method of Making Slides.*—Two capillary pipettes are made with teats at wide end to exert negative pressure in the pipette.

A little of the bacillary emulsion is placed in a watch glass. The 2 tubes of serum are cut across and stuck in a pipkin containing wet sand covered with filtre paper. Two clean object glasses scrubbed with finest sand paper placed on table. A mark is made with a glass marking pencil a short distance from the end of pipette. A little air is pressed from teat and a volume of leucocytes drawn up to mark end is wiped, a bubble of air allowed to enter and then one or two more volumes drawn into pipette

in the same manner then a volume of bacillary emulsion, then two volumes of normal serum. They are partially mixed in the neck of pipette by slightly altering the pressure 2 or 3 times and then completely mixed by being blown out 2 or 3 times into a watch glass and again sucked into tube. End of tube sealed and tube placed in incubator and time noted. Another mixture is made in exactly the same manner but using the patient's serum. After 15 minutes' incubation the contents are blown out on object glasses and spread of even thickness in each preparation, leaving free edge of smear some distance from end of glass. Each film is air dried, fixed in saturated HgCl_2 solution and stained an equal time with Hot Carbol. Fuchsin, decolorised equally, with 1.5 to 2.0 % H_2SO_4 and Absolute Alcohol then counterstained *very lightly* with diluted Löffler's Blue dried and examined with $\frac{1}{2}$ ol. immers. lens and a No. 4 eye piece. Counts and calculations are then made as already described.

APPENDIX II.

Examples of serums recommended by some observers in treatment of Lupus.

(1) *Maragliano's Serum.* Produced by injection into horse of two products from virulent tubercle cultures until in 6 months blood serum contains considerable antitoxine. Used in daily injections and painting the part locally has benefitted a few cases.

(2) *Feeding on Milk of Immunised Animals.* Not much good but recommended by some.

(3) *Schweinitz Serum.* From horses and cows inoculated with attenuated tubercle. This has been used.

(4) *Sommolis Dog Serum.* Serum of normal dogs; slight temporary benefit on a few cases.

(5) *Marmorek's Serum.* Is now being used. It is said to be effectual when given by rectum and then there are no side issues as urticaria, etc., as is the case with hypodermic use.

APPENDIX III.

Some other Vaccines in use.

(1) *Hallopean and Roger* have nearly cured one case and improved others by injecting streptococcus cultures sterilized at 110°C .; an injection weekly for 9 months.

(2) *Careless* records a case improved by Coley's Fluid when all other treatments have failed.

(3) *Behring's* Tulase is one of the latest vaccines recommended.

(To be continued.)

Our Contemporaries.

MEDICINE.

A Suggested Treatment for Functional Aphonia.*

BY

C. PERCIVAL CROUCH, M.B. (Lond.), F.R.C.S.

Hon. Surgeon, Weston-super-Mare Hospital.

The treatment of functional aphonia has always struck me as being unsatisfactory.

In the majority of cases, of course, the voice can, so to speak, be frightened back. The introduction of a mysterious instrument, as the laryngoscopic mirror must appear to the uneducated mind, in many cases serves the purpose. In other cases the more severe treatment by the interrupted current effects a cure, but a small minority of patients fail to benefit by any of the usual methods, and often pass into a state of voicelessness which persists for years, and often for life.

Now the frightening of the voice back always seems to me on a par with frightening children into good behaviour; it is uncertain in its effect, and relapse is common. It is only systematic treatment on definite lines which can be depended upon for any permanent effect, either in the case of a naughty child or the ill-behaving vocal cords; and I venture to think that the treatment I now advocate is based upon sound principles, and can be successfully carried out by any medical man.

I have adopted it myself with success for the last four or five years, and so far as I can ascertain it is a method which has not hitherto been described for the cure of functional aphonia. Should I, however, be mistaken in my assumption, I must apologise for having inadvertently trespassed upon someone's preserves.

Before illustrating by specific cases, I would premise by saying that the treatment is based upon the fact that in almost every case there is some sort of a sound which can be produced by the approximation of the vocal cords, and this note has, so to speak, to be caught and educated. As a rule, it is a very high-pitched note—C or D above—of the very feeblest quality, often not louder than a mouse's squeak, and inaudible at a few feet away. It requires great patience on the part of the doctor to catch and educate it.

* Read at a Meeting of the Bristol Medico-Chirurgical Society at Weston-super-Mare, on June 12th, 1907.

In most cases the sound is more easily made with mouth almost or quite shut. As the voice strengthens, the patients can gradually open the mouth more and more, but any attempt to make them start with a big, round mouth—as a singing master would advise his pupils to do—is useless, and they themselves, as a rule, choose to keep the lips fairly close together. Although the first sound produced is usually very high-pitched, in one patient the only sound I could elicit was a low-pitched grunt—about F below middle C; this is unusual, I believe. It is very desirable to ascertain on the piano the note the patient first pitches on, either as a squeak or as a grunt, and to record this note in a book, so as to start on the same note the next lesson.

Sometimes it is not easy to make out what note a grunt is, but you can get pretty close to it, and after a few trials the patient will attune her voice to the note you have decided on as being "nearest" to her first attempt. It is well to remember that it is easier to "hum" than it is to pronounce a definite vowel sound, as "o" or "e." At the first interview you strike middle C on the piano, telling the patient to try to sing or "hum" to it. You then strike D, E, F, G, A, B, C in quick succession. As a rule, with the lower notes no sound beyond a gasp or whisper is heard, but when upper B or C is reached the patient usually gives a momentary faint squeak, which, if prolonged, relapses at once into a whisper. At the first interview you must be content with this momentary feeble squeak. On the following day start at once on the note the patient succeeded in producing the day before—say C above—at first, as yesterday, being satisfied with a succession of short, sharp, falsetto sounds, with intervals of rest between. After practising the interrupted sounds for a few minutes, it is well to hold the note on the piano down for a brief space, telling the patient to continue to squeak as long as it is held down. At first the sound is very tremulous, but by the end of the lesson, which lasts about ten minutes, it has usually become firmer, somewhat like a miniature siren. If it does not become firm, go back for a time to the interrupted squeaks. When the voice has thoroughly grasped the siren or humming sound, and can sustain it without breaking for a few seconds at a time, the vowel sound "o" should be attempted, and as soon as that has been accomplished a word, *e.g.*, Do of the Do, Re, Mi should be learnt and sung on the same note. When the "Do" is first attempted it often results in failure, the voice breaking into a whisper again. Should that be the case, let the patient pronounce it as two words, De (short) O; she will then whisper the first part, De, and sing the O, and after a few trials will arrive at Do as one word. By this time she will, as a rule, be able to take a lower note and a higher one.

and to sing the words Do, Re, Mi up and down on these three notes till they are sung firmly and fairly loudly. If there is any difficulty let her repeat the Do up and down, and soon the words Re and Mi are learnt, as the voice strengthens and she gains confidence. If the patient has anything of a voice the scale can soon be managed, and after that, or before, if the patient is not a singer, words can be intoned, and in reply to your questions the answers must be intoned, so that the patient gradually learns to use a large number of different words. After that she can try a simple song, as "Three Blind Mice," repeating the same sentence several times running, and then pass on to intoning on a few notes any piece of reading you choose. When she can sing or intone easily anything you give her, it is time to start speaking, and after practising the singing voice for a few minutes tell her to read instead of singing, starting with a simple sentence and repeating it very slowly after you. If there is any hesitation, let her at once go back to the singing, and try again. It may require two or three attempts. After that she can practise reading aloud regularly at home, but should always keep the voice in working order by daily singing.

This is an outline of the treatment, which can be modified as occasion demands. It is very desirable while you are carrying out this treatment in a severe case to isolate the patient, particularly if she happens to be living in the bosom of a large and sympathetic family. If possible, let her stay with a nurse or any sensible woman who will carry out your instructions conscientiously. Strict orders should be given that she must not whisper at all, but after she has learnt to intone permission may be given to use her voice in conversation by intoning.

After the first two or three lessons, when she can sing Do, Re, Mi, it is a good plan for her to practise these first three notes twice or thrice a day for ten minutes at a time at the piano, her companion striking the notes and insisting on their being sounded firmly and steadily.

In the most severe case I had it took ten or eleven days before she could speak at all vigorously. In mild cases two or three visits may often suffice to restore the voice.

I will now illustrate by two cases, which I have taken as bad ones.

Case 1.—A French lady, a teacher, about 23 years of age, came to me on April 30th, 1902. She had lost her voice sixteen months ago, and had been treated at a throat hospital in town by electricity, &c. She had naturally a very weak voice, and had never sung. The only note she could produce was a high squeak on C above middle C, and B next below not so well. Both these notes were of the feeblest quality, barely audible

a few feet away. On attempting notes above or below B or C the voice at once became a whisper. Three or four days later she succeeded in producing upper B, C, D fairly strongly, and also A and G very tremulously. I bade her practise these five notes—G, A, B, C, D—thrice daily, and enjoined on her the necessity of not trying to speak at all, but of asking for what she wanted in a sing-song on upper C. Three days after that she sang fairly clearly from G up to D, and at the same lesson spoke in a feeble voice. From that date she improved rapidly.

Case 2.—A young lady, age 19 years, came to see me June 18th, 1904. She had lost her voice six months ago. She was very strong physically, and clever. Had had treatment, including electric battery, without benefit. Could only speak in a whisper. At the first interview the only sound I could elicit, after over a quarter of an hour's trial, was a very feeble, low-pitched grunt, about F below middle C, barely audible. No note in the nature of a high-pitched falsetto note could be produced at this visit. Three days later, on again making the grunt, the voice broke on to a momentary falsetto squeak, just audible, on E above upper C. On the following day she started at once on E above, and soon produced all the notes by humming from upper C down to middle C, but broke down at once into a whisper when told to sing Do. By pronouncing the Do as two words—De—()—she soon succeeded in singing it as one word. The next day she sang the octave, and in answer to various simple questions intoned the replies. On June 26th, eight days after her first visit, after singing the octave and various sentences clearly for a short time, she succeeded, with some difficulty, in speaking a simple sentence, repeating the words after me very slowly. From this time the voice got rapidly stronger, and I advised her to practise singing every day to keep the voice strong.

These two cases I have chosen as they had both been treated by experts in throats, and the battery had been applied in both cases without success.—*The Bristol Medico-Chirurgical Journal.*

Recumbency in the Treatment of Infantile Paralysis.

BY

ADONIRAM B. JUDSON, M. D.

In the ever-changing treatment of disease the influence of environment is receiving unusual attention, as is seen in the management of tuberculosis of the joints. The influence of the lapse of time is also better understood. Medicines are given in small doses for very long periods, and the effects of time on the body are more clearly seen to influence the course of disease and the action of remedies.

In the treatment of infantile paralysis I propose a method which relies exclusively on the influences of environment and the lapse of time. It is applicable only in the very early stage, before the case is likely to be seen by an orthopædic surgeon. As soon as the disease is recognized I would limit the patient to the recumbent position till there is no possibility of further recession of the paralysis. The period of spontaneous recession extends over several months. During this time the difficult task must be undertaken of keeping a child, well in every other way, off his feet at an age when he should be learning to walk. In some cases 18 months should be occupied in this way. The common belief that such a patient requires exercise, especially of the affected limbs, will give rise to criticism and objections. A simple argument will not prevail in the family circle, and the physician's word will hardly prevent the little patient from having many a romp. And when the case ends there will be differences of opinion. If some lameness results, it may be said that the patient should have had more exercise, and if there is no disability at all, after the strict observance of recumbency, it may be said that there had been very little the matter with the child.

The argument is as follows: It will be recalled that the ill effects of joint disease are seen more commonly in the lower extremities than the upper because tuberculous action is subject to resolution in the epiphyses of the shoulder, elbow and wrist, but often goes on to destruction of the articulating surfaces of the hip, knee and ankle. And when it is noted that the arms are free while the legs bear the weight of the body it is reasonably inferred that the joints of the lower extremities when affected, or even suspected, should be protected by either recumbency or appropriate apparatus. The conclusion is a plain proposition and needs no discussion or verification. It shares the simplicity of Jenner's argument when he traced the relation of cause and effect and prescribed vaccination. In another field Finlay, walking with his eyes open apprehended the relation of cause and effect and prescribed the sequestration of the mosquito.

The necessity of reforming the environment of the lower extremities having been derived from clinical observations of joint disease, can practical conclusions be drawn in a similar manner from observing the course of infantile paralysis? Disability from this disease is seen eight times as often in the lower as in the upper extremities, and yet in the early stage the paralysis is found in all parts of the nervous system. The muscles of the recumbent patient are in very moderate use and in a position entirely favorable to spontaneous recession of the paralysis. The arms and hands retain this advantage when the patient is erect, but the impaired muscles in legs and feet give way at once when they meet the

resistance of the weight of the body. They rapidly become elongated and attenuated, and could not well be placed in an attitude more destructive of the possibility of restoration.

When prescribed recumbency shall give to all parts the same environment, recession of paralysis will be equally encouraged in the lower and upper limbs, the disproportion of 8 to 1 will disappear, and the sum of deformity from this disease will be materially reduced.

The value of the method is thus *proved*, but is not readily *demonstrated*. When comparing methods it is not easy to show that one is better than another. It may always be said that a case cited on behalf of a certain method may have been one that would have done well under any treatment. Tables of carefully recorded cases might lead to correct estimates, but studies of this kind are difficult and have not escaped criticism. Dr. Gaillard Thomas said, with wit and wisdom, that if there is anything more misleading than facts it is figures. Medicine and Surgery are still outside of the realm of exact science. Therefore we welcome every logical and reasonable resource of prevention and treatment.

Passive motion, resistance, exercises, electricity, massage, local applications and judicious medication should be continued. They cannot interfere with the treatment proposed, and their observance may make it easier persistently to maintain recumbency, the most important agent of all.—*The California Medical Journal*.

Diabetes.

BY

DR. ARNOLD LORAND, CARLSBAD, AUSTRIA.

Resume of an address delivered at a meeting of the Toronto Medical Society.

Diabetes appears generally in people who are fond of rich food, especially of much meat and carbo-hydrate. Under such conditions it will develop the sooner in people whose work causes a strain upon their nervous system, such as lawyers, physicians and diplomats. It is interesting to note that diabetes develops spontaneously in dogs only when they are fed with albuminous and sweet food, and more readily if the animal be of a nervous temperament, like a fox terrier. This kind of food in large quantities may exercise, after a certain time, a deleterious action upon those glands which control metabolism, like the thyroid and the pancreas. By experiments which he has made in company with Professor Minkowski, Dr. Lorand has found that in dogs, whose pancreas has been extirpated, the thyroid shows histological alterations, indicating a condition of

hyperactivity, like that found in Graves' disease, or by Chalmers Watson in fowls which have been fed exclusively on raw meat. Before Chalmers Watson, Dr. Lorand found by clinical observations that abundant meat food exercises a deleterious action upon the thyroid. On the other hand, it has been found by Toboleff that rich carbohydrate food induces a degeneration of the islands of Langerhans in the pancreas, to which, according to the vast majority of authors, is attributed an important rôle in the development of diabetes. According to the researches of Dr. Lorand, diabetes is due to two main causes, viz., degeneration of the pancreas; second, hyperactivity of the thyroid. Diabetes after mental emotion is due to subsequent alterations of the thyroid, which may go so far that even Graves' disease might come on suddenly after such a cause. It is a fact that glycosuria, or diabetes, is very frequent after all conditions of hyperactivity of the thyroid gland, whereas in the opposite condition, myxœdema, it is impossible to produce even alimentary glycosuria after the largest doses of glucose. All diabetic dogs have entirely lost their sugar after extirpation of the pancreas.

It is an important factor to detect diabetes in its beginning. Many diabetics show no subjective symptoms whatever of their disease, not even thirst. The urine of each patient should be examined, no matter what his ailment. It is necessary to give a test dinner in case no sugar is found, taking into consideration that many light cases of diabetes do not eliminate any sugar even for months. By giving a test dinner of $\frac{2}{3}$ ounces of grape sugar two hours after breakfast, the life insurance companies could be protected from severe losses. Diabetes treated from the beginning is very promising. The main object is to prevent the appearance of diacetic acid, as it is this substance, with following acid intoxication, that ends the life of diabetics. To prevent it no severe diet should be given, as exclusive diet of meat and fat surely might bring it about after a certain time. Meat should be limited in every case, especially in severe cases. The diet should be mixed, little meat, green vegetables, a few eggs, cream, and, in severe cases, much milk and no meat. Apples, peaches and oranges, in certain quantities, are much recommended. Bread, graham bread, should always be given. In severe diabetes much alkali should be given, especially by the rectum, so as not to injure the stomach. Carlsbad waters might give good results, especially in cases without cachexia. In severe cases, although the symptoms will get better the sugar may sometimes persist and also diacetic acid. Drugs are no use for a long continued treatment, but antithyroidin may influence beneficially, especially the nervous symptoms.—*Canadian Practitioner and Review*.

The Nephritic Type of Pneumonia.

BY

EDMUND CAUTLEY, M.D., F.R.C.P.

The temperature chart, put on the board for your inspection, is that of a boy, aged 2 years and 4 months, who had a fit on November 9, followed by vomiting, and two fits next morning. Breathing was rapid, and grunting in character. He was admitted to the ward on the third day of the illness with high fever and the usual clinical symptoms of lobar pneumonia. Examination of the chest yielded no evidence of lung disease, but the urine presented the characteristic features of acute nephritis. Labial herpes came out next day. Physical signs of pneumonia appeared at the right apex on the ninth day, and extended to the whole upper lobe by the twenty-third day, after which slow resolution took place. The acute nephritis subsided by the ninth day, when there was only a trace of albumin, which persisted for another three weeks. The temperature was persistently high, 102° F. to 105° F., for eleven days, and subsided by lysis to normal on the fifteenth day. Two days later it again rose, and irregular pyrexia (96° F. to 104° F.) persisted for thirty-three days, after which the boy rapidly improved and gained weight. For more than a month the boy suffered from frequent vomiting, and often had to be fed nasally. He was gravely ill for seven weeks.

Nephritis is more common as a secondary infection in pneumonia. Sometimes, as in the present instance, the severity of the pneumococcal infection falls primarily on the kidneys, and the lung is affected later. The renal symptoms subside rapidly after the crisis, or may persist for several weeks. In this case the renal symptoms subsided before the fever, and the pneumonic infection spread slowly. The continued irregular pyrexia, suggested empyema, but there were no physical signs to warrant exploration. The course of the case and the ultimate result warranted, I think, the diagnosis of fever due to pneumococcal pyæmia, and the absorption of toxins from the slowly resolving lung.—*The Polyclinic*.

Old Age.

The natural tendency of old age is toward an ossifying process in which there is a lime formation, and this is deposited where it will do the most harm. The arteries are particularly called upon to bear the brunt. If it is those of the brain, apoplexy is the result; if in those that supply the heart, we have an organic cardiac lesion; if in the kidneys, we have nephritis, and so on. If we can keep the arteries young and pliant, other things being equal, we stave off the ravages of old age. There have

been pursued methods and measures galore to cheat old Time out of a few years, but the matter still remains in the realm of speculation.—*The Medical Summary.*

SURGERY.

The Genito-Urinary Clinic: Its Relation To Sanitary and Moral Prophylaxis.

BY

W. G. ECKSTEIN, M. D.

Clinical Assistant in Genito-Urinary Diseases, New York Post-Graduate Medical School and Hospital.

It is not our purpose to offer commentaries on the innumerable plans that have been devised and tried, either to do away with it as such, or to diminish the effects of what is referred to as the Social Evil. That is a many-headed monster, and must be approached from all sides, and fought with every sort of weapon and all kinds of ammunition.

Men who do genito-urinary work, (especially those who handle the enormous material in the dispensaries of a large city) are in a peculiarly favorable position to be useful, and it is more than regrettable that there is little evidence to show any over-activity on their part in this particular field. Our purpose is to draw attention to this circumstance, and to describe a method by which we think to accomplish a great deal of good. That they who do the work in the genito-urinary clinics, have at their disposal effective ammunition was well brought out at the February meeting of the American Society of Sanitary and Moral Prophylaxis by Professor Cabot, who told of the leaflets he has been giving to patients suffering from venereal disease. His leaflets are remarkable for their succinct and pointed do's and don't's, and their distribution has resulted in much benefit. Professor Cabot has been doing this now for nine years.

The effectiveness of these leaflets became manifest in a very short time after I began to use them in my department of the German Polyclinic. In every way patients evinced a better appreciation of their predicament. They came more regularly for treatment, they gave themselves better attention, and displayed more intelligence, and livelier interest as to their condition. For some years leaflets, prepared with the same intention have been distributed to patients coming to the genito-urinary clinics of the Charité in Berlin, and the General Hospital in Vienna. The opinions of the men most familiar with conditions in those cities agree that the circulation of these leaflets has shown better results than the police control of prostitution, not only in a medical way, but morally.

With this experience, and Professor Cabot's, and my own, it has seemed to me to be worth while to go a step farther, and I have decided to introduce in my dispensary class small pamphlets instead of the leaflets. These are designed to answer some of the questions patients so often ask, to furnish more information, give more explicit directions, and more "argumentum ad hominem." No originality is claimed, either for the system or the subject matter of the paragraphs, which is, I believe, about the same that all who treat venereal cases give their patients, or at any rate should give them. Nevertheless, the selection of points, and the manner of presenting them to that curious array of mentalities which makes up the genito-urinary clinics, has not been so simple. The language, for instance, has been made to suffer deterioration in the interest of easy comprehension. What to include, what to insist on, and especially what to leave out of the pamphlets has been determined by study of existing leaflets, and by reading to groups of dispensary patients the first draughts of the paragraphs, noting the effect on them, and then making the changes that seemed advisable. Several of the original paragraphs have been dropped *in toto*, a few new ones have been added, and all of them modified as a result of the questions and comments of the very persons they are designed to reach. It will be observed that the effort has been made to rid patients of the idea that their disease is of little or no consequence; and I have tried to accomplish this without causing undue panic. Gonorrhœal patients are especially apt to incline to either of the extremes rather than the sensible middle view of their predicament. It is certain that some cases of neurasthenia have their origin in the too forcible or too detailed dissertation of the physician, and I have tried to avoid this in the tract for gonorrhœics because they seem to me more prone to psychic exaggeration than syphilitics. Persistently have I tried to be impressive as to the care of the patient for the safety of others.

The lead of the Viennese has been followed by warning patients of the danger of illicit intercourse. This may seem something like locking the stable door after the horse has fled, but it helps the patient to appreciate that though we treat him in a friendly way, we are not unmindful of his violation of the moral law, thereby giving him a more perfect understanding of our attitude as physicians toward him; there is also the presumption that some of the tracts will find their way into other hands than venereal patients, and thereby be productive of good.

Regarding prostitutes some may question the accuracy of the statements, but it is my experience that many men believe venereal diseases rare outside the prostitute class.

The sentences regarding cleanliness, washing, quacks, drugstore clinics, etc., need no explanation. As to prophylaxis, hints have been given because they are so often asked for, and because there has seemed to us no good reason why the benefits of preventive medicine should mind those who happen to frequent the venereal clinics. With those who urge that such advice encourages immorality we differ, probably because our aim is not sentimental, but rather to be of the greatest practical use to the largest number.

In the waiting rooms, and in the rooms where treatment is given these signs are to be hung:

Syphilis can be CURED by proper treatment and patients are warned to come regularly, and not neglect themselves to their own danger.

It is the duty of patients to learn, and carefully obey all directions so as to avoid giving the disease to others.

ASK FOR PRINTED INSTRUCTIONS.

Gonorrhoea or "the Clap" can become dangerous when neglected or not properly treated, and patients are warned to obey carefully all directions so as to protect themselves and save others from the disease.

ASK FOR PRINTED INSTRUCTIONS.

It will be seen from the signs, that the keynote of the system is to impress on the patient three fundamentals:

- (1) He is a menace to the well-being of others, and should conscientiously do his duty by them.
- (2) His disease is curable.
- (3) His disease is serious.

We give these slips or pamphlets to the patients without their asking for them. They are directed to ask for them so as to prevent the omission by oversight.

The patient is brought in and examined, the history taken. The record is kept on the history blanks with diagram, as published in the April 1907 number of the *Post-Graduate*. These blanks are patterned after those in use at the Hôpital Necker in Paris; ours are more complete and comprehensive than the originals, as I have added considerable space and matter to them. Professor Cabot also has found them an easy, convenient and thorough method of keeping records. These we retain on file,

and once every week, or once every two weeks (depending on the case) add to the examination record the new "*status praesens*." The patient is then given a "treatment" card which he retains. This is ruled in oblong spaces and on it the date and therapy are indicated, *i.e.*, Feb. 23, Nargol 2%. Pros. Mass., or Mar. 3, Hg. sal. m. 20, KI gtts. 30. This card the patient brings always with him, and an envelope is provided so that it is kept clean, and these are renewed when necessary. By means of these cards a consistent plan of treatment can be carried out without reference to the files at each visit.

According to his disease he is then given one of the pamphlets—a yellow one for the syphilitics, and a light red one for the gonorrhoeal patients.

GERMAN POLYCLINIC, 2d AVE. 8th and 9th Streets.

WEEK DAYS AT 2 P. M.

INFORMATION AND INSTRUCTION AS TO SYPHILIS.

It is important for you to perfectly understand this instruction.

Many people who mean well spread this disease, and go around sick and dangerous because they are ignorant of the nature of SYPHILIS.

The nature of syphilis makes it peculiar because:

- (1) It lasts such a long time.
- (2) It is always dangerous until cured, no matter how slight the signs or symptoms.
- (3) It shows itself in so many different ways; it can attack any part of the body.
- (4) It can be so easily given to others.
- (5) Its bad effects show in the children.
- (6) It can be surely and positively CURED but only when patients obey faithfully all directions as they are given.

A

Any intercourse outside the married state is very dangerous because of the great frequency of venereal diseases. Many women have syphilis or "Clap" or both diseases and do not know it, thereby innocently spreading those diseases. This is more likely to happen among women who are not whores or prostitutes. These diseases are not so easily seen in women, and for that reason they give the diseases to men when they seem to be in perfect health. YOU ARE THEREFORE WARNED AGAINST ALL IMMORAL INTERCOURSE.

B

THERE IS NO SUCH THING AS A SURE PREVENTIVE AGAINST SYPHILIS: not even the use of the condom. Daily washing, and bathing the parts with soap and water, especially under and around the foreskin, is advised because it keeps the parts in good and healthy condition. If the foreskin be at all tight it should be shown to the Doctor.

C

Syphilis is almost always caught by contact or touching of the sexual parts, but can be caught by contact or touching with any part of the body especially the lips and mouth.

D

The symptoms of syphilis do not usually begin until about three weeks after the contact or intercourse with the infected person (person who gives it to you).

E

Even under the most favourable circumstances (light case, strong constitution, etc.) syphilis lasts (2) two years. It never lasts less than two years but almost always three (3) years. During these years, every three or four months, new symptoms such as skin disease, especially on the palms of the hands and soles of the feet, sores in the throat and mouth and on the tongue, and in the rectum, inflammation of the eyes and falling out of the hair are likely to happen, BUT CAN BE CURED.

F

The severity of the disease is not always indicated by the signs or symptoms, which may be light and few or many and painful; therefore patients are particularly warned that it often happens that what seem to be the lightest cases develop the most severe symptoms later.

G

Syphilis can be easily given to, or "caught by" any one, and the danger of a patient spreading syphilis lasts for a number of years; therefore you must be religiously careful that you do not give the disease to any one, by kissing (especially children), by intercourse (connection), by sleeping with any one or by in any way coming in close bodily contact or touch with them (wrestling, etc.), and by using the same tooth-brush, razor, knife, fork, spoon, glass, cup, or any other article for personal use.

ANY CARELESSNESS IN THIS RESPECT IS CRIMINAL.

H

You cannot expect protection from the severe (bad) signs or symptoms, and complications of the disease unless you faithfully obeyed all

directions, and taken the "cure" several times a year as ordered by your doctor. Every case is different and the time necessary for a complete cure depends somewhat on the severity of the case, and the kind of treatment, but more than anything else, it depends on the patient, the care he takes of himself, and the care with which he follows directions.

I

You will lose time, and invite danger by changing doctors; therefore when you have selected a reputable dispensary or doctor, have them treat you until they pronounce you cured. Should you have to move to another place tell your doctor, and he will advise you.

J

While you are being treated you must live a regular, temperate life, and avoid intemperance and excitement, and be careful not to do anything to excess. Eat only plain substantial food (especially when taking mercury). Try to get along without any beer, wines, or liquors and if you must use tobacco use as little as you possibly can. Do not take too much exercise, and do not tire yourself out. Keep out of quarrels and fights. Do not forget that you are being treated for a serious sickness and that you must do your best to try and get well.

K

Take extra good care of your mouth, teeth and gums, because they very often get sore. Be sure to use a mouth wash three or four times a day, especially when getting injections or taking mercury. Remind the doctor to look at your teeth. If you go to a dentist be sure to tell him that you have syphilis.

L

There is no patent medicine known that will cure syphilis. Every single one of the doctors who advertise is dishonest, and not one in a hundred of them treats the disease as it should be treated. Do not risk your health by letting the man in the drug-store treat you, and beware the advice of friends. You have a serious and treacherous sickness, and you will be best off attending a reputable and established dispensary, or going to a reputable doctor.

M

Make it a rule to tell the doctor anything unusual you may notice about yourself.

N

Make it a rule to ask the doctor anything that you do not understand perfectly.

Do not as long as you live forget that you have had syphilis. If you are ever sick and have a doctor, tell him at once that you have had syphilis. It may help him to cure you very quickly and not telling him may prolong your sickness or even make it dangerous to life.

P

If you should have the good luck to go along without painful or troublesome symptoms, and feeling more or less well, do NOT fool yourself by thinking that you are cured. You are not cured until your doctor tells you so. This is a mistake that is often made, and causes much disappointment and misery.

Do not ever engage yourself to marry unless you have your doctor's consent. Be sure to ask the doctor, if possible the one who has treated you, for his permission to marry. FAILURE to take this precaution is CRIMINAL. Children are born with syphilis.

R

Keep this and read it from time to time. By obedience to these rules you will be cured in the shortest time.

T

Should you meet any one who has syphilis, and who does not take care of himself or herself as you have been taught, GIVE them this to read. The object of this is not only to help you to a quick and permanent cure, but especially to prevent others from getting syphilis.

GERMAN POLYCLINIC 2d AVE. 8th AND 9th STREETS.

WEEK DAYS AT 2 P. M.

INSTRUCTIONS AND DIRECTIONS FOR PATIENTS HAVING GONORRHOEA OR THE CLAP.

On account of the widespread prevalence of venereal disease and the enormous number of men and women having the clap, any sexual intercourse (connection) outside of the married state is in the highest degree dangerous, and it is practically certain that such intercourse will sooner or later result in THE CLAP or some other venereal disease. It is a mistake to think that only whores or prostitutes have the clap. Other women who have intercourse (connection) outside the married state (no matter what they seem to be) are just as likely to give the disease, and while it cannot be proved, professional prostitutes, especially those living in houses, are probably safer in this respect than other women.

It is possible for a woman to have the clap and not know it; and as a matter of fact the disease is often spread by women who seem to be in

perfect health, and who do not know that they are giving the disease to men.

As a preventive against clap, the use of the condom (rubber bag) is fairly certain. (It is no preventive against syphilis). Careful cleansing or washing of the parts, with soap and water and passing water immediately after connection are advisable.

Proper treatment from the very beginning of the disease is most important, not only as to the time necessary for a cure, but also as to the extension or spread of the disease.

Contrary to the usual understanding, the "clap" is a serious disease. When neglected or improperly treated it causes painful disease of the bladder, testicles or kidneys, often leaving permanent injury, and sometimes becoming dangerous.

A person "catches" the "Clap" from another person: therefore until you have been thoroughly cured, sexual intercourse (or connection) is not only forbidden, but is CRIMINAL.

Even when the discharge ("running" or "material") has entirely and completely stopped, a patient can give the disease to another. To be able to tell whether a case has been perfectly cured requires a number of tests, and a very complete examination by the doctor.

The proper treatment of Clap is difficult and complicated, and needs special skill. No case can be cured by medicine taken by the mouth alone, and patients are warned against taking the advice of friends, and against patent medicines.

Do not be fooled by the doctors who advertise or the drug-store man or any one else who may promise you a short, sure cure. *There is no such thing.* There is probably no other disease that can be so easily and quickly made worse by improper treatment or neglect; therefore, you are most earnestly advised to go for treatment to a reputable and established dispensary or a reputable doctor.

DIRECTIONS.

- 1—Wear a suspensary bandage all the time.
- 2—Avoid physical exercise as much as you can; don't run, jump, dance, or ride a bicycle. Keep out of wagons that jolt. Avoid long railroad rides. When there is much discharge or "running," lie down as much as you can.
- 3—Do NOT drink beer, whisky or any kind of wine; this is most important. Take very little coffee or tea.
- 4—Avoid sharp, peppery, salted, sour or highly spiced food. Milk, water and plain food are best.

5—Wash and cleanse the parts at least twice a day. This should be done always even when there is nothing the matter with you.

6—Change the cotton or gauze that you use to catch the discharge "running" three or four times a day.

7—Be very careful with the discharge (pus, running or material) and wash your hands immediately after handling the parts, or anything that has been soiled by them; because when brought to the eyes it causes a very bad painful disease that often ends in blindness.

8—Try your best to keep the pus (running) from soiling your shirts and drawers. Anything that has been soiled by it should be boiled at once, or destroyed (burned). Many people have been made sick by carelessness in this matter.

9—You will most likely be told by the doctor to inject or syringe yourself; this you must do carefully as ordered by your doctor, usually three or four times a day.

10—To inject properly, pass water, then fill your syringe, then gently but steadily push in the medicine until you feel a slight stretching. By pinching the end of the part (from side to side) try to hold the medicine in for five to ten minutes. If you do not succeed at first, try a second syringeful. Be sure that your syringe is large enough, and that the tip is not cracked or broken.

11—Pollutions (wet dreams) come almost always at night, and should be prevented if possible. Keep the sleeping room cool. Do not sleep longer than six or seven hours at a time. Do not eat late at night. Avoid anything likely to arouse the passions, such as "keeping company" with women, lewd (smutty) talk, pictures or books.

12—Chordee (hard on) can often be avoided by following rule: (for pollutions or hard on). When they happen, try washing the parts in cold water, or taking a cold sitz-bath.

13—Do not pass your water for three or four hours before going to the doctor. This is important because the doctor is able to learn a great deal from the water as you pass it for him. It is one of the best tests of how you are getting on.

14—Do not use your injection for six hours before going to the doctor.

15—When you have been told by your doctor that you are cured, destroy (burn) your syringe or anything else that you may have used in your treatment. On no account lend, sell or give such things to any one.

16—Remember that no one can honestly tell you that you will be cured in a certain time. It often happens that the Clap takes a long time to cure; you will most likely make a mistake by changing doctors. Remember that the complications are more painful and dangerous than the disease itself. Complications occur in the testicle, groin, bladder and kidney; in women also in the womb. There is also a disease of the joints that sometimes comes with the clap.

17—If you should notice anything unusual, such as a pain or very frequent desire to pass water, pain in the testicle or rectum or blood in the urine, stop your injections, and come for treatment as soon as you can. These symptoms are sure to happen if you should try to practise sexual intercourse (or connection.)

18—Drink a glass of water every three or four hours and be sure that your bowels move freely (have a good action) every day.

19—Should you meet any one who has gonorrhoea or the clap, and who does not take care of himself as you have been taught, GIVE them this to read. The object of this is not only to help you to a quick and permanent cure but also to prevent others from getting or spreading the Clap.

It will be seen that our purpose is simple. We are going to try to improve, extend and get better results from an inexpensive and easily applied system that has already given good results.

Incidentally it will be noticed that considerable time is saved by the distribution of these pamphlets and that in the handling of large numbers of patients no necessary instructions to individuals will be omitted, as is so likely to happen. We intend to have these translated and printed in several of the foreign languages, and perhaps persuade other institutions, particularly the State Board of Charities, to try the plan.

As an adjuvant it seems to me that the Board of Education would do a valuable service by including in the scope of its public lectures an occasional one (perhaps to men only) on the subjects connected with sexual hygiene, and the various genito-urinary clinics could act as distributors of notices or tickets for such lectures.

The improvement in sanitary and moral prophylaxis will be greater when teaching and education replace preaching and sentimentalism, and to this end there is no more potent agent than the friendly helper of the unfortunate in the genito-urinary clinic.—*The Post-Graduate*.

A New Method of Operating for Cleft Palate.

(*Canadian Journ. of Med. and Surg.*, June, 1907.)

STARR points out that non-union along the line of closure in operations for cleft palate is often brought about by (1) tension along the line of sutures, (2) sucking of the stitches by the patient, and (3) infection from the mouth. To obviate the first two difficulties the author introduces a plate of aluminium, beaten out sufficiently to make it thoroughly pliable, through the lateral incisions and folds it so as to completely surround the flaps. After the muco-periosteal flaps have been freed and the edges of the cleft freshened, the aluminium plate bent at an angle where

it is to fold over the outer side of one flap, is introduced through one of the lateral incisions. A pair of forceps is then passed through the opposite incision, and the aluminium plate is pulled through it into the cavity of mouth again. It is then carried across to the other side, and the excess cut off. The plate can be easily perforated at different points by a strong needle, and the ends tied together with horse-hair to prevent them irritating the tongue, or the free end can be turned up into the lateral incision again, and the edges pinched with a pair of forceps. The plate should be left in position for eight or nine days, when it is removed by cutting it close to the lateral incision. At the same time the stitches should be removed. Besides preventing tension and sucking at the stitches the aluminium plate prevents adhesion taking place between the muco-periosteum and the bone, until union of the edges has occurred. To avoid infection from the mouth the palate is sprayed with a solution of boric acid and 10 per cent. rectified spirit, which easily finds its way under the splint. The opsonic index, should also be taken, and if it is low to the germs within the buccal cavity, injections of vaccines should be administered for a few days before the operation.—(T. R. WHIPHAM.) *The British Journal of Children's Diseases.*

The Treatment of Gonorrhœa.

The *Scottish Medical and Surgical Journal* for May contains a useful paper on the treatment of gonorrhœa by irrigation, from the pen of Dr. J. S. Purdy, who has made some interesting experiments in order to demonstrate that ordinary urethral injections do not penetrate beyond the membranous urethra. With a 4-drachm glass syringe he injected into the urethra of a cadaver a solution of methylene blue. He found that staining occurred as far as the termination of the membranous portion but no further. On using the douche in an elevation of 2½ ft. was sufficient to stain the prostatic urethra and of 3 ft. for intravesical irrigation. On the living subject an elevation of not less than 5½ ft. was necessary to reach the bladder without a catheter. For intravesical irrigation it is better to use a catheter. Although the resistance may be overcome by using a column of water sufficiently high, it is not always advisable to do so, especially in nervous patients. Dr. Purdy has previously published his experience in the treatment of gonorrhœa with the new organic compound of silver, *protargol*, at the London Lock Hospital. This body has the advantage of being non-irritating even in strong solutions. After first washing out the urethra, he injects four times daily a 5 per cent. solution, which the patient holds in the urethra for at least five minutes. In from four to ten days all obvious discharge ceases. On the cessation of the

discharge he uses a weak astringent injection, a solution of sulphate of zinc, one grain to the ounce, which is held in the urethra for half a minute. In some cases cure is completed within fourteen days. In posterior urethritis Dr. Purdy has obtained good results from deep instillations of silver nitrate, and in some obstinate cases finds this method necessary, but he considers that no method gives such uniformly satisfactory results as urethral and intravesical irrigation. He uses a double-channel nozzle made of celluloid or metal, consisting of two tubes concentrically arranged so as to allow the fluid to flow through the inner and to return by the outer. An ordinary burette clip serves to control the stream. Dr. Purdy's experience of the urethroscope is not fortunate. In some cases the disease was even aggravated by its use. Much practice and skilful manipulation are required in order to use this instrument with benefit.—*The Lancet.*

Dry Heat Applied to Wounds.

If after gauze, cotton and bandage have been applied over a wound, especially an infected one, the wound subjected to a high degree of dry heat for some time, healing will be greatly hastened. If the sun is shining very hotly, the wounded extremity or part may be placed so that the sunshine burns it until every trace of moisture is gone; or it may be placed very near to a hot stove or furnace for some time—even the heat of a Bunsen burner does good but takes longer. In adopting this mode of treatment no special pains need be taken to clean the burned or injured surface; it should not be washed with antiseptic solutions but simply cleaned with dry gauze as well as possible, the surrounding surface being also cleaned without water. Dry bichloride gauze (iodoform is better for this purpose) is applied in several layers—which of course become instantly moistened by the blood or serum—and a thin layer of cotton placed over this, with bandage over all. The dry heat is then applied—a “hot-air apparatus” will not do, as the sweating interferes with the desired desiccation—and the patient told to return in three or four days. Healing is by “third intention” of the old writers: healing under a scab—artificially produced. In some cases suppuration is practically prevented.—*Clinical Medicine.*

OBSTETRICS AND GYNÆCOLOGY.

**Fibro-Myomatous Uterus Weighing over Seven Pounds
Removed from a Woman aged 22.***

BY

HERBERT R. SPENCER, M.D., B.S., F.R.C.P.,

Professor of Obstetric Medicine in University College Hospital, Medical School, London; Obstetric Physician to University College Hospital.

F.G., a Jewish virgin, aged 22, born on March 20th, 1884, as shown by her birth certificate, was seen on December 15th, 1906. She complained of menorrhagia, dysmenorrhœa, and enlargement of the abdomen.

Menstruation began at the age of 13, and had been regular every four weeks since. At first it lasted one day, but for the last three years it had lasted five days, during the first two of which there had been pain in the left side of the abdomen.

The patient had typhus at the age of 9, and when she was 13 she was treated at St. Bartholomew's Hospital for rheumatism.

She was admitted to University College Hospital, London, on December 18th, 1906, and looked healthy and not anæmic. The breasts were virginal. The hymen was intact and its opening very small, rendering examination difficult.

The abdomen was distended, measuring 3 in. below the umbilicus, 31 in. in girth. The distance from the umbilicus to the anterior superior iliac spine was $6\frac{1}{4}$ in. on each side. The distension was caused by a tumour which reached up to 3 in. above the umbilicus. The tumour had almost the shape and consistence of the pregnant uterus, but differed in that the lower segment was specially prominent, that the left cornu of the uterus felt rather harder than the rest of the organ, and that neither ballottement nor uterine souffle could be obtained. The tumour felt cystic to palpation, and gave a well-marked thrill on percussion. It was dull on percussion. On vaginal examination the cervix was virginal. The uterus appeared to be small; the tumour could not be reached. The relation of the uterus to the tumour could not be made out without an anæsthetic, even by rectal examination. It was not thought advisable to give an anæsthetic as the case was clearly one which required operation. An ovarian tumour was diagnosed.

On the 20th of December, 1906, I operated and found that the tumour, in its shape, and colour and consistence, closely resembled a pregnant uterus at the seventh month. The only points in which it

*Communicated to the Obstetrical Society of London and specimen shown, July 3rd, 1907.

differed from the pregnant organ were in the fulness of the lower segment (which in the pregnant uterus is usually flat), in the absence of signs of a foetus, and in the presence of a white patch where the tumour had pressed against the promontory, which I have often observed in the fibroid uterus but never in the pregnant organ. In spite of the close simulation of the pregnant uterus I decided that the patient could not be pregnant, as the breasts, though the areolæ were pigmented, were in other respects typically virginal. I considered that the tumour was a degenerated fibromyoma, and on making an incision into it this diagnosis was confirmed.

The uterus was then removed by total abdominal hysterectomy, the pelvic peritoneum being closed by a purse-string suture.

The abdominal wound, sutured with buried silk (for the fascia) and through stitches of silk-worm gut, healed by first intention, and the patient left the hospital quite well on the 22nd of January.

On bisecting the uterus, which weighed 7 lb. 7 oz., it was found to be invaded by an intra-mural fibroid which originated in the right wall and had undergone mucous degeneration. This degeneration was especially marked at the upper part of the tumour, where it formed a gelatinous layer half an inch in thickness.

Microscopic examination confirmed the naked-eye diagnosis.

The points of interest in the case are the large size of the tumour, the youth of the patient, and the fact that at the operation the tumour closely resembled in appearance a pregnant uterus. Nine years ago I brought before the Obstetrical Society all the cases I had been able to find recorded (forty in all) of fibro-myoma occurring in women under twenty-five years of age, together with two cases of my own, one of which weighed 4 lb. 9½ oz. Dr. Russel Andrews has published a case of a fibro-myomatous uterus weighing 4 lb. 5oz. occurring (like my own) in a Jewess, aged 20. Most of the tumours recorded, however, were small, and it is rare to find so large a tumour as this in so young a subject.—*The Journal of Obstetrics and Gynecology.*

**Two Cases of Early Ectopic Gestation, with some
unusually Misleading Symptoms.**

BY

J. C. HOLDICH LEICESTER, M. D., B. S., B. Sc., M.R.C.P. (Lond.),
F. R. C. S. (Eng.), I. M. S.

First Surgeon to the Central Hospital, Calcutta.

Case I.—Mrs. A., European, aged 29, was admitted to this hospital on June 6th, 1906, with the following history: At the end of April, having gone about 12 days over her period, she had a blood discharge

from the vagina for 4 or 5 days, and then what appeared to her to be the ovum came away, but the discharge continued. Five days later she began to have severe attacks of pain, occurring at first every 4 days or so, but very soon becoming continuous. There was no vomiting. The bowels were freely opened, with pain on defæcation. About 20 days after the (?) abortion she noticed a swelling on the right side of the lower part of the abdomen. As the discharge did not stop, she was placed under chloroform on the 25th of May and curetted by the doctor under whose care she then was. For some days after this operation the discharge diminished and the pain was relieved, but on the sixth day the discharge again became worse, the pain was more severe, and the abdominal swelling appeared to increase in size.

The patient had had 2 children, the last 11 months ago, and no abortions previous to this one.

The catamenia had been regular, every 4 weeks; they lasted 5 days and were unaccompanied with pain. The last period had ceased on March 25th. There was nothing in the previous history which had any bearing on the present illness.

On admission, there was a rounded, hard, irregular tumour rising out of the pelvis in the mid-line, lying rather obliquely towards the right, parallel with and just above Poupart's ligament, about equal in size to a hen's egg, not very tender; nothing else abnormal was noted on abdominal examination. Per vaginam, the uterus was found to be lying anteverted and anteflexed, pushed forwards and not enlarged; the external os was patulous. In Douglas's pouch, extending round to the right side and filling up the right fornix, was a soft boggy mass, very tender, of indefinite outline, continuous with the mass felt by the abdomen. There was slight fever, ranging between 99° and 100·8°F. On June 11th the swelling in the abdomen was a little softer. Per vaginam, the mass previously felt was now softer, and distinct fluctuation could be detected. The temperature had varied between 99° and 101° F.

On June 12th, under chloroform, an exploratory incision was made by the vaginal route into the most prominent part of the swelling, and a large quantity of blood and blood-clot evacuated; the cavity was douched out and a large-sized drainage tube inserted. After the operation a distinct tumour, equal in size to a hen's egg, could be made out on the right side of the uterus, which felt like a distended Fallopian tube. The same afternoon the temperature, which was 100° at the time of the operation, suddenly rose to 104°F., and there was a severe attack of colic-like pain on the right side of the lower part of the abdomen. The cavity was

douched out daily, and on the 18th, as there was very little discharge, the tube was left out altogether. At this date the mass on the right could still be felt, but was a little smaller than before. On the 14th inst. the temperature was normal for the first time since admission; but it rose again after this and varied between normal and 101° until the 24th inst., after which date it never rose above 99°.

The patient was finally discharged from hospital on the 9th of July, on which date a vaginal examination showed the uterus to be lying in normal position, freely movable, and not enlarged; both fornices were quite clear, the wound was closed, a slight thickening was still apparent in Douglas's pouch.

I saw her medical attendant in March of this year (1907); he informed me that she was in excellent health, quite free from any pain or discomfort and able to take active exercise of all kinds.

CASE II. Mrs. T., a Eurasian, aged 32, was admitted July 30th, 1906. She stated that she had been suffering from fever for the past 8 days, and that the fever had been preceded by a rigor. She had had attacks of vomiting for the last 2 days with pains all over the body and slight headache; heart beating was very rapid; she had no cough. A doctor outside had told her that she was nearly 3 months pregnant. She complained especially of pain in the lower part of the abdomen on the left side, and over the lower ribs on both sides.

Menstruation began at the age of 14 years and had always been irregular, there being sometimes 30 days between the periods, at others 40. The flow was scanty in quantity and usually lasted only 4 days. The last period was on the 20th of July; it only lasted 2 days and the quantity was less than usual. She had not missed any period during the year.

There was nothing in her previous history which had any bearing on the case.

On admission she was seen by my colleague, Captain J. G. P. Murray, I.M.S., who kindly gave me the following particulars of her condition at this time:—"Pulse small and rapid, marked dyspnœa, but no cyanosis; pain in both hypochondriac regions. Beyond loud pleural friction over the lower part of the axillæ on both sides, no abnormal physical signs could be detected."

When I first saw the patient, on the morning of the 31st of July, the tongue was furred and rather dry, pulse 128, small and compressible. Beyond friction over the lower part of the axillæ on both sides, no abnormal physical signs could be detected in the chest.

On examining the abdomen, the edge of the spleen could be felt just below the costal margin on deep inspiration. There was fulness of the lower part of the abdomen, with some increased resistance on the left side. Per vaginam, the uterus was felt to be lying forwards, anteverted, freely movable, and not enlarged. Behind and on the right side there was great tenderness in both fornices; no discharge.

The following day (August 1st) the tongue was furred, no friction could now be heard on the right side and very little on the left. The other signs were unaltered but the general condition was somewhat improved. On the 3rd the bowels were acting well. There was still some slight fulness in the lower part of the abdomen, but not much tenderness. On the 6th some slight tenderness could still be detected on the left side of the lower part of the abdomen. On the 9th, the tongue was clean, pulse much improved, still a definite sense of resistance on the left side. Per vaginam, there were tenderness and resistance in the left fornix but no distinct tumour could be made out; in the right fornix there was definite fulness.

On August 11th, abdominal section was performed. The right tube and ovary were found normal, except for a small cyst in the latter which ruptured on manipulation. The left ovary was normal, but the middle of the tube on this side was enlarged into a fusiform swelling equal in size to a hazel nut. The tube was therefore removed in the usual way. The uterus was quite normal. The vermiform appendix was found to be kinked on itself and adherent to the cæcum; it was freed, the meso-appendix ligatured, and the appendix removed by means of a clamp, the stump being buried by Lembert sutures.

Beyond some troublesome vomiting, the patient progressed favourably. The stitches were removed on the tenth day, and the wound had healed well, except in the lower part where there was some slight superficial suppuration. She was discharged on the 14th of September, the abdominal scar being soundly healed, the uterus in good position, and no thickening to be felt anywhere.

I last saw her on the 25th of May of this year (1907). She had no pain or discomfort of any kind. She stated that since the operation her menstruation had been considerably less than before, and that it now only lasts one day. The scar remained quite sound; the uterus was in good position, freely movable; the right ovary felt somewhat enlarged.

I sent the specimen to London, where it was cut in serial sections, and Dr. John Fairbairn, who kindly had this done for me, reports as follows: "It was a good example of early tubal gestation but contained

no embryo; it showed beautifully chorionic villi invading muscle wall of tube."

It seems to me that these cases were worth publishing, more especially from the point of view of the difficulty in arriving at the correct diagnosis. With regard to case I, the first question which naturally arises is: Was there a true abortion or was it only decidual membrane that was passed? From a careful questioning of the patient I am inclined to think that there was a true abortion; of course it is impossible to be certain, and unfortunately she did not put herself under medical care until some days after, or else her medical attendant would doubtless have thrown some light on the subject. The opinion I formed after a careful study of her history and after making a thorough examination, was that the case was one of abortion, with a co-existing pyosalpinx, which had been lit up again into activity by the pregnancy and the curetting, and this was the view I believe that her medical attendant had also taken. It was not until I received the report on the condition of her blood, which showed that there was no leucocytosis present, that I began to have suspicions as to the correctness of any diagnosis. I am unable to throw any light upon the cause of her fever, more especially the sudden rise to 104° on the day of the operation. I am inclined to think that it may have been malarial in origin, though no parasites could be found in the blood. Another doubt that may arise is whether the hæmatocele was due to a ruptured tubal gestation. I think there is very little doubt that this was the case, even though a careful examination of the blood and blood-clot evacuated from the pelvis failed to show any trace of an ovum or tissue of any sort. It seems probable that the tumour felt after evacuation of the hæmatocele was the enlarged tube which had ruptured, and it is possible that the ovum may have been retained in the tube or its neighbourhood after rupture, and slowly absorbed.

The second case presented if anything even greater difficulties of diagnosis. The first time that I made a vaginal examination I was very doubtful as to whether the fulness I felt in the right fornix might not be a localized collection of blood, due to a ruptured ectopic pregnancy. I was never able to make out any definite tumour on the left side, but on taking a careful review of the whole case I decided that it would be wise to recommend an exploratory abdominal section, and I think that subsequent events justified this decision. I must say that I was extremely surprised to find an unruptured early ectopic gestation on the left side, but, of course, it would have been almost impossible to feel so small a swelling in the tube unless the conditions had been exceedingly favourable, which they were not. As to the cause of her dyspnoea, taking into

consideration the friction sounds heard I can only suppose that this must have been due to an attack of diaphragmatic pleurisy, but I am unable to suggest a possible cause for this condition. The general appearance of the appendix pointed to old, rather than to recent, mischief. The fulness felt on the right side was probably due to distended intestine, together with the enlargement of the ovary due to the cyst in it.

It would be almost impossible to picture two cases of the same affection more dissimilar than these, both as to signs and symptoms, and they certainly serve to emphasize not only the great difficulties which may be met with in the diagnosis of ectopic pregnancy, but also the infinite variety of signs and symptoms in this condition.—*The Journal of Obstetrics and Gynecology*.

Practical Suggestions for the Limitation of Puerperal Infection.*

BY

JAMES E. DAVIS, M.D., Detroit, Mich.

Statistics.—The best available statistics concerning puerperal infection are said to present a mortality less sombre than the actual facts. Williams mentions the investigations of Boxall and Byers, who found that, outside of the lying-in hospitals, this preventable scourge claims as many and perhaps more victims than it did twenty or even forty years ago.

The Berlin Society of Obstetrics and Gynecology arrived at the conclusion that from 10 to 15 per cent. of the deaths occurring in women during the period of sexual activity were due to "childbed fever," and that this disease destroyed nearly as many lives as small-pox and cholera. Max Boehr, in his famous statistics, estimates that one-thirtieth of all married women in Prussia die in childbed.

Ingerslew states that at the present time in Denmark, with the single exception of tuberculosis, puerperal infection is the most frequent cause of death in women between the ages of twenty and fifty years.

Bacon, in an article based upon uncertain records obtained from the Health Department of Chicago gives a mortality for puerperal sepsis of 7.3 per cent. of all women dying between the ages of twenty and fifty years.

Williams says one cannot be guided altogether by the mortality statistics, inasmuch as the largest proportion of puerperal infection cases do not end fatally, but present later as difficult gynecological problems.

* Read before the Michigan State Medical Society, June, 1907.

Causative Organisms.—The more important bacteria present in puerperal infections are the streptococcus, bacillus coli communis, gonococcus and bacillus aerogenes capsulatus.

These pathologic organisms are fortunately only found occasionally in the vagina and uterus prior to delivery, and are therefore necessarily acquired.

The material found in the vagina is not a true secretion, as it is composed of secretions from the cervix and uterus with exudates containing exfoliated epithelium and leucocytes. The reaction of this fluid during pregnancy is markedly acid—incidentally this may be said to prohibit coition during the latter months of pregnancy.

The body of the uterus is normally free from micro-organisms. Stroganoff found the bacteria of the vagina extending up to the mucous plug of the cervix, but not penetrating it, and experimentally proved the mucus an unfavorable environment for bacteria. A true infection may result from penetration of the uterus by any of the pathogenic bacteria.

Classification of Infections.—Spiegelberger has given a classification of puerperal infection which serves excellently to emphasize the principal points to which inquiry should be directed:

1. Inflammation of the genital mucous membrane.
2. Inflammation of the uterine parenchyma.
3. Inflammation of the peritoneum.
4. Phlebitis uterina.
5. Pure septicæmia.

It is true that the inflammations of the first class, which are confined to the vagina, "endocolpitis," are more frequently present than those of the uterus, "endometritis."

The majority of infections by way of the vaginal mucous membrane occur through lacerations and bruises. To prevent these ports of entry or areas for the lodgment and growth of pathogenic bacteria is one of the chief duties of the accoucheur.

Whether conservative or active measures are to be followed in each given case is a question of careful and experienced judgment. Too often the mere delivery of the child is the only consideration. An hour is saved at the time of delivery, and a dozen hours are used later in caring for artificially what nature would have done safely in that one hour.

Different workers have formulated rules as to when aid should be given in the second stage of labor. Croom would allow no multipara to be in the second stage more than three hours, and no primipara longer than four hours. The rule of allowing no case, when in the second stage,

to labor longer when no progress has been made for one hour, is applicable, like Croom's and all other rules, only in a general way. It may be said that the average practitioner does not wait long enough, while the midwife and the persistent opponent of instruments wait too long. Incidentally, I might say that instruments in the hands of most men are potent factors in the causation of tears. Yet, delayed labor is a cause of puerperal fever, because the tissues become bruised, and therefore incapable of normal resistance. It is better to have insignificant tears which can be accurately approximated and a good cement repair effected in twenty-four to forty-eight hours, than a large devitalized area with probable sloughing and unhindered invasion during the necessary decubitus.

Of all the single factors in the prevention of puerperal infection, "provided that ordinary cleanliness has obtained," the accurate approximation of all laceration with absorbable suture material is, to my mind, the most important.

It is not an easy task to properly examine and make satisfactory repair of all tears immediately after delivery unless the conditions are made convenient. First of all, examination should be made upon a table, with a convenient good light. All parts must be carefully palpated, and, if possible, made accessible for ocular inspection. The sulci should be most carefully examined. In my experience repairs made with plain No. 3 catgut give the best results. When any but animal membrane is used for sutures there will be considerable drainage around them, causing frequent infection of the approximated walls.

The hands of the obstetrician and the portiovaginalis should receive the same preparation, and there are no agents so effective as good liquid soap and hot sterile water. It is a good plan to use at least five minutes for each, and much longer if the parts are dirty. A thick lather should be repeatedly made by vigorous rubbing with gauze. The utmost care should be given to most thoroughly cleansing the vulvar folds, clitoris, and area of the vestibular glands. The ducts of these glands frequently harbor gonococci. On account of unfortunate habits there will frequently be found a variety of pathogenic bacteria about the clitoris, the finger nails having served as the carrier of the organisms.

After the free use of water and soap, the hands and genitalia should be frequently bathed with a 1 or 2 per cent. solution of any one of the cresylic acid preparations, like cresylone, lysol, etc. A basin containing this disinfectant solution should be near at hand, so that convenient and frequent applications may be made.

It is now the consensus of opinion that ante-partum and post-partum douches increase the liability to infection. A thorough preparation of the portiovaginalis is the best factor for the prevention of infection.

It is with the genitalia of some patients as with the hands of some practitioners—the personal equation is almost insurmountable. A patient whose habits are uncleanly should receive specific directions for self-preparation, and failure of compliance therewith should place a heavy responsibility upon the patient, and knowledge of this should not be withheld from her. The accoucheur is not always to blame for infections, though custom has decreed it thus, and the sensitive conscience of the obstetrician has appropriated the opprobrium. Apropos of this, is the following case:

A. M., during an absence of his wife from home, acquired gonorrhœa. In due time he infected his wife, who was eight months pregnant. In a brief time their little girl, two years of age, and her cousin, a little girl of three years, who was her playmate and lived in the same house, became infected. On May 11th I attended the mother in a normal confinement. In four days the child developed ophthalmia in one eye, notwithstanding the free use of a 25 per cent. solution of argyrol. Simultaneous with the ophthalmia a specific vaginal discharge began in the infant. The urethra of the mother has been actively reinfected and urination after the third day from confinement has been difficult and painful. This case is an extreme example, which will illustrate where responsibility should rest.

The routine use of gloves is one of the most important considerations in preventing infection. In all cases where gloves are not used the history of the hands should be intimately known. Any man doing aseptic surgery (and obstetrical work is of this class) should be at all times face to face with his personal responsibility. The pathogenic bacteria found in puerperal infection should be frequently brought in mental review. The possible and natural culture media, with the mode of transmission of each, should be "finger end" knowledge with all who do midwifery.

It is well to bear in mind always that the habitat of the bacillus coli communis, by virtue of its proximity to the birth canal, is an easy source of infection. The rectum and sigmoid should be emptied about three hours before the completion of the second stage of labor.

The average careful practitioner is perhaps most apprehensive of fatalities from gonococcic infection. The well-known latency of this disease, with its widespread prevalence, make for the necessity of great watchfulness. The most rigid attempt should be made to disinfect the areas of the vestibular glands. The repair of lacerations should be

promptly and thoroughly done; drainage should be aided by elevation of the head of the bed.

The whole question of limiting puerperal infection is not by any means confined to the patient and physician. There is no nursing, of either the professional or non-professional type, that so inadequately copes with serious responsibilities as does that of obstetrics. The obstetrical nurse is necessarily a third factor in the responsibility of infection, and under the present prevailing conditions, the best we can do is to insist upon her following such directions as are within her capabilities.

In conclusion, the subject may be summarized in its three parts, which are: Division of responsibility; knowledge of the requirements of prevention, and persistent vigilance in resistance to the pathogenic bacteria of its causation.—*The International Journal of Surgery*.

Prolapse of the Umbilical Cord—Its Treatment.*

Dr. George B. Twitchell, of Cincinnati, took the prize on this subject in the *New York Medical Journal*. This journal gives out a subject, and to the one of its readers who writes the best essay on this subject gives a prize of twenty-five dollars. The subjects are usually quite practical and the papers are often of very great real value. Dr. Twitchell has found the arrangement of the umbilical cord very good to withstand pressure without stopping the flow of blood, and that Wharton's jelly is a decidedly good protection of all the vessels. In every breech case there is a physiological prolapse of the cord, which is ordinarily not compressed by the breech, but by the aftercoming head. Considering all things, it is strange that the infant mortality from prolapse of the cord is so great, and it is probably true that this condition, properly treated, would not be so dangerous if it did not occur associated with other conditions unfavorable to fetal life. It occurs where the presenting part and the superior strait do not fit well in the transverse and foot presentations, and in contracted pelvis where the head does not engage, and sometimes in multiparous women when the lower uterine segment is very loose. Where we simply deal with a presentation of the funis, the membranes being intact, we preserve the membranes if possible until full dilatation occurs; after this the treatment will be as in true prolapse. If the os is fully dilated and the membranes ruptured, the child should be delivered as quickly as possible. In transverse cases, of course, by podalic version; in head presentations occasionally forceps could be used, but as a rule, when the accident occurs, the head is so high that version offers an opportunity for much quicker delivery. We must quickly deliver when the umbilicus appears

1907.]

at the vulva. This same compression occurs in normal breech cases, and here an accepted rule is to deliver in less than eight minutes. In extracting the head, sole dependence should be made on Mauriceau's method. Forceps to the after-coming head is easily applied and saves much time. A clever operator can turn a child in less time than it takes to prepare a loop for a catheter, and deliver before a cord is replaced permanently, if it ever is. When the os is not fully dilated we meet with a much more serious condition. Here the indication is to dilate as rapidly as possible, then turn. Manual dilatation is usually the best method. Very often the os can be dilated in a very short time. In multipara we may have a very soft cervix, and here the operation becomes very easy. It is possible that a Champetier de Ribes balloon could be used if the cord could be carried above it. In manual dilatation the cord can be protected by the hand during dilatation. Unfortunately, too, too many cases come to us after the cord has ceased to pulsate. Here, of course, the mother has to be delivered of a dead infant by whatever method is safest and best for her.—*Wisconsin Medical Recorder*.

Contra-indications Against Breast Feeding.

BOWQUET (*Bull. gen. de ther. rev. Zentralbl. f. Gyn.*)—According to the experience of the author every mother who suffers from a cardiac lesion, even if it is completely compensated, should be prohibited from nursing her baby. The same is true for mothers who have an albuminuria caused by nephritis. One of the most important contra-indications is tuberculosis. The resistance of the nursing mother is reduced and the child is in danger of receiving with the milk either tubercle bacilli, or at least tubercular toxins. Breast feeding must be stopped in cases of acute infectious diseases of the mother, such as typhus, erysipelas or measles. The necessity of a discontinuation is obvious in cases of lymphangitis, abscess formation or malignant tumours in the breast. It is more difficult to decide on the advisability of breast feeding in cases of chronic intoxications. Alcoholic mothers seem to transmit through the milk substances which become responsible for disturbances of the intestinal tract or the nervous system. This deleterious effect upon the nursing child is more pronounced in chronic trade poisoning, e. g., with mercury, lead or arsenic. In another group of cases nursing must be discontinued on account of persistent anomalies in the chemical constitution of the milk.—*Interstate Medical Journal*.

Twins in one Amniotic Sac. Cords Twisted and Knotted.

Piltz. *Zentralb. für Gynäkol.*, 1907 No. 2—Ahlfeld states that twins with one amnion occur once in 1325 twin births, and as twin-births occur once in eighty cases, the above condition occurs once in 10,600 births. Holzapfel has collected 44 cases. In 28 the cords were knotted together. In Piltz's case the placenta showed no sign of partition, it weighed 1,000 gm., and was 2cm. thick. The various opinions as to the cause of this condition are discussed, and a bibliography is appended. —CUTHBERT LOCKYER.—*The Journal of Obstetrics and Gynecology*.

A Case of Quadruplets.

WASHBURN (FRANK H.). *Amer. Journ. Obstet.*, 1907. Vol. lv., p. 751.—There are about three cases of quadruplets reported yearly in the literature of the civilised world. Veit, in a study of thirteen million births in Prussia, found that quadruplets occurred once in 371,126 cases. A primigravida, aged 31, was expecting to be confined in April. In December, her vulva and all the parts below her waist line became oedematous, and a slight trace of albumen was found in her urine. Her abdomen was extremely distended, making palpation very difficult, but nevertheless twins were suspected. The abdomen continued to enlarge rapidly, and hydramnios was diagnosed in addition to twins. Towards the end of December the patient complained of epigastric pain and the os was found to be dilating. "A tremendous gush" of liquor came away and three female children, each 13 inches long, were born within an hour, all being in anterior vertex positions. The fourth child was a male. The children did not survive. The three females were attached to what seemed to be a common placenta, while the male was attached to a distinct placenta. There were anastomoses between the placental vessels of the three females.—C. NEPRAN LONGRIDGE.—*Ibid.*

A Lithopædion in a Woman aged 85.

WALLERT, St. Ludwig in E. *Zeits. für Geburts. und Gynäkol.* Bd. lix., Ht. 2—At an autopsy on an old woman of 85, a true lithopædion was found in the peritoneal cavity intimately adherent to the omentum and intestines. The petrified foetus, from its size, seemed to have been of about 4 months' development; from its situation, to have resulted from a tubo-ovarian pregnancy. It must have been more than 40 years in the woman's body.—*Ibid.*

Foetus in Foetu.

ROSENBACH, Berlin. *Archiv für klin. Chirurgie*. Bd. lxxxi., T. 1.—A retroperitoneal tumour lying between the folds of the mesentery of the descending colon, in a child aged three years, was found to consist of a comparatively well-developed foetus enclosed in a sac-like amnion. The intestine of the parasite hung out of the amnion and projected quite free into the peritoneal cavity of its host, but all the rest of the tumour lay behind the peritoneum. The child died after an attempt to remove the tumour.—*The Journal of Obstetrics and Gynecology*.

THERAPEUTICS.**The Suprarenals.**

DR. J. L. MILLER states that the value of the suprarenal gland as a topical application to the mucous membranes, especially of the nose and throat, is well established. Recently it has been employed extensively in a variety of different conditions, those deserving special mention being cardiac insufficiency, hæmorrhage, bronchial asthma, and in the treatment of various exudates and transudates in the body cavities. He takes adrenalin as the representative of the gland, although preparations of the active principle under other trade names are upon the market. The action of adrenalin, in general, stimulates that of electrical excitation of the sympathetic nerves. So exact is this selective action that it is assumed that an organ contains sympathetic fibres if it contracts under the influence of adrenalin, as plain muscle without sympathetic fibres is not affected. It is now generally conceded that its action is a peripheral one affecting the neuromuscular function. Its most important action is on the cardiovascular system, the effect produced being the same as would follow an electrical excitation of the sympathetics. According to Schafer, the coronary vessels are not constricted by adrenalin, on account of the absence of vasoconstrictor fibres. Brodie and Dixon believe sympathetic fibres absent in the lesser circulation in the lungs and maintain that these organs are not constricted by adrenalin. This very important point from a therapeutic view has been disputed by Plummer, and must still be considered as in doubt. Large amounts may be given by the mouth without any demonstrable effect on the cardiovascular system. It is evident that the only indication for adrenalin by the mouth would be for its local effect in hæmorrhage from the œsophagus or stomach. Given in this way it is valueless in intestinal hæmorrhage on account of its ready decomposition in the stomach. A cardiovascular effect can only constantly be expected after subcutaneous, intramuscular, or intravenous use of this drug. The

special dangers from the use of adrenalin are, rupture of an artery from the sudden increase in pressure, glycosuria, and arterial degeneration. It should be employed with great care in all cases of suspected arterial degeneration.—*The Cleveland Medical Journal*.

Adrenalin.

IN the *Therapeutic Gazette* for May, Henry Guy Carleton reports as to the external use of adrenalin in neuralgia, neuritis, and reflex or referred pain. The usual application was an ointment containing 1 to 1,000 of adrenalin, and two or three minims was the amount generally employed. The only absolute failures noted were of neuralgias from toxic conditions, as intestinal toxemia, malaria, diabetic, and saturnine poison; also some arising from traumatic or inflammatory lesion of a branch of the same nerve (e.g., a supraorbital neuralgia arising from a violent iritis; also neuralgias and neuritis arising from degenerative conditions). The unvarying successes were in functional neuralgia and neuritis. In some cases recurrences were noted in from seven hours to ten days, but these yielded again to treatment; the interval between the attacks became longer and the attacks less violent till they ceased altogether. The specific action of adrenalin in functional neuralgia and neuritis is so unvarying, that its failure to relieve may be accepted as diagnostic of reflex neuralgia or a referred pain indicating the presence of some perhaps yet unknown morbid condition. Reflex neuralgias of great severity are commonly relieved for periods varying from a few hours to several months. The most common of these are derived from eye-strain and dental caries. "Transferred" pains are easily relieved by this treatment, and the pains of gout, articular and muscular rheumatism, myalgia, and of at least some traumata, are relieved almost entirely by adrenalin applied externally. He calls attention to (1) The quantity of adrenalin necessary to relieve neuralgia or neuritis (including affections of the deeper nerves like the sciatic) is too small to cause the slightest ischæmia, or variation of blood-pressure. (2) There is a decided regeneration of the nerve and its branches after treatment, rendering it less liable to recurrence of an attack, though predisposing conditions continue or return. He has records of nearly 100 cases in which one application of adrenalin ointment has caused a previously frequently recurrent facial neuralgia, functional or reflex, to cease troubling for periods of from one month to six, and recurrences, reflex from perhaps the same lesion, came in some other nerve than the one afflicted before. The quantity of 1:1,000 ointment of adrenalin to be used in any affection of a peripheral nerve should not exceed from one to two minims (0.06 c.cm. to .12 c.cm.) by inunctions, except in case of the

sciatic nerve, when two or three minims may be used. Larger quantities often produce ischæmia, which might prove injurious in some cases, notably when application on or near the spine is necessary. Administration by mouth or hypodermically is of little use in neural cases; he has often proved this. The usual time for relief is three minutes; apparent delay is sometimes caused by mnemonic persistence of the impression, as can be easily proved.—*The Cleveland Medical Journal*.

Action of Tea.

According to Brunton (*Canadian Practitioner and Review*), tea may interfere with nutrition in three ways: First, by lessening the feeling of hunger; second, by rendering food less digestible, and third, by interfering with the digestive power of the stomach. At the same time that it thus lessens the nutrition of the body it enables the person to use up much more energy than he or she would be able to do without its aid, and the consequences of this are most evident in the effect on the nervous system. Although tea prevents the sensation of fatigue from being felt for a while, yet exhaustion is going on, both in mind and body, and this usually at length causes disinclination to either mental or bodily exertion, and tends to destroy the power of doing any useful work, either mental or physical, even when the attempt is made. Power or self-restraint is diminished and the person becomes nervous, unduly sensitive, timid and emotional. Not infrequently ringing in the ears is felt, giddiness, headache, sometimes very severe neuralgia and tremulousness. The tremors seem to be more readily induced by green tea than by black tea, and Brunton has known of one case in which two or three cups of green tea were sufficient to induce marked tremor. Neuralgia is very apt to occur in nervous people who are able ordinarily to take a great deal out of themselves, either by sheer force of will or under excitement, and are thus more liable to reduce themselves below normal than those of more lymphatic temperament.

Neuralgia has been described as the prayer of a nerve for better blood and more of it, and tea, by enabling these people to take even more out of themselves than they otherwise could, will render their neuralgia more severe and more continuous. It is evident that a similar result is to be expected in regard to other nervous functions, and that the stability of the brain may be so seriously impaired that the combination of starvation and stimulation, produced by excessive tea drinking, will certainly produce a tendency to mental derangement, even if it does not actually determine its onset. In addition to its action on the nervous system, however, tea is

a powerful stimulant to the circulation, and, if abused, will lead to feebleness of the pulse and to palpitation. All teas are not equally injurious. Ceylon and India tea are preferred by many people to China tea on account of their aroma and stimulating qualities, and, so long as they are taken in moderation and prepared in the right way by simply infusing for two or three minutes, and then pouring the water off from the leaves, they will suit healthy people very well. Whether on account of the higher proportion of tannin they contain, or some other reason which we do not yet know, they are not so good for weak digestions as China tea, which, especially if it is prepared in the way just recommended, by infusion for two or three minutes only, is less likely to cause dyspepsia than other kinds of tea. The physiologic action of tea is usually attributed almost entirely to the alkaloid, theine or caffein, which it contains, but Brunton does not think that this can be the case, because green tea, which contains no more of the alkaloid than black tea, has a much more powerful effect on the nervous system, an effect which cannot be explained by the somewhat larger proportion of tannin, and must, he thinks, be due to some other constituents in the leaf. Green tea and black tea are not obtained, as many people suppose, from different varieties of the plant, but only differ in their method of preparation; the leaves which form the green tea being roasted in a pan shortly after they are plucked, while those that form the black tea are allowed to undergo a form of fermentation before roasting. Brunton sums up his paper as follows: Tea when properly prepared, and taken in moderation, is both useful and agreeable. When taken in too great quantity, or along with meat, when too strong, when infused too long, or still more when boiled or stewed, it is apt to produce digestive troubles. When taken in excess it may produce nervous symptoms of the most serious character, and facilitate, if it does not actually produce, mental degeneration.—*The Dietetic and Hygienic Gazette*.

Buttermilk.

Buttermilk as a remedial agent cannot be praised too highly. The lactic acid, the sour of the buttermilk, attacks and dissolves every sort of earthy deposits in the blood vessels. It keeps the veins and arteries so supple and free running that there can be no clogging up, hence no deposit of irritating calcareous matter around the joints, nor of poisonous waste in the muscles. It is the stiffening and narrowing of the blood vessels which bring on senile decay. Buttermilk is likely to postpone it ten or twenty years, if freely drunk. A quart a day should be the minimum, the maximum according to taste and opportunity. Inasmuch as gouty difficulties arise from sluggish excretion, buttermilk is a blessing

to all gouty subjects. It stimulates the liver, skin and kidneys. It also tones the stomach and furnishes it the material from which to make rich, red, healthy blood. If troubled with gout, avoid meat, sweets, pastry, wines, spices, hot rolls, bread of all sorts, and everything belonging to the class of ferments. If anyone has a creaky joint or a swollen and aching one, he should drink all the buttermilk he can relish, whenever and wherever he can, but it should be fresh and wholesome.—*Albrights*.

Pasteurizing Milk.

Milk is one of the most easily and rapidly spoiled of food substances, yet it is within comparatively few years that any attempt has been made to get it and keep it pure. Even to-day much of the milk sold in the larger cities contains a greater number of bacteria in a given amount than the sew age of the same cities.

The bacteria are different in kind, so that their presence is not betrayed in the same evident way, but they are there, and some of them may be of the kind to cause disease—tuberculosis, typhoid fever, scarlet fever and infantile diarrhoea.

The addition of antiseptics to the milk is not allowable, for the antiseptic is in itself a poison; and although it is not in sufficient quantity to harm at first, its continued use is bad and may give rise to chronic disease of the digestive organs or of kidneys.

Boiling milk for 10 minutes will kill all the contained bacteria, but the heat alters its chemical constitution and diminishes its nutritive value so that babies fed on it are apt to suffer from rickets or scurvy.

It has been found, however, that it is not necessary to bring the milk to the boiling temperature, but that most of the bacteria will be destroyed if the milk is heated to 160 degrees and kept there for about 20 minutes. Milk so treated has a slightly different taste when warm, but after it has cooled it is impossible to distinguish it from "raw" milk, and its nutritive qualities are, moreover, not materially affected.

The heating may be done by bringing water in a tin boiler to the boiling point, then removing it from the fire and letting it cool for a moment until the thermometer indicates about 180 degrees. The milk, in bottles plugged with cotton which has been baked for 10 minutes in an oven, is then set in the hot water, and the vessel is covered with a double blanket and allowed to remain for 20 minutes. At the end of this time the bottles should stand in a pail of cold water for a while and then be placed in the ice chest.

If this is carefully done and the bottles are kept stoppered with the cotton and on the ice the milk will keep perfectly sweet for several days even in summer.—*Health.*

Tannigen in Pediatric Practice.

BY

DR. ANGELO ARCELLI.

The writer speaks with high appreciation of tannigen as a result of his experience. For comparison he tried a number of the most usual intestinal astringents, but, without wishing to detract from the value of these substances, he awards the palm to tannigen.

Of the twenty-two cases adduced, twenty-one concern children of ages ranging from twenty-eight days to five years, whilst one case referred to a girl of twenty-four who had suffered for a month from enterocolitis. There were abdominal pains and tenesmus. The numerous fluid stools were often mixed with sanguineous mucous masses. After the most varied medicaments had been tried for twenty days without real benefit, tannigen was employed as a last resort, and administered both by the mouth and per rectum. Tannigen was found splendidly effective; the patient recovered in six or seven days.

The remaining twenty-one cases presented diarrhoeas with various etiologies—simple summer diarrhoea, diarrhoea due to enteritis, gastroenteritis, catarrhal diarrhoea, diarrhoea brought on by intestinal worms, &c.

In many cases the author resorted to tannigen after fruitless trials of other agents, and found it successful. In those cases also in which he used tannigen exclusively the results were excellent.

Arcelli states the following, as incontestable advantages of tannigen compared with the other modern astringents:

- (1) The astringent action of tannigen is speedy and sure.
- (2) Tannigen develops an antiseptic action in the intestinal canal.
- (3) Tannigen neutralises the tox-albumins of the intestinal tract with which it combines, thus rendering them innocuous.
- (4) It has no toxic action, even after long use.
- (5) It never deranges the digestion, owing to its insolubility in the gastric juice, and produces neither nausea nor vomiting.—*Clinical Excerpts.*

Somatose.

SOMATOSE has now been employed by medical men for some years past. It is a preparation of beef, each ounce of the meat being

represented by one and a half drachms of somatose. The chemical constituents are:

Water	..	..	10	Salts	..	..	6
Nitrogen	..	..	12	Peptone	..	..	2 or 3
Albumoses	..	..	..	..	..	78	

The present writer has employed somatose in his practice for the past ten years. He has found that it is frequently retained when all other nutriment is vomited, and in nausea the tastelessness of somatose no doubt renders it thus acceptable to the patient. In gastric ulcer and in other gastric derangements somatose is invaluable. It is quickly absorbed without the necessity of its passing through the entire process of digestion. Patients quickly experience a relief of the "sinking feeling," showing that the preparation has quickly become a factor in nutrition.

A gentleman of our acquaintance (aged about forty years) some time ago walked from London to Brighton, a distance of fifty miles. He took with him nothing but somatose in solution and two chicken's legs. At Crawley he ate the chicken (without bread), and finished the distance into Brighton entirely on somatose. He was one of the party from the London Stock Exchange, and, compared with the rest, he arrived in good trim and in fair time.

Besides its employment in various illnesses, somatose will be found to be very useful to nursing mothers, should the quantity or quality of the milk be deficient. In cases where this is anticipated it is well to commence the somatose some time before the expected confinement.

Considering the highly nutritious value of somatose, its price is very moderate.—*The General Practitioner.*

Ichthyol.

This well-established remedy continues to excite lively therapeutic interest.

Nasarow used it internally with good results in fibrinous and catarrhal pneumonia in doses of 60-70 drops. Forster gave a pill containing 0.2 gm. (gr. 3.) of ichthyol 3 times a day for 2 months in a case of œdema fugax; he then gave 2 of these pills a day for a month, and finally only 1 pill. The result of this treatment was that no recurrence took place in a quarter of a year.

Externally Jadassohn recommends it for the treatment of chilblains. For this purpose the affected hands or feet are bathed 1 to 3 times a day for 10-15 minutes in water as hot as it can be stood; they are then

carefully dried, and bathed with spirit, unless the chilblains are ulcerated. At night the affected limbs are massaged with the following ointment, and covered with a thin layer of it:

Re. Ichthyoli	grm. 1—5 (gr. 15—75) •
Resorcini	grm. 1—3 (gr. 15—45)
Adipis lanæ	grm. 25 (oz. $\frac{1}{2}$)
Ol. Olivæ	grm. 10 (oz. $\frac{1}{4}$)
Aq. destill. ad.	grm. 50 (oz. $2\frac{3}{4}$)

For mild cases this treatment is usually all that is needed. If there be small open places, these are powdered during the day with bismuth subnitrate, while during the night they are likewise covered with the ointment. When there is extensive ulceration these ointment dressings are worn in the day also. A. Hecht confirms the excellence of this treatment, and commends it for universal use.

Moser treats every recent cut finger by cleansing and suturing, covering it with plenty of pure ichthyol and with gauze and wool. If it do not require suturing, he prescribes ichthyol ointment of at least 30% to be used in the same way. In this way suppuration is prevented, and the wound heals very rapidly. If the wound be already infected, the ointment is used with the addition of 5—10% of argentum colloidal, and the dressing changed every day.

Love's attempts to cure smallpox with ichthyol were without success, whether it were given internally or applied externally. On the other hand Hare found ichthyol to be the best remedy for the treatment of erysipelas. After cleansing the skin he uses the following ointment:

R.e Ichthyoli	grm. 15 (oz. $\frac{1}{2}$)
Ol. citronell	m. 20
Vaselin	grm. 30 (oz. 1)

Leibenger also suggests a 50% ichthyol ointment combined with gentle massage as a very efficacious method of treating erysipelas in veterinary practice.—*The General Practitioner*.

Phenol Camphor.

The physical properties of phenol camphor (camphora carbolisata) are fully described by J. Lemberger; he gives proof that it is no chemical entity but a mechanical mixture of camphor and phenol. The absence of caustic action of this fluid mixture is due, in the author's opinion, to the slight solubility of the preparation, while the disinfectant power is said to be increased by the salts which are present in the cellular

tissues of the skin and of wounds. Being non-irritant, this remedy may be used more extensively than is possible with the strongly caustic substance, carbolic acid.

C. Ehlich and G. Nespor used phenol camphor for the treatment of acute and chronic suppurations and wounds; they used the mixture suggested by Chlumsky, 30 grm. (oz. 1) of phenol, 60 grm. (oz. 2) of camphor and 10 grm. (oz. $\frac{1}{2}$) of alcohol; they obtained very good results in cellulitis, whitlow, furuncles, ulcers of the leg, fissure in ano, erysipelas, tuberculous fistulæ, infected wounds and abscesses. Phenol camphor is applied by folding a piece of muslin several times and soaking it with the preparation; this is placed upon the affected part, covered with dry, sterile wool and bandaged. Impervious dressings should not be used. In incised wounds and abscess cavities, stripes of muslin are soaked in phenol camphor and inserted loosely; fissure in ano and recent erysipelas are painted with the preparation. The action is explained by Ehrlich on the supposition that by the evaporation of the camphor small quantities of phenol are set free, and keep up an irritated condition of the skin; thus the action would depend, not solely on the disinfectant action of the carbolic acid, but also upon the maintenance of hyperæmia. The duration of treatment is stated by the authors named to be very brief. Unpleasant secondary actions, such as burns, pain or maceration of the skin, never occurred; on the contrary, phenol camphor is said to possess a sedative action, and to give rise to an agreeable feeling of warmth when it is applied on pervious dressings.—*The General Practitioner*.

To Cool Water without Ice.

When it is impossible to get ice, water may be made cold in the following way: Wrap a porous jug in wet flannel, covering it in such a way that no part of the jug is exposed to the air. Place the jug, filled with water, in an open window exposed to all the air there is, keeping the flannel wet. In an hour the contents of the jug will be cold as if iced.—*Nurses' Journal of the Pacific Coast*.

HYGIENE.

A Voice from the Orient.

From our Seat of the Scornful we have dealt out to the benighted denizens of the Orient so much gratuitous advice about things in general, that at last a critic has arisen among them to wound us in our most vulnerable part—our pride in our occidental superiority as regards personal cleanliness. The article to which we would like to take exception

but to which we must, in truth, subscribe our highest appreciation for verities fearlessly related, appeared in the *Madras Antiseptic* for July, and heralds forth the avoidable social crimes consequent on the artificial life in our large cities. The unkindest and most veracious note is the charge that but for Anglo-Saxon influences, the Hindus today would be the same clean folk they were some years back when daily bathing was the best tenet of their Mohammedan creed. And mark you, this is good, sound sense and not "the loud clarion of the braying ass" as the flippant both here and in England would have us to believe.

No doubt for a foreigner to speak of a lack of personal cleanliness among a people so cleanly as we pretend to be, will strike the average American as the opposite of pointed truth, and as for dubbing it a social crime, our risibilities will be stimulated for many a day. For with us, social crime has had a special and peculiar significance which, for years, we have associated with the devastation following random pistol shots or the indiscriminate use of knives, and could not possibly be made applicable to so slight and insignificant a matter as the absence of the daily bath. Daily, we might say, we hear that certain choice spirits among us have returned from excursions into the slums, with more or less harrowing tales descriptive of the ravages of gaunt hunger, the absence of true spirituality and the impending signs of crime, but if any have ever mentioned the lack of cleanliness as the greatest of all social crimes, our readings certainly have been of a superficial order.

A very pretty idea obtains among us that because some thousands in a large city are advocates of the best principles of cleanliness, the whole community more or less follows in their footsteps. When any description of the rank condition of our tenements is given them they either disbelieve, founding their foolish opinion on their daily ablutions, or shudder to think that such gross ignorance can exist in what they are pleased to call so civilized a community. Were they to visit any of the tenements which disgrace our American cities, they would be purblind, were they not struck by the utter lack of facilities among the poor for combating filth. And here it would be well to mention the educative factor as a means of gradually bringing our lower classes around to a proper understanding of the use of the bath, as a preventive measure against the many visitations of those special diseases, which unfortunately fall to their lot. That little can be accomplished without driving the shaft home in the way we suggest was illustrated in an article in the June number of the *Canada Lancet*, where Dr. Jacobson of Brooklyn, says: "In multitudes of tenements the only general ablution that ever takes place is practiced once on a newly born child and again on the corpse of any

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Original Articles.

*AFFECTIONS OF THE CORNEA.

BY

E. LUCAS HUGHES, M. R. C. S. (ENG.) L. R. C. P., (LOND.)
Ophthalmic Surgeon, Liverpool, England.

[Continued from page 612, "The Antiseptic" Vol. IV. No. 11.]

PART III.

Treatment of Corneal Ulceration.



N primary corneal ulcerations which have no infective discharge the two chief therapeutic factors locally consist in (1) the bringing about of absolute functional rest in the affected area, (2) the promotion of the healing process by the stimulation of tissue changes. In addition to local measures attention to the patient's general health is of the utmost importance.

The first of these desiderata in our local therapeutics we may hope to accomplish by two measures—(a) the instillation of Atropine drops; (b) the application of a bandage. The second we endeavour to bring about by means of (c) warm fomentations. In quite a number of the less severe cases the above simple routine measures are found to be sufficient.

(a) The instillation of Atropine drops should be just sufficient to dilate and to keep dilated the pupil. Even if the iris be not inflamed it is necessary it should be kept at rest, because the cornea being inflamed any movement close to it is likely to prevent resolution; not only must an inflamed area be at rest if resolution is to occur, but the immediate neighbourhood should have functional rest as well. Slight movements in the aqueous and variations of tension are enough to keep up and intensify the inflammatory process. In most cases there is a certain amount of hyperæmia of the iris if it is not actually inflamed. The Atropine solution

• Specially contributed to *The Antiseptic*.

generally used is 1 per cent. Supposing the pupil dilates thoroughly after a single instillation of 3 or 4 drops and the inflammatory symptoms do not increase, the pupil remaining dilated, the instillation need not be repeated. It is bad practice to overdo the Atropine and may lead to unpleasant if not actually unfortunate results. In ulceration the result of phlyctenular disease, Atropine should be employed with great care as, owing to the mydriasis, it increases the photophobia with its injurious consequences of blepharospasm, etc. Supposing the pupil does not dilate well the Atropine has to be continued, and may, in some cases, have to be applied much more vigorously, even solid Atropine combined with previous cocainisation. After a few drops of cocain (3 to 5 %) a tiny particle of solid Sulphate of Atropine is placed by means of a spud or Daviel's spoon in the conjunctival sac; this will immediately dissolve in the tears, and care should be taken that none of the atropised lachrymal secretion is carried into the nasal duct and so into the nose and pharynx. It can be prevented by keeping a finger pressed on the lachrymal sac at the internal canthus. In like manner care should be taken that these tears do not flow down the cheeks into the mouth. The patient should blow his nose vigorously about five or ten minutes afterwards in order to eject any tears which may have entered the nose. During the insertion of the Atropine the head should be inclined towards the shoulder of the side on which the eye is, that is being atropised. It is much better with children to order a weak ointment of Atropine if the application of this drug has to be left to parents or unskilled attendants. Should the Atropine have to be continued over any length of time the conjunctiva must be watched for signs of Atropine Catarrh, and Hyoscine (Scopalamine) substituted, if necessary. Should undesirable physiological effects of any kind occur, *i.e.*, symptoms of poisoning such as dry irritable throat, red rash of skin, diminished secretion, etc., the drug must at once be given up.

(b) Not only does a bandage keep the eye at rest, but it also protects the organ from dust and, what is equally important under the circumstances, from light. A circular piece of linen or gauze of the size of the orbital aperture is placed over the closed lids; over this a pad of cotton wool is placed, the padding being especially at the inner canthus so that equal pressure may be exercised on the globe all over. This padding should reach from the forehead above to the cheek below, and should be secured by a strip of adhesive plaster from the root of the nose to the cheek; over this is placed a few turns of a light calico or a *crepe vulcan* bandage. The bandage should exercise firm pressure, but should not be uncomfortably tight. Of course it is only in primary ulceration that a bandage is indicated; in cases where the ulcer is secondary to some

conjunctival inflammation where there is secretion, especially conjunctivitis catarrhalis or blennorrhœa, a bandage would do harm instead of good because the secretion that should immediately come away as soon as it is formed would be retained.

(c) Fomentations are best applied in primary corneal ulceration in the form of hot compresses. It does not matter much what the liquid is so long as it is warm, soothing and aseptic. Hot solutions of 4 % boric acid, also 1 in 5,000 or 1 in 10,000 corrosive sublimate may be used with advantage. Camomile tea and poppy head water is often used. In Fuch's Clinic at Vienna a solution of about 1 % aluminium sulphate is used (Burow's solution is 8 %, and this is diluted about a tenth). In Paris Cyanide of Mercury solutions are used in about the same strengths as the sublimate ones.

The hot compresses should not be too heavy (a few layers of gauze or linen); the temperature of the fluid in which they are immersed should be the highest which the patient can bear without pain (generally about 120° Fahr.) The bandage having been removed, the compress is dipped in the stupe and laid on the eye. Every two or three minutes for half an hour at a time these compresses must be renewed and it is most important that the temperature of the fluid be maintained, which can be done by means of a spirit lamp, care of course being taken that it does not on the other hand become too hot. The applications are made while the patient is lying down, and repeated every two or three hours.

Simple ulcer of the cornea may be cured by the above line of treatment very quickly, *i.e.*, in a week or ten days. If of phlyctenular origin a weak yellow Oxide of Mercury ointment will soon be necessary as a local stimulant. It may advantageously be combined with Dionine. For a number of years I have been in the habit of prescribing in the numerous hospital cases of children with phlyctenular keratitis an ointment as follows:

R Atropinii Sulphatis gr. i.

Hydrarg. Oxidi Flav. gr. 1/8.

Vaselini 3 ii.

Misce: Fiat Unguentum Signetur:

A small piece to be placed into eye night and morning after bathing the eye with warm boric lotion.

In superficial phlyctenular ulcers a very weak yellow precipitate ointment as above is well borne even from the start, but care should be taken as even in minute quantities for some eyes the yellow oxide is very irritating, and it is well to start with strictly sedative treatment at first, nothing more stimulating than the warm fomentations.

Later on, especially in phlyctenular ulcers that are obstinate and indolent, much more vigorous stimulation is necessary; here we resort to gentle massage with the Yellow Oxide ointment (1 in 60) which may be combined with Dionine 5%. This latter drug is useful in the treatment of many cases of primary corneal ulceration, etc. It is said to act by causing dilatation of the lymphatic vessels with considerable amount of chemosis. It is sedative and anodyne like morphia, and is a new alkaloid derived like this latter from opium. Unfortunately it cannot be depended upon to act equally well in all eyes, although it does not seem to be harmful in any cases where it has been used, the only objection being that in some cases it fails to produce any reaction, and in many cases its action ceases after the first two or three applications. It is recommended to be used on alternate days, so as, if possible, to avoid this toleration of the drug.

Myotics such as Eserine and Pilocarpine have been recommended in the treatment of corneal ulcer, but their province is very limited. To say the most for them a clear indication for their action is only when the ulcer is close to the corneal margin with a tendency to perforation. The myosis here would assist in preventing prolapse of the iris in the event of perforation. It is very doubtful whether myotics reduce normal tension and they certainly (especially Eserine) increase any tendency there may be to iritis.

The general treatment consists in keeping the patient in bed if the ulcer is extensive or at least keep him quiet in the house. As the disease is mostly in weak debilitated subjects, tonics, cod liver oil, etc., are indicated with a very nutritious diet, and it may be absolutely necessary to order some form of alcoholic stimulant. In cases where alcohol is undesirable a good stimulating tonic is ten to twenty drop doses of a strong concentrated tincture of Avena Sativa (Parke Davis and Co's).

In severe cases that are kept in bed it is best to bandage both eyes. When the ulcer is deep and shows a tendency to perforate, bandaging the eyes is of the utmost importance. In secondary ulceration following on catarrhal conjunctivitis and blenorhoea (gonorrhoeal) the patient should be kept in bed with cold compresses (not warm). Iced compresses are best constantly applied. A dripping pad loosely placed on the eye every few minutes so that the antiseptic lotion goes into the eye and washes away the secretion immediately it forms. Chlorine water as strong as can be borne, Perhydrol (Merck's) Pyoktanin and Chloride of Zinc (1 grain to the ℥i) are among the solutions to use in these cases where there is a purulent discharge to wash away. Even a primary ulcer, if it appears to be of a sloughing purulent nature, needs

1907.]

that its floor should be thoroughly disinfected by the insufflation of Xeroform powder or the application of a strong ointment (1 in 8) of Xeroform, Airoil or Iodoform to which Dionine may be added. In the more chronic stages, where fear of perforation is no longer a contra-indication, these may be applied cautiously with gentle massage. Pain and iritis is generally greatly lessened and alleviated by the use of Dionine.

If there is danger of perforation as shown by deep loss of substance with steep edges and purulent or bulging floor, the patient, of course, is in bed, his bowels are kept open by laxatives, and here paracentesis becomes imperative, as, should perforation unfortunately occur, it will be difficult to deal with the prolapse that is almost bound to occur and all the other evils following this accident. Paracentesis used to be always made through the deepest part of the ulcer with a fine needle, but now it is recommended to make an incision with a keratome in the outer or inner lower quadrant of the cornea and the peripheral lip of the wound gently pressed on with a spatula or Daviel's spoon, gradually letting the aqueous ooze away. This seems to me a better plan than puncturing the floor of the ulcer as healthy tissue is operated on instead of further irritating inflamed tissue by the incision. If the ulcer itself is operated on it appears to me better to perform Sæmisch's incision or to use the galvano-cautery.

Sæmisch's incision consists in cutting through the base of the ulcer into the anterior chamber with a Graefe's cataract knife, which is entered in the healthy tissue on one side and brought out in the healthy tissue on the other side of the ulceration, which is then divided by a sawing movement of the knife, after which Atropine is instilled and a compress bandage applied. If it is thought desirable the wound may be kept from closing for a day or two by means of a spatula or Daviel's spoon.

Sæmisch's incision is really a modification of paracentesis, its chief value being in the complete relief of tension by the oozing away subsequently of the aqueous as it is formed.

Swanzy describes the operation of paracentesis as follows:—"The eye having been cocainised, a spring lid speculum is inserted, the eye fixed with a fixation forceps, and the point of the paracentesis needle applied to the floor of the ulcer" (this little instrument has a shovel shaped blade) "in such a way that the plane of the little blade may be at an angle of about 45° with that of the floor of the ulcer. The point is pushed gently through the floor, and the plane of the blade is then immediately changed, so that, as the instrument is being advanced up to the hilt, it may be almost in contact with the posterior surface of the cornea. The instrument should be withdrawn very slowly in order that the aqueous humour may flow off gradually, and not with a rush."

Besides the clear indication of imminent perforation for performing one or other of the above operations, another very strong indication for paracentesis in severe corneal ulceration is pain. This is of a neuralgic character; it is increased for a short time immediately after the operation, but then entirely disappears, the patient experiencing the greatest relief and passing the first good night after many wakeful ones.

The galvano-cautery (or the thermocautère in the form of a very fine point) is a great service in some forms of ulceration, viz., the serpiginous ulcer and other infected corneal ulcers. It acts by destroying the micro-organisms upon which the ulcerative process depends. The red hot point is brought into contact with the whole surface of the ulcer so that the whole of its superficial layer is thoroughly destroyed. A local anæsthetic, such as cocaine, is of course necessary. Fluorescence is used to map out the exact extent of the ulcerated surface. If deemed necessary, perforation can be performed with the point of the cautery.

Curettage the floor of the ulcer with a small sharp spoon is another valuable method.

Of recent years sub-conjunctival injections have been strongly recommended. The great disadvantage is the severe pain caused by these injections lasting several hours and the severe œdema not only of the conjunctiva but of the eyelids as well. These sub-conjunctival injections are believed to act beneficially because of the vascular reaction to which they give rise. The two best solutions to use are Chloride of Sodium 4% and Oxycyanate of Mercury (1 in 5,000). To diminish the severe pain Swanzy recommends that several minims of a 1 per cent. solution of Acoine be taken up in the syringe with the main solution just before the injection is made. Hot fomentations relieve the pain, but it may be necessary to give a hypodermic injection of morphia. After the œdema and redness has completely subsided the sub-conjunctival injection may be renewed, but few eyes require or can indeed tolerate more than two injections in the week.

It is not necessary that the injections be made into Tenon's capsule; only one or two minims should be injected; care should be taken not to wound any sub-conjunctival vessels; the point of the needle should not be towards the cornea and should be entered in that part of the ocular conjunctiva that is nearest to the ulcer. Serpiginous ulcers generally have some discharge which makes it unwise to bandage them, and warm fomentations increase their morbid activity; antiseptic measures, scraping the floor of the ulcer, and possibly one or other of the operative procedures described are often necessary.

Sub-conjunctival injections are very beneficial for the serpent ulcer. The diplobacillus ulcer is best treated with Sulphate of Zinc 1 per cent. drops instilled three times a day or touching the ulcer with a pencil of cotton wool soaked in a somewhat stronger solution.

Rodent ulcer of the cornea is a very intractable disease. The undermined margin must be cut away with fine sharp scissors and the galvano-cautery used. A fine piece of wood, such as a match, is cut to a point and dipped in pure liquid carbolic acid, this being applied to the ulcer, the excess being taken up with a piece of blotting paper. Absolute alcohol instead of the carbolic acid is recommended by one authority. Tincture of iodine applied with a camel hair pencil, scraping, etc., are useful. Warm fomentations are good in this variety of ulcer. The marginal ring ulcer requires the actual cautery combined with paracentesis. Eserine must be instilled to prevent prolapse of the iris. Xeroform should be insufflated. A bandage, warm fomentations, etc., are necessary, and the patient's general health should be carefully attended to. The absorption ulcer is treated in the same way as a phlyctenular simple ulcer; Atropine, Dionine and protection with a bandage in the early stage; later on, stimulating treatment by means of the ointment of yellow Oxide of Mercury. The general health must be seen to with suitable tonics, etc.

(To be continued.)

* THE TREATMENT OF TUBERCULAR LUPUS.

BY

A. WINKELRIED WILLIAMS, M.B., C.M., (EDIN.), D.P.H. (LOND.)
Physician to Skin Department, Royal Alexandra Hospital, Brighton,
and St. Mary's Home Dispensary, Brighton, etc.

[Continued from page 625, "The Antiseptic" Vol. IV. No. 11.]

PART II.

In the November number of *The Antiseptic* the author contributed an article on the treatment of Lupus by vaccines, serums and radio-therapeutic methods. The present paper describes briefly a few of the very numerous treatments recommended by different authorities. The writer hopes this will prove of value to practitioners who have not the literature of the subject at hand, when they wish to change the treatment in difficult cases or in cases treated under difficult circumstances.

* Specially contributed to *The Antiseptic*.

Chloride of Antimony.

The local treatment of Lupus by this drug introduced by *Unna* has been highly praised by *Unna*, *Allen Jamieson*, *Beilage* and other dermatologists. The excellent results are largely due to the free Hydrochloric Acid present in the preparation used. *Unna* detailed a successful treatment in the Medical Annual of 1897; in brief it is as follows:—

1st Method.

- (1) Apply with a rod on all nodules.

R Acid : Salicylic :	1·0
Liq : Antim : Chlorid :	1·0
Ext : Cannabis : Indica :	1·0
Creasot : Fagi	2·0
Vaselin :	5·0
Adip : Lanae	10·0

and then cover the whole region with a Zinc Oxide Plaster.

A stronger ointment may be required in older cases with scattered nodules and very deep infiltration, *e. g.*—

R Acid : Salicylic :	2·0
Liq : Antim : Chlorid :	2·0
Ext : Cannab : Indic :	2·0
Creasot : Fagi	2·0
Vaselin	2·0
Adip : Lan :	10·0

- (2) The plaster to be removed when necessary, generally on the second day. Free suppuration is the indication for this removal.

- (3) Allow the parts to skin over, if necessary, during the interval some resistant nodules may be touched with Liq. Antim. Chlor. after application of cocaine.

2nd Method. (Spick method) suitable for cases in which the nodules are very isolated.

Well pointed wood matches, soaked in Liq. Antim. Chlorid., are bored into nodules and cut off close to the skin level. The part is then covered with Zinc Oxide or Mercury Carbolic Plaster. This is removed in 48 hours and the match ends loose in pus come away.

3rd Method recently adopted by *Unna* and the very excellent cures, with admirable cosmetic effect rivalling the Finsen scars which were seen by the writer during a recent visit (September 1907) to Dr. *Unna*. It is most suitable for isolated nodules.

- (1) Puncture nodules with Thermocautery Point at dark heat. (*Unna's Microbrenner*).

- (2) Apply

R Acid Salicylic	2·0
Liq. Antim : Chlor :	2·0
Adip : Lanae	8·0
• Creasot	4·0
Ext. Cannab. Ind :	4·0

and cover as in the 1st method.

Permanganate of Potash.

L. Butte (Anñ. de Polyclin. Paris) Dupuy and others describe the use of this drug as an innovation in Lupus treatment, but it had been regularly used and described nearly 20 years ago by *J. L. Milton*. It is a very valuable method.

Butte's treatment consists of applying compresses of a 2 % permanganate solution for 10 to 15 minutes daily. It is very good in ulcerated Lupus but not in non-ulcerated.

Dupuy's (Thise de Paris 1901) method for non-ulcerated Lupus is as follows:—

- (1) Wash part with Ichthyol soap and dry well.
- (2) Powdered Pot : Permang : spread with spatula over the part, (whole of patch if not extensive, part of patch if extensive), and covered with dry absorbant wool and left on for 15 minutes.
- (3) Remove the dressing (2), wash surface with Boric lotion and apply simple wet dressing.
- (4) In a few days a red ulcerated area forms where the dressing was applied; this rapidly heals with a good scar.
- (5) Re-apply the treatment if necessary.

Werther's method (*Berl. Klinik*, January 1906) of application to ulcerated Lupus—Dip a pointed wood match in boiling water and then into powdered Pot : Permang : and rub and bore it into part.

Another Simple but Good Method. Paint daily with a 3i in 3i solution of Pot : Permang : in water. A black crust forms and in time nodules soften and are wiped away with cotton. May be used for 6 to 8 weeks. *Milton* combined this with daily doses of Sulphate of Magnesia, and obtained good results.

Zinc Chloride.

Leon Derville (*Journ. des Scienc. Med. de Lille*, Jan. 18, 1896.)

- (1) Insert a Vidal scarifier into Lupus nodule until resistance of surrounding cicatrical tissue is felt and then rapidly rotate it.
- (2) Insert a small crystal of chloride of zinc into the torn open tissue. The hæmorrhage stops and a small black point with white tissue round is seen.

(3) A crust forms which falls off on the 12th to 15th day leaving a small red spot.

(4) A complete cure from one application will only result when the nodules are small and superficial. In other cases it must be repeated, sometimes twice, at about 15 days interval.

Objection. The scar is irregular and so not well suited for the face.

Advantages claimed by Derville :—(1) Almost painless, tolerated by children without anæsthesia. (2) Does not interfere with patient's occupation. (3) Rapidity of cure.

Zinc Chloride and Pyrogalllic Acid.

Schütz (*Archiv. F. Derm. u. Syph. XXVI, I.*) describes a severe treatment. It would require careful watching to guard against Pyrogalllic poisoning and is hardly to be recommended for large areas.

- (1) Administer Chloroform.
- (2) Scrape away all friable tissue with sharp spoon.
- (3) Scarify floor of wound and borders to a distance of 1 c.m.
- (4) After bleeding has been stopped, dab wound with a cold saturated solution of Zinc Chloride in alcohol to which a few drops of Hydrochloric Acid have been added.

(5) The severe pain lasting 6 hours after operation is mitigated by ice compresses.

(6) The great swelling and œdema arising in course of 12 hours is removed by application of Boric Acid compresses for 36 or more hours.

(7) Apply three times daily for next 4 days Pyrogalllic Acid 1 in 4 of Vaseline.

- (8) Next 5 days frequently changed Boric compresses.
- (9) Next 4 days Pyrogallol application (7)
- (10) Next 3 days Boric compresses.
- (11) Next 2 days Pyrogallol application (7)
- (12) Heal up with Iodoform powder or Boric ointment.
- (13) Later on should a few isolated points of Lupus be found apply the Zinc Chloride solution.

Mucous Membrane Patches. In positions where practicable apply a 20 to 30 % watery solution of Zinc Chloride.

Camphorated Naphthol.

Moty. (*Bull. Med. du Nord.* May 8, 1896).

A minute quantity of Camphorated Naphthol is injected into substance of each nodule, *i.e.*, about $\frac{1}{2}$ drop for largest and less for other nodules. Black dry scabs form. Moty claims very good results from this treatment. It would be advisable to examine urine for albumin before and during its application.

Chloro-Phenol.

Barbe (*Ann. de Derm. et de Syph.* March, 1897).

A 20 % solution of Monochlorophenol in alcohol on a pad of wadding is rigorously rubbed on the part every 2 days for several months.

Thyroid Gland.

The internal administration of Thyroid is of distinct value in some cases of Lupus, but it utterly fails in others.

Byrom Bramwell (*Brit. Med. Jour.* April 14, 1894) recommended it highly.

Chrysarobin.

Bonandrini (*Thesis Genoa* 1892.) by histological investigation showed that the amelioration of Lupus after local treatment with Chrysarobin is due to a change of the soft granulation tissue into more normal fibrous tissue. He advises on this account a preliminary course of Chrysarobin treatment before active thermocautery and similar treatments.

Freezing Methods.

Dethlefsen. (*Hospital tidende*, January 16, 1901).

1st week. Part frozen daily with Ethyl Chloride. After thawing serum exudes and scabs form. The scabs must be removed before freezing again.

After 1st week. Part frozen every 2nd or 3rd day. In 10 weeks a case may be cured with smooth skin almost normal in appearance.

Drewo. (*Lancet*, July 13, 1907) (*Berl. Klin. Woch.* November 21, 1904)

- (1) If disease is deep seated freeze with CO₂, if not very deep with Ethyl Chloride, until part is snow white.
- (2) Rub on frozen surface crude Hydrochloric Acid by means of cotton swab round penholder stick. Slight pressure must be exerted. Rub this on until the nodules react (*i.e.*, become a greyish white color.) The nodules react before the sound skin.

(3) After thawing use a dusting powder, *e.g.* Eugoform.

(4) Repeat every 4 or 6 weeks. Generally 2 to 4 applications required, *i.e.*, until only a few isolated nodules are left. These should be treated with the cautery.

General anæsthesia will be required for the above treatment in the following cases:—

- (1) Lupus Multiplex. Lupus Exulcerans.
- (2) Lupus of mucous membranes, *e.g.* nasal cavities, tubercular ulcers and fistulæ.

added. This is spread somewhat thickly upon lint and covered with wax tissue and bound on; it is changed twice daily and continued from 2 to 4 days. Considerable œdema and inflammatory swelling result, which however, soon subside after the arsenical application has been discontinued. Its action is, unless too long continued, only on the diseased tissue; the nodules and other Lupus infiltration are converted into a grayish, necrotic mass. The after treatment for several days should, when possible, consist of poulticing until the sloughs come away and then subsequently a 1 to 2 per cent. Pyrogallol salve, or an ointment of equal parts of mercurial plaster and vaselin. As with other methods the arsenical application may have to be separated one or more times before a permanent result is reached."

The treatment of an area size of some palms might be dangerous from the quantity of arsenic absorbed despite its destructive action on the blood and lymphatic vessels. Thus on reference to this treatment *Ratcliffe Crocker* in his great work on "Diseases of Skin" (3rd Ed, Vol. II, p. 736) writes.—"To avoid any danger of arsenical absorption only a limited area should be treated, say 3 or 4 square inches at the most, though it is used more freely in Vienna."

Treatment by Excision and Grafting.

Reiner (*Wier Med. Presse*, Apl. 8, 15, 22, 29, and May 16, 1900) strongly recommends excision and grafting, but warns against adopting this treatment when the lupus involves the mucous membrane.

Excision is especially indicated in small patches when skin can be brought together by sutures.

Extensive excision to be covered by epidermal grafts by *Shiersch's* method or by skin flaps taken from another part. *Shiersch's* method is very good on body patches but not on face nor fingers because of the liability to after contracture.

Recurrence occasionally but not often happens when re excision may be done. Its great advantage is the rapidity of cure weeks instead of years.

Bedwell (*Ind. Lancet* Sept. 1, 1896. Treatment 1899) gives details of his method of excision and grafting. He has operated on extensive cases and very little contracture resulted, even when 21 and 25 square inches of lupus tissue was removed. He insists on strict antiseptic and aseptic precautions, and mentions the following details to be attended.

(1) Both the lupus patch and the part from which grafts are to be obtained must be treated the day before operation as follows:

Thoroughly disinfect with soap and water, ether and carbolic acid, and cover with pack of gauze soaked in, 1 in 20 carbolic solution until the operation.

(2) Operation next day under general anæsthesia.

(3) Incision made down to the subcutaneous fat all round the lupus patch to a distance of $\frac{1}{4}$ to $\frac{1}{2}$ inch from its margin. The whole thickness of skin and some subcutaneous fat dissected off and bleeding points controlled by pressure forceps and sponge pressure.

(4) Grafts are then cut from the part chosen and treated on the preceding day, e.g., front of thigh; a special razor is used for this purpose. The skin is moistened with a 1 in 4,000 solution of mercuric chloride and made tight by an assistant. Long ribbon like shavings (1 to 4 inches long) are cut off; they must include the entire epidermis and tips of the papillæ. The grafts are slid off the razor on the wound surface, the edges being carefully uncurled; they are pushed into position by a probe; they must overlap the edges of the wound and each other.

(5) After all has been carefully covered by grafts a piece of gauze protective is applied, and an antiseptic dressing of double cyanide which can usually be kept on for 7 days when the grafts will have taken.

Lang, Spitzer and Gangman's monograph.—*Results of Operation on 240 Lupus Cases.* (*Vienna J. Safer*, 1905) should be consulted for details on excision and flap transplantation. It is too long and details too great for resume in a short paper.

Erasion.

Treatment by erasion is a favourite with some surgeons.

The ring curette or sharp spoon must be vigorously used, and, guided by sense of pressure, the friable diseased tissue scraped away. This, however, cannot be completely done as minute lupus tissue islets and processes infiltrate the fibrous tissue at the base of the nodules. On this account and because of the opened vessels and lymphatics the scraped area must be treated with one or other disinfectant caustics, e.g., liquid carbolic acid, solid nitrate of silver, sulphuric acid followed by neutralizing with bicarbonate of soda; fused caustic potash followed by neutralizing with dilute acetic acid, etc.

The operation of erasion should be undertaken, if possible, when the tubercle opsonic index is high for the reason given in the preceding paper.

Mild antiseptic ointments, e.g., Boric acid, should be applied until healing is complete.

The scar must be watched as nodules are likely to recur, and these must be promptly treated or the whole trouble will return as bad as or worse than before the operation.

Multiple Scarification.

The author prefers this to be done with the Paquelin thermo-cautery by the method he learnt when attending the Klinik of *Professor Pick* of Prague many years ago.

A series of operations are undertaken.

1st Operation. General anæsthesia. (Chloroform or some non-inflammable anæsthesia when operating on face). Scarification with Paquelin thermocautery blade is made in a series of parallel lines and a dressing of gauze moistened with Balsam of Peru applied (if a large area is cauterized the urine must be frequently examined for albumin and if present the Balsam of Peru stopped).

2nd Operation. After healing a second scarification in parallel lines at right angles to the 1st series.

If after healing isolated nodules are left, a *third operation* cauterizing these separately may be performed. As a rule a much better scar than one would expect results from this treatment. Mucous membrane areas were freely cauterized where possible.

Acid Nitrate of Mercury.

Marmaduke Shield (*Brit. Jour. Dermat.* 1896, p. 44)

- (1) Soak part in 20% Cocaine.
 - (2) Paint on pure Acid Nitrate of Mercury.
- Make application several times as necessary.

Hot Air Cautery.

Introduced by *Hollander*, *Lang* and others. An apparatus is used resembling Paquelin's thermo-cautery, but air is heated and used instead of Platinum. It is blown on the part.

L. Spitzer (*Leitschr. f. Heilkunde* XXXIII p. 6) advocates its use and summarizes its advantages as follows :—

- (1) Rapid healing ; (2) Good cosmetic effects ; (3) Applicable to large areas ; (4) Simplicity ; (5) Can be used again when 1st application fails.

J. M. H. McLeod (*Brit. Journ. Derm.* 1899, p. 346) describes the method and gives useful warning which is quoted below :—

Hollander's treatment as practiced by *Lassar* and others.

- (1) " General anaesthesia required as it is intensely painful.
- (2) Pump the hot air, on part and, *i.e.*, immediately on application of the heated air the lupus tissue appears to crackle and the part becomes blanched from an ischæmia. When this whiteness is present over the

1907.]

diseased area, sufficient hot air has been used to destroy the Lupus tissue and the surrounding tissue will recover. If, however, the hot air is applied for a longer time than is necessary to produce the ischæmia, an absolute charring takes place, which also affects the healthy tissue around the nodules and from which recovery is impossible and an ugly scarring is the result. It is thus an instrument which, in the hands of the inexperienced, can do considerable harm." The ordinary Thermo-cautery is safer.

- (3) After cautery a dressing of Borolanoline or simple dusting powder is applied, and the part is bandaged so as to exclude air.

There is much pain for some time after the operation.

Vacuum Treatment.

Sondermann (*Monats. F. Prakt. Deum.* January 1st, 1905) describes a modification of Bier's vacuum congestion treatment.

A modified inhaler face piece is pressed over the patch ; this is connected with an India-rubber ball and valves so as to produce a partial vacuum in it. A modification allows the area to be irrigated with any liquid at the same time. Improvement, resulted from this treatment, and really good results in a few cases.

N. B.—Ordinary dry cupping might be used for this purpose.

Mercurial Injections.

The intra-muscular injection of calomel has been praised by some writers. The usual method is to inject $\frac{1}{2}$ grain (0.05 gr.) in 1 c.c. sterilized olive oil deep into buttock thus.

Asselberghs (*Soc. Medico-chir du Brabant*, 29th June 1897) treated 14 cases with 5 centigrams of calomel in 1 c.c. sterilized olive oil for a dose. Commenced with one injection every 10 days and later on a longer interval between the doses. The results were good, but painful.

Fournier (*Ann. de Derm. et Syph.* Vol. VIII, p. 545) remarks on cases improved, but suggests in some there was a doubt of existing syphilis. Later (*Ibid* Vol. X 1899, p. 527) he records a case treated in which the ulcerative processes were cured, but the tubercular tissue remained.

Surdi (*Ref. Medica.* 22nd Feb. 1896) reports an excellent cure from hypodermic injection of perchloride of mercury in the neighbourhood of an ulcerating Lupus.

Bernstein, *Scarenzio* and others advocated the intra-muscular injections of calomel (*Mun. Med. Woch.*, Nov. 15, 1898) (*Gaz. Med. Lombard*, April 19, 1897) &c.

The above *resume* of some of the treatments recommended for Lupus Vulgaris is advisably concluded by a note of warning. Do not be in too great a hurry when a case is first seen to adopt radical treatment, especially in cases with much erythema around them. This of course applies especially to the variety of Lupus described by Leloir "Lupus Vulgaris Erythematosus" in which the greater part of lesion is Lupus Erythematosus, scattered on which are a few nodules of the apple jelly like Lupus Vulgaris. In such cases Calamine lotion, Boric Acid compresses, Lead lotion, weak Perchloride lotion 1 in 2,000 or weak Permanganate lotion should be used for a time, or ointments, thus the diluted Brookes ointment or Lassars paste may be used. Then when the acute erythematous or inflammatory manifestation has gone down one or other of the more active treatments should be adopted.

Another type of case in which temporary expedient should be adopted is the Multiple Lupus after measles.

Adamson—(*Brit. J. Derm.* 1904, p. 366) reviews this subject and describes 28 cases and warns against adopting drastic measures at first as many of the lesions disappear. He recommends—

- (1) Fresh air and cod liver oil for some time.
- (2) Later, salicylic and creosote plaster treatment.
- (3) If (2) fails X-rays for areas on face and excision of lesions on other parts.

As to the choice of treatments various authorities of course disagree, but the tendency of present day is to lessen the differences of opinion. The following quotation from a paper by Willmott Evans (*Brit. Journ. Dermat.* 1907, p. 39) is an excellent summary of the tendency of the modern school of dermatologists in relation to this subject

"To sum up, for the non-exposed parts of the body complete excision is, in my opinion, by far the best treatment, though in a few cases scraping followed by an efficient caustic will suffice. For the face and neck X-rays and the Finsen light are the most convenient and effective methods of treatment, and personally I prefer the X-rays. The opsonic treatment is especially useful in cases where the tendency to recurrence is great or the predisposition to tubercle is intense."

The Dietetics of Lupus need hardly be considered, but there is one point of great importance frequently overlooked—*i.e.*, the effect of alcohol as illustrated by the following reference.—

A. Winkelried Williams.—(*Trans. Brighton Med. Chir. Soc.* 1906 p. 98).

"A negative phase of the Tubercular opsonic index can be obtained without Tuberculin. Whisky produces this effect. The following experiment on myself is of interest:—

1st Serum examined.—No alcohol for 3 days, no food 4 hours previously.

Colour of serum = Straw colour.

Opsonic Index to Tubercle = 1.0.

2nd Serum examined.—A little, later *i.e.*, 15 minutes after taking 45 c.c. of whisky in water.

Colour of serum = Pinkish

Opsonic Index to Tubercle = 0.7.

3rd Serum examined.—Still later, *i.e.*, 30 minutes after the above dose of whisky.

Colour of serum = Deep Lake.

Opsonic Index to Tubercle = 0.6.

4th Serum examined.—Later, *i.e.*, 90 minutes after the above dose of whisky.

Colour of Serum = Straw color.

Opsonic Index to Tubercle = 0.6.

This reduction of the Opsonic Index indicates that lupus cases should only consume alcohol when guarded by frequent observations of the opsonic index as described (*The Antiseptic*, Nov. 1907, page 613).

This would necessitate the patient paying many guineas in fees to the Pathologist for every peg of alcohol he takes or else being a total abstainer.

* TREATMENT OF THE STUMP IN APPENDECTOMY.

BY

SURGEON-MAJOR R. E. WRAFTER, B. M. S. (*Retired*).
Dehra Dun.

The appendix Vermiformis, is a long worm-shaped tube or process, attached to the posterior and lower aspect of the cæcum near the extremity of the ileum, situated in the right iliac fossa above Poupart's Ligament. It varies in length from three to five or six inches, and about the diameter of a goose-quill. It is usually more or less coiled upon itself, and retained in that position by a falciform duplicature of the peritoneum. When inflammatory action begins in the vermiform appendix from constitutional causes, or escape into this part of morbid matter, the symptoms are very acute. Appendectomy may well be called one of the latest life-saving surgical procedures extant, although it is scarcely a decade ago

• Specially contributed to *The Antiseptic*.

since it was first recognized as such. Indeed, there are medical men to-day who believe in treating all cases of appendicitis from a medical standpoint, claiming that 85 per cent. recover without an operation. However true this statement may appear, the medical appendicitis men fail to tell us what becomes of the remaining 15 per cent. They fail or omit to mention how many of the 85 per cent. of cases recur and how many of the recurrent cases succumb without timely operative interference. Osler says: "There is no medical treatment of appendicitis." Be this as it may, we firmly believe, after considerable experience of this malady, that any person suffering from appendicitis, original or recurrent, may become a surgical case at any time, when recovery often follows.

The Stump.—How shall we manage the stump in appendectomy? There are almost as many methods of dealing with the stump as there are prominent operators. We refer to chronic recurrent or "interval" cases. In fulminant appendicitis and in perforation and abscess cases the experience and the judgment of the surgeon must determine the operative procedure best suited to each case, and no hard and fast rules can be laid down for such operations. They must be looked upon as "emergency" cases and treated accordingly. No case of appendicitis, however, in our judgment, should be allowed to become an "emergency" case whenever a qualified practitioner has been called in within the first 24 hours of the attack. In any given case of appendicitis, whether it be the first attack or the fifth, 12 to 24 hours should determine whether an operation is demanded at that stage of the disease or whether it can be allowed with safety to pass to an "interval" operative case. The following methods of treating the stump have been recommended by prominent operators:—

(1) As soon as the appendix is freed from adhesions (if any exist) and "delivered," a simple ligature of silk or catgut is tied around it near the cœcum. The mesenterium is also ligated and both are amputated with or without cauterizing the stump and dropped back into the peritoneal cavity. This is probably the earliest and the most universal method of treating the stump in appendectomy.

(2) Barker, Cheyne, Fowler and others practise and advocate the subserous or "cuff" method. A circular incision through the serosa is made around the appendix from a quarter to half an inch away from the cœcum. The peritoneal covering is separated and pushed back towards the bowel forming the so called "cuff." A ligature is then applied near the colon and the muscular, sub-mucous and mucous coats are cut through as the appendix is ablated. The serous covering is now brought forward and united by one or more sutures to cover the stump and the operation is completed in the usual way. Professor Broca, of Paris, practises subserous

amputation of the appendix. He does not cauterize the stump, but buries it by means of two rows of Lembert sutures of fine silk. Professor Nicholas Senn mentions this latter method in his "Surgical Notes from Four Continents."

(3) A third method practised by some operators consists in stitching together the outer and middle coats of the appendix, after removal of the inner (mucous) by cutting the latter away or removing it with the Paquelin Cautey.

(4) Deaver, who has probably had as much experience with appendicitis as any one, "amputates the appendix with a pair of scissors, flush with the cœcum, and the opening thus made in the latter should be closed with Lembert sutures."

(5) Rbse, Carless, Kummell, König and other surgeons ligate the appendix near the caput coli and invaginate the stump by means of a few Lembert sutures in the colon. Professor Senn advocates, among other methods, the amputation of the appendix close to the cœcum. He then applies two Czerny and three to six Lembert sutures in the stump. Professor Sonnenburg, of Berlin, ligates the appendix near the colon. He does not cauterize the mucosa, but buries the stump by two rows of catgut sutures. The first row of sutures embraces all the coats of the cœcum contrary to the usual practice. (From Professor Senn's "Surgical Notes.")

6. Dawbarn was the first to practise complete invagination of the stump without the ligature by means of the "purse string" sutures in the colon. This plan is favoured by McBurney and others. The appendix is freed from adhesions and "delivered." The Caput Coli is held by an assistant so as to prevent any faecal matter escaping, and the appendix is amputated near the bowel. Small forceps are then introduced and the appendical opening is dilated so as to allow of complete inversion, that is, the mucous membrane of the appendiceal stump is turned outside in and invaginated into the colon with its mucosa in contact with the mucosa of the bowel. The "purse string" suture previously applied is then tightened and tied and the stump is within the colon without any ligature about it.

(7) Ochener practises practically the Dawbarn method with the addition of Lembert sutures over the "purse string"—a very wise precaution.

(8) Other surgeons, again, destroy the mucous membrane of the stump by means of the cautey and ligate "within the cauterized area."

(9) Park ligates the appendix near the colon with catgut, ablates with the Paquelin Cautey and invaginates the stump into the bowel with sutures in the colon.

(10) Doyen was the first to crush the appendix near the colonic opening, thereby simplifying the whole procedure. By means of an angiotribe, the mucous, submucous and muscular coats of the appendix are crushed so that only the serous covering remains. This greatly facilitates ligating and invaginating as may be desired. Professor Kocher applies compression forceps at the base of the appendix; ties over compressed area near the colon, ablates and buries the stump by means of continuous serous sutures. These ten methods (with slight modifications) represent the practice of treating the stump in appendectomy in vogue to-day. We have the simple ligature, the "cuff" the Lembert, invagination of the stump into the colon with the Lembert sutures, with the "purse string" sutures, with and without the ligature of the stump, and the angiotribe method with and without the ligature and invagination. From our own experience in a goodly number of cases, in which nearly all methods have been tried, inclines us to use by preference the Doyen-Dawbarn method with ligature and invagination of the stump. We proceed as follows: As soon as the appendix is "delivered" or brought out of the abdominal cavity with or without a portion of the caput coli, and freed from adhesions, should there be any, we apply an angiotribe (the blades of which measure one centimeter in width) to the appendix close up to and flush with the colon. The angiotribe compresses the appendiceal tissues so firmly that only the peritoneal tissue remains. By means of an intestinal or cambric needle, threaded with No. "O" catgut, a "purse string" ligature is applied in the walls of the colon one centimeter from the base of the appendix. The next step consists in the introduction of a ligature of the same material through the mesenterium midway between the appendix and its free margin. The abdominal wound is now carefully packed with sterile moist gauze to protect the peritoneal cavity from the slightest possible infection or taint. The angiotribe is removed and the ligature tied around the appendix, flush the bowel where the angiotribe has crushed the tissues. When practicable, as it usually is, the same ligature is retied about and made to include the meso-appendix. Should the latter be too large or contain too much adipose tissue several small ligatures are applied to it. Forceps are now applied to the distal end of the appendix and meso-appendix within two centimeters of the ligature and the appendix and mesenterium are amputated between the ligatures and forceps. The ligatures control all the bleeding and oozing and the ten millimeters of appendiceal stump consist of nothing but peritoneal tissue, the mucosa and muscularis having been crushed. Pure liquid carbolic acid is applied to the stump; this is followed with pure Peroxide of Hydrogen. The whole is washed with sterile hot normal salt solution

and then carefully dried. An assistant now depresses the stump into the Caput Coli and the "purse string" ligature is tied, thus completely invaginating the ligatured stump. By placing the "purse string" ligatures about one centimeter from the base of the appendix, and by leaving the stump only about ten millimeters long, the serous surfaces of the invaginated colon and appendiceal stump come in actual contact and rapidly adhere, forming a solid base, which has never, in his hands, left any depression or infundibulum for future trouble. The advantages of thus treating the stump as above described are the following:—

- (1) The mucosa is entirely crushed and the stump thoroughly sterilized.
- (2) The ligature is applied flush with the colon, leaving no infundibulum and no appendiceal tissue to create further trouble.
- (3) The invagination is complete with serous surfaces in contact, favouring rapid healing.
- (4) Absorbable ligature (catgut) material is used, from which we never have a fistula. Silk may become infected and is then liable to cause a sinus, which persists until the silk is thrown off or removed by a secondary operation.
- (5) Intra-abdominal adhesions do not take place as the cut surfaces are invaginated or intussuscepted.
- (6) The ligature about the appendiceal stump is perhaps not necessary. Still we feel more secure from a possible fistula which has been known to occur when the stump was not ligatured.
- (7) This method presents the advantages of simplicity, rapidity of execution and the assurance of aseptic work from which in the last number of cases there have not been observed the least complication.

Our Contemporaries.

MEDICINE.

Differential Diagnosis in Cases of Sudden Unconsciousness.

BY

C. O. HAWTHORNE, M. D., M. R. C. P.

Physician to the North-West London Hospital and to the Central London Ophthalmic Hospital, &c.

The practitioner who is called on to give advice in reference to a patient found in a comatose or unconscious condition, has to accept a very serious and weighty responsibility. When a history of the case can be obtained, the question of diagnosis may be a comparatively easy one. But

it is often necessary to decide and to act in the entire absence of any such history. And with very similar general or superficial appearances, cases may vary widely in their causation and in the treatment they demand. Thus an attack of more or less sudden unconsciousness may be due to poisoning by alcohol, opium, or some other narcotic; it may be an example of uræmic, diabetic, or post-epileptic coma; or, again, it may depend on damage to the brain, produced either by external violence or by one or other of such incidents as cerebral hæmorrhage, thrombosis, embolism, &c. The differential diagnosis in the cases now in question, therefore, often is further increased by the possibility covers a wide range; and the difficulty that there may be a combination of causes, as, for example, in the not infrequent association of alcohol with injury to the head or with cerebral hæmorrhage. Regarding all such cases, it is well, when any doubt exists, to err, if at all, on the safe side, and to place the patient where he can have the benefit of continuous medical supervision and care. To label a patient as drunk, and to leave him in a police cell with the expectation that he will be "all right in the morning," when the event proves him to have been dying of apoplexy, is an error that cannot be excused. The slightest doubt is sufficient to demand surroundings which afford opportunity for sustained and skilled observation and treatment. Further, it should be remembered that whilst a case of alcoholic coma may from the civic point of view be an offence to be dealt with by the police, it is from the medical standpoint a case of poisoning demanding appropriate care and treatment. The practitioner must necessarily use his best efforts to come to an accurate diagnosis, but even when he concludes the condition to be due to alcohol, his first and main responsibility is the restoration and safety of the patient. It is not as an offender against a code of law or morals, but as a patient needing treatment, that the medical practitioner has to regard the sufferer from alcoholic coma.

The main points which guide the diagnosis in cases of more or less sudden unconsciousness, are as follows:—

(1) The first question to be determined is: *Is there any evidence of injury to the skull?* A gross lesion, such as a gun-shot wound, a depressed fracture, escape of cerebro-spinal fluid and blood from the ears or nose (showing fracture of the base), will at once afford an explanation of the unconsciousness. It is, however, possible that existing injuries may not be the complete explanation. Thus they may possibly be the result of a fall due to the sudden development of unconsciousness produced by some earlier event, for example, an attack of apoplexy. Hence, even when signs of violence exist, it is necessary to consider whether they are sufficiently

severe to account for the condition of the patient. Again, a person may be partially stunned by a comparatively slight blow or fall on the head with little or no resulting external sign of violence. He may regain consciousness, walk home, and appear to have completely recovered. Yet, after an interval of a few hours, he becomes comatose and shows symptoms of compression of the brain—one of these being a gradual slowing of the pulse rate. The explanation, of course, is that the original violence causes rupture of the middle meningeal or other intracranial vessel. At the time the feebleness of the circulation which accompanied the concussion of the brain allowed the vessel to be plugged by the formation of a clot. Subsequently, as the cardiac action regains its normal degree of vigour, the clot is displaced. Hæmorrhage, therefore, occurs, and the substance of the brain is compressed. Hence the absence of external signs of grave violence does not exclude the possibility of internal injury. And, as already stated, the presence of such signs does not necessarily mean that the injuries are the sole, or even the main, cause of the unconsciousness.

(2) The second point to note is *the degree of the unconsciousness*. If the patient can be roused so as to answer, at least in some measure, questions shouted into his ear, it is extremely improbable that he is the subject of cerebral hæmorrhage or other cause of compression of the brain. In such conditions unconsciousness is complete. The same is true of opium poisoning, except in early and slight cases. In poisoning by alcohol the patient can usually be roused unless the case is a severe one. In concussion of the brain, also, there will be some response to loudly-spoken questions.

(3) The third question to ask is: *Are there evidences of paralysis or convulsions?* A cerebral hæmorrhage which produces coma usually also causes hemiplegia. In a profoundly unconscious patient it may be difficult to detect this. Attention should be directed to the following points. The face may be drawn to one or other side, or one of the cheeks may be puffed out in expiration differently from the other; conjugate deviation of the head and eyes may be present (also often seen in epilepsy); on raising the limbs and allowing them to fall, one after the other, it may be noted that those of one side fall in a particularly limp and helpless fashion, or, more rarely, the limbs on the hemiplegic side are rigid; pinching the skin may cause movements of the limbs of one side and not of the opposite ones; stimulation of the sole on the hemiplegic side gives hyperextension of the great toe with flexion of the other toes (Babinski's sign) showing interruption of the motor pathway. These evidences prove, without doubt, the existence of an organic lesion. It may be hæmorrhage, thrombosis, or embolism. With profound and prolonged coma, it is most probably

hæmorrhage. On the other hand, hemiplegia cannot be due to poisoning by alcohol or opium. The occurrence of convulsions is almost equally significant; although exceptionally, children (very rarely adults) poisoned with opium manifest tetanic spasms. Convulsions limited to one side mean a focal brain lesion. They are sometimes seen in cerebral hæmorrhage when this affects the cortex. More widespread seizures may accompany uræmic coma. They are also seen in an epileptic fit and in the *status epilepticus*. Paralysis of individual cranial nerves, for example, the oculomotor and facial, may accompany fracture of the base of the skull.

(4) *The State of the Pupils*.—Unequal pupils which do not respond to light mean almost certainly an organic cerebral lesion. Mere inequality may be a personal peculiarity. It is sometimes the result of local disease (iritis) which may also interfere with the light response. In concussion of the brain the pupils retain their reaction to light; they are generally, but not invariably, somewhat contracted. In cerebral hæmorrhage (apoplexy) the pupils are generally dilated and insensitive; they may be unequal. Hæmorrhage into the pons varolii gives strongly contracted pupils. The same is true of opium poisoning, though here they often dilate shortly before death. Carbolic acid also contracts the pupils. Physostigmine (Calabar bean) does the same. Chloral hydrate gives moderately contracted and insensitive pupils. In hydrocyanic acid poisoning the pupils are dilated and insensitive. The same conditions exist in an epileptic fit. In poisoning by alcohol the pupils are contracted if the patient has not been recently disturbed; on moving or shaking him the pupils dilate, but they gradually (5 to 20 minutes) contract if he is allowed to be quiet. Belladonna (atropine), hyoscyamine, cocaine, homatropine, and certain other substances dilate the pupils.

Bodily temperature.—The temperature tends to be subnormal in concussion of the brain, in poisoning by opium or alcohol, and in uræmic and diabetic coma. In the more usual types of cerebral hæmorrhage it is at first normal or subnormal, but after some hours it begins to rise. In hæmorrhage into the pons the temperature rises from the outset and may soon reach a considerable height (hyperpyrexia); this observation distinguishes pontine hæmorrhage from advanced poisoning by opium—two conditions which in other respects may closely resemble one another. The *status epilepticus* is also marked by a considerable rise of temperature.

Pulse.—The pulse in apoplexy or other cause of compression of the brain is full, tense and slow, the rate continuing to fall as intracranial pressure increases. In concussion of the brain the pulse is feeble and frequent.

Respiration.—The most marked departure from the normal is seen in cases of hæmorrhage into the pons. In such circumstances the respirations may be very infrequent and irregular. They tend to follow the Cheyne-Stokes type, and the periods of apnoea may be very prolonged. In the more frequent cases of apoplexy breathing is slow, deep and puffing or stertorous. A similar condition may be seen in opium poisoning, and even in poisoning from alcohol when the case is a severe one. Uræmia may be associated with Cheyne-Stokes breathing, and in diabetic coma the respirations are slow and sighing.

Odour of the Breath.—Carbolic acid gives a highly distinctive odour. The same is true of hydrocyanic acid. The odour of opium, when the drug itself or any of its preparations have been taken, may sometimes be recognised in the breath; the preparations of morphine have no characteristic odour. In diabetic coma the breath has a peculiar, sweetish, apple-like smell. The recognition of alcohol in the breath is of no certain diagnostic value.

Urine.—In uræmia the urine contains albumen, usually in large amount. Albuminuria, to a greater or less extent, is not uncommon in apoplexy, as cerebral hæmorrhage is often a consequence of the arterial degeneration which accompanies chronic renal disease; further an intracranial lesion may cause albuminuria, or even glycosuria. In diabetic coma the urine will contain sugar. Carbolic acid gives a dark green urine, which darkens still further on exposure. Alcohol, when it has been taken in large amount, may sometimes be detected in the urine.

The principal symptoms in the most important causes of unconsciousness are displayed in the table given in the next page.

Among other causes of sudden unconsciousness note should also be taken of the following:—

Syncope.—This in the form of the ordinary fainting fit is a familiar occurrence. The patient becomes temporarily unconscious, but generally soon revives. The face is pale, the pupils dilated, the surface cold and clammy, the heart's action rapid and feeble, and respirations weak and sighing.

Epilepsy.—The patient becomes suddenly unconscious and falls to the ground, often with a cry or groan. At the same time there is a general tonic spasm, the muscles being rigid and the chest fixed. In the course of a few seconds clonic convulsions occur, and spasmodic movements are seen in the face, tongue, trunk and limbs. The face is dusky or livid, the pupils dilated, the conjunctival reflex is lost, the tongue may be bitten, froth is seen on the lips, and involuntary evacuations are apt to

(Continued at p. 701.)

Differential Diagnosis in cases of Sudden Unconsciousness.
Table of Symptoms due to Different Causes of Unconsciousness.

	Concussion of Brain.	Cerebral Haemorrhage.	Haemorrhage into Pons.	Opium Poisoning.	Alcoholic Poisoning.
Degree of unconsciousness	Incomplete.	Profound.	Profound.	Incomplete at first, then profound.	Incomplete unless case severe.
Paralysis or convulsions	Neither.	Hemiplegia as a rule; occasionally hemispasms.	Limbs relaxed; sometimes convulsions. In some cases crossed paralysis.	Neither, except occasionally tetanic spasms in children.	Neither.
Pupils	Variable, but generally contracted; sensitive to light.	Variable, but generally dilated; sometimes unequal; insensitive to light.	Strongly contracted.	Strongly contracted; may dilate shortly before death.	Contracted, but dilate if patient moved or roused.
Temperature	Subnormal.	Normal or subnormal; later elevated.	Rising rapidly above normal; hyperpyrexia.	Normal, tending in advanced stage to subnormal.	Normal, or in severe cases subnormal.
Respiration	Quiet, shallow, or sighing.	Slow, deep, stertorous.	Slow, irregular, often with prolonged interruptions.	Slow, becoming stertorous, perhaps irregular as coma deepens.	Slow, deep; stertorous in severe cases.
Pulse	Feeble and frequent.	Full, tense, slow.	Slow and deliberate; after a time weak and irregular.	At first rapid, afterwards short, perhaps irregular.	Rapid, full; in extreme cases irregular.

occur. This stage lasts only a few minutes. As the convulsions cease, the colour of the face improves and the breathing becomes easier and more regular. Soon the patient is partially conscious, but he remains for a time in a state of incomplete coma, with dilated pupils and temporary absence of the reflexes. This gradually passes into a condition of natural sleep.

The dilatation of the pupils and the abolition of the conjunctival reflex are valuable aids in distinguishing an epileptic attack from the pretended fit of the malingerer. The malingerer also does not bite his tongue, at least not severely, and he usually maintains his demonstration much longer than the few minutes which cover the convulsive period of an attack of epilepsy.

Occasionally epileptic seizures succeed one another with great rapidity and so produce the *status epilepticus*.

Hysterical fit.—This may simulate an epileptic attack. The patient may display violent convulsive movements, which increase in severity if any attempt be made to restrain her. She—for the patient is almost invariably a female—is not completely unconscious, and is soon found to be aware of what is said in her presence. The face is flushed rather than pale or livid.

Uremia.—Coma, sometimes convulsions, may suddenly develop in cases of renal disease. The pupils are contracted, the kneejerks exaggerated, the urine contains albumen (generally in considerable amount), and the temperature is subnormal. When severe and frequent convulsions occur there may be hyperpyrexia.

Diabetic Coma.—This also is occasionally sudden in its development. It is sometimes preceded by a period of excitement resembling alcoholic intoxication. Diabetic coma is marked by a deep, sighing character of the respirations, by a curious, sweetish or chloroform-like odour in the breath, and by the presence of sugar and acetone in the urine. The pulse is quick and feeble and the temperature subnormal. Occasionally convulsions with elevated temperatures are noted.

Unconsciousness may also be due to poisoning by carbolic acid, hydrocyanic acid, chloral hydrate and belladonna.—*The Polyclinic*.

The Treatment of Headaches.

Beverley Robinson, M.D. (*The Monthly Cyclopaedia of Practical Medicine*, May, 1907), states that, to begin with, the ætiology must always be considered and the cause banished, if good results are possible. Anaemia must be cured, gout or rheumatism specifically treated as far as may be,

febrile conditions ameliorated, and then with proper time the patient recovers—it may be altogether, it may be only for a time. If an alcohol habit be marked, it should be got rid of, and tobacco excess moderated. Lead poisoning of certain trades, manifest malarial cachexia, insufficient renal elimination, with premonitory headache of uræmia, are all to be properly treated, or else headache continues. When syphilis is present and there is nocturnal headache with insomnia, iodides in increasing doses are our mainstay. Nasal obstruction, adenoids and hypertrophied tonsils must be removed. A sagging or retroverted uterus should be raised or replaced in normal position. Errors of menstruation must be corrected by general and, in minor degree, by local measures. But when we reach digestive disturbances, acute or chronic, we touch really the keynote of very many headaches. An error of diet, some special food, or merely a surfeit of too many foods, will give a headache, which five grains of blue pill, followed by a saline draught, will alone relieve effectually and rapidly. A neuropathic condition is shown to be the efficient cause of very many, indeed the greater number of miserable headaches. The most prevailing symptom accompanying the headache is disordered digestion, dyspepsia, constipation, diarrhoea. Proper neutralization and elimination through the digestive tract can usually be of primary and greatest service. And here, particularly, we would lay great stress upon the sour milk diet and the moderate use, morning and night, of sulphate of soda.

When we come to relieve migraine, we can do little more or better. No treatment will surely prevent the return of the paroxysms, simply because we have here to do with a constitutional neurosis, in which heredity is the ruling power. A permanent and absolute cure is a difficult undertaking, and to be fair to our patients they should be informed of this fact. In most cases of sick headache the final and only appeal left to us is, unfortunately, the hypodermic administration of morphine.—*The Medical Review of Reviews*.

Traumatic Diabetes.

De Sandro (*Il Margagni*, July 6, p. 423).—A healthy man received a severe blow on the left parietal region and fell unconscious. A wound was inflicted which healed after some weeks and he resumed work. But he became very irritable. After 3 months he began to suffer from polydipsia, polyuria, and polyphagia. The urine contained much sugar and acetone. The patient became very emaciated and suffered from asthenia, impotence, paræsthesia of the extremities, headache, and neuralgia. Even under a strict anti-diabetic diet the sugar did not disappear from the urine.—*The Medical Review*.

OBSTETRICS AND GYNÆCOLOGY.

Post-partum Hæmorrhage and its Treatment.

DE LEE (JOSEPH B.), Chicago. *International Clinics*, 1907. Vol. ii., pp. 147—176.—Though post-partum hæmorrhage, strictly speaking, means hæmorrhage after the placenta is delivered, the author deliberately includes under the term all hæmorrhages occurring during the third stage and in the few hours immediately following the delivery of the placenta. He classifies the causes of such hæmorrhage as (a) lacerations of the parturient canal; (b) atony or anomalous retraction of the uterus; (c) diseases of the blood or blood-vessels. In cases of placenta prævia post-partum hæmorrhage is not often due to atony of the uterus, but rather to tears of the cervix which may constitute an appalling complication, and as to these he refers to a previous article of his own (*ibidem*, 1907 vol. i.). Most of the fatal cases of post-partum hæmorrhages, however, are due to atony, or to insufficient retraction or contraction of the uterus. The causes of such atony are discussed at length: Improper conduct of the third stage of labour is a fertile source of anomalous action of the uterus in de Lee's opinion, and the majority of post-partum hæmorrhages are due to this cause. Hæmophilia is rare but usually causes severe hæmorrhage, and de Lee thinks that a temporary hæmophilic condition of the blood may be induced by syphilis, malaria, leukæmia and certain metallic and alkaloidal poisons. Scurvy, morbus maculosus Werlhoffi, and certain forms of anæmia, may lead to profuse hæmorrhage. Women vary greatly in their ability to stand hæmorrhage: the pulse is the best criterion of the severity of the bleeding. It is, however, astonishing how much blood a woman can lose and survive. Ahlfeld concluded from several thousand observations that a loss up to 800 grams is normal, and that a healthy woman of average weight may safely lose a quart. De Lee does not concur in this; recovery is more satisfactory when the loss does not exceed 400 grams, and the larger loss does interfere with lactation. Hæmorrhage should be stopped as early as may be; the thinner the blood the less it is disposed to clot. Though the absolutely fatal cases are few, sequelæ are serious, thrombosis, embolism and sepsis are more common after severe hæmorrhage, as well as permanent debility and neurasthenia. No time should be lost in precisising the diagnosis; act promptly. If the placenta is in the uterus try massage, failing this, expression, or, if necessary, manual removal. If the placenta has been expelled try massage, ergot, hot uterine douching and clearing out the uterine cavity, or compression of the uterus in anteflexion; failing these successively, uterine tamponade. In the after-treatment, the patient must be kept warm, with the foot of her bed

raised as much as two feet higher than the head; hypodermic injection of sal volatile and camphorated oil may be given; and nourishment as soon as she can take it, but hypodermoclysis is the most efficient help in desperate or even severe cases.

De Lee, however, insists that during gestation, prophylaxis is always to be kept in mind. Note must be taken of the family and personal history of the patient, of her having had endometritis or floodings in previous labours. During labour, while undue interference is to be avoided in every stage, and the complete dilatation of the cervix is to be secured, the patient must not be allowed to become exhausted. Moreover, the obstetrician should not only be master of all methods, surgical and otherwise, of controlling hæmorrhage, but should have with him all instruments and appliances possibly to be required, and a supply of sterilized hot water should always be provided. He insists on the use of india-rubber gloves; that no hæmorrhage ought to prevent the disinfection of the lower genitalia before the introduction of the hand to remove the placenta; when the placenta had been detached, the uterus should be allowed to expel it with the hand, and the uterus should be afterwards re-explored, and, as the smooth india rubber is not adapted like the finger-nail to detach any still adherent remains, the finger-tips should be covered with gauze to rub them away. Compression of the aorta is mentioned as a useful temporary means of control, also Henkel's method of seizing the uterine arteries in bullet forceps, as very occasionally to be used, and a method, attributed to Parsenow, of arresting hæmorrhage from the uterine vessels by drawing the cervix downwards with a volsella; the effect of this manœuvre, we thought, was known to all gynæcologists, and also that when the uterus was released, the bleeding was very apt to recur.—*The Journal of Obstetrics and Gynecology*.

The Comparative Physiology of Menstruation and the Allied Processes.

MARSHALL (F. H. A.). *International Clinics*, 1907. Vol. ii., pp. 190—7:—The stages in the menstrual cycle of women are four: rest, growth, destruction and recuperation. In mammals the œstrual cycle has been divided into the anœstrum or resting stage; the proœstrum, a stage of growth and congestion followed by one of destruction with loss of more or less blood; the œstrus or stage of desire and normal coition; and if pregnancy does not follow, a short metœstrum, a return of the genitals to the normal condition. It is the proœstrum and not the entire period of heat (proœstrum and œstrus) that is homologous with menstruation in

women. The normal time for ovulation and fertilization in a lower mammal is after the proœstrum, and Sigismund's theory of menstruation is untenable; it is not an undoing of preparation for a fertilized ovum. Beard's theory is also untenable; the proœstrum cannot represent an abortion of something prepared for an ovum discharged several months after the preceding "heat." The entire proœstrual or menstrual process, the stage of degeneration as well as that of growth, is of the nature of a preparation for an ovum discharged normally (at any rate in the lower mammals) in the period immediately succeeding the proœstrum. There are reasons to believe that, primitively at any rate, ovulation in women occurred during a definite œstrus succeeding a proœstrum. Marshall, after reviewing the facts ascertained by experiment, concludes:—The ovary is an organ providing an internal secretion which is elaborated by the follicular epithelial cells or by the interstitial cells of the stroma. This secretion circulating in the blood induces a series of changes which assist in causing the phenomena of "heat" and menstruation. After ovulation, which occurs normally in the lower animals during a definite œstrus, the corpus luteum is formed, and this organ elaborates a further secretion, the presence of which is essential for the changes taking place during the attachment and development of the embryo in the first stages of pregnancy. It follows that the effects produced by the administration of ovarian extract must vary according to the condition (œstrual, nonœstrual or pregnant) of the animals from which the extract is obtained.—*Ibid*.

Some Practical Considerations of Dysmenorrhœa : Especially Its Treatment.

PALMER (CHAUNCEY D.), Cincinnati. *International Clinics*, 1907. Vol. ii., pp. 198—211.—No theory of painful menstruation has been so prominently put forward as that the pain is the result of some obstruction to the passage of the menstrual flow. The explanation is direct, simple and plausible; in a certain proportion of cases, obstructions in the uterine canal do exist, and the idea is apparently substantiated by a very common method of treatment, dilating the uterine canal, which was practised by such eminent men as James Y. Simpson, Marion Sims and Robert Barnes. Fortunately few gynæcologists endorse this theory to-day. Frequently there is no well-defined relation between painful menstruation and the condition of the uterus. The pain may be absent or present irrespective of the quantity or duration of the flow; the canal may be perfectly patulous, in by far the greater proportion of cases of painful menstruation no obstruction is to be detected, and when an obstruction is found the pain may, or

may not, be relieved by its removal. We must therefore conclude not only that dysmenorrhœa is not obstructive in all of its kinds and in all cases, but that, as a factor in the production of pain, an impediment to the menstrual flux rarely exists. Dysmenorrhœa may be properly divided into the following varieties: the neuralgic, the congestive or inflammatory, the obstructive, and the membranous. The division is useful in practice though the dividing lines cannot always be well defined. Dysmenorrhœa may in its origin and causation be either constitutional or local. It is essentially a functional disorder of the uterus. In the neuralgic form no local disease may be detected, or if such disease be found, its cure may not in the least diminish the pain. When the uterus is displaced it is reasonable to attribute the pain to congestion, which precedes the displacement quite as often as it results from it, but the neurotic element is the chief and only cause in many cases, and is present more or less in all, irrespective of the variety of the disease. Membranous dysmenorrhœa, according to Raciborski and Simpson, is an exfoliative endometritis, and is the most obstinate form to combat.

In all cases of dysmenorrhœa in young unmarried women the treatment at all events for a time, should be purely constitutional. And as nothing increases the susceptibility of the nervous system to pain so much as the constant use of anodynes, no opium in any form, or tar products, should be recommended. The tinctures of pulsatilla or actæa racemosa often prove beneficial, and in rheumatic cases the salicylates and guaiacum. Cannabis Indica seems indicated when ovarian neuralgia is present, and is certainly preferable to opium. In the intervals the constitutional treatment implies the correction of all defective hygienic habits: most patients will need iron and other tonics, arsenic if the menstrual flow be profuse, and bichloride of mercury with hydrastis if there be endometritis. In chronic endometritis, dilatation with curettage is, if properly performed, safe and almost always beneficial. Oöphorectomy simply to stop menstruation and prevent recurrences of dysmenorrhœa is unjustifiable. Intra-uterine medication may be employed (Churchill's tincture of iodine, iodized phenol, or ichthyol) to supplement dilatation and curettage, but alone is seldom satisfactory. If there be stenosis or flexion of the cervical canal, or a pinhole cervix, free dilatation, sharp curettage and thorough packing, with possibly some intra-uterine medication, promise much. But the best means of making the cervical canal permanently patent is intra-uterine galvanization, with the cathode in the uterus. Theoretically, electricity seems to be clearly indicated in many cases of painful menstruation, and experience has fully substantiated this view. A faithful use of intra-uterine galvanization is an alternative to the use of the curette

1907.]

for membranous dysmenorrhœa, and will cure when the curette has failed. In combination with suitable local and general treatment electricity has given brilliant results in dysmenorrhœa whether the pain has preceded, accompanied, or followed the menstrual flow.—*The Journal of Obstetrics and Gynecology*.

Styptol in Uterine Hæmorrhage.

Lockyer. *Folia Therapeutica*, July, 1907. No. 3, p. 76.—This paper includes more than is indicated by its title, for it begins with a summary of 9 cases of dysmenorrhœa, of which 7 were relieved of menstrual and ovarian pain, 2 were not. One of the failures was a case of infantile uterus, the other a case of membranous dysmenorrhœa. Of 7 cases of neoplasm (fibro-myoma, 6 cases; ovarian cyst, 1 case), styptol was successful in controlling metrorrhagia in 5. The two failures are explained in one case by the fibroid undergoing sarcomatous change and in the other by the presence of a severe cardiac lesion. The writer considers that the results he obtained in eight cases of diseased appendages are sufficient to show that in the earlier and milder forms of tubal and ovarian inflammation styptol has a beneficial effect in checking the secondary menorrhagia. This is due to the fact that such lesions are always associated with a pre-existing endometritis, and it is the latter which is favourably influenced by the uterine hæmostatic. After giving short notes of 7 cases of uterine enlargement in which it was used, he sums up his experience of the drug as follows: "In my opinion, styptol is principally of value in uterine inflammatory lesions, such as the above, and although I have only cited 7 cases, this is the class in which I use the drug most extensively. It has proved of service also in the menorrhagia of young girls where no abnormality could be found, and also in threatened abortion in the early months before dilatation of the os uteri. * * * It is a drug which, in moderate doses, can be taken over long periods and apparently without any bad effects, unless it be that a "habit" is acquired. Of the value of styptol as an uterine hæmostatic and sedative combined, I have firmly convinced myself." References to the recent German and English literature on this drug are appended.—*Ibid*.

Compression of the Aorta for Post-partum Hæmorrhage.

Elliott (F. Percy). *Bristol Med. Chirur. Journ.*, June, 1907.—Elliott reports the following case.—In a neurotic but well nourished tertipara, aged 22, whose previous pregnancies had been normal, save that her last

child died at birth from the cord being round its neck and proper assistance not being available, labour began on March 3rd, the pains being preceded by sharp uterine hæmorrhage. At 9 p.m., when she was first seen, the pains were feeble and irregular, there was slight hæmorrhage, the os admitted one finger, the lower margin of the placenta overlapped the os, the position of the foetus was normal, and the general condition of the patient good. At 11-30 p.m., profuse hæmorrhage occurred; the os then admitted the tips of three fingers; the pains were strong and frequent. Under chloroform, the dilatation was completed with the hand, and the child was turned and, at 12-45 a.m., delivered. The bleeding was but slight during the manipulation and ceased when the leg was brought down, but sharp hæmorrhage followed the birth of the child, the uterus showed inertia, and the pulse rose to 140. Manual compression of the aorta stopped the bleeding, the uterus contracted, and the placenta was expressed, without difficulty, half an hour after the birth of the child. The condition of the woman was serious; she was pale, cold and faint, with a pulse of from 140 to 150. Under treatment she rallied and in three hours her pulse had fallen to 120 and the uterus remained firmly contracted. The hæmorrhage returned shortly before 10 a.m., the uterus became enlarged and flabby, and alarming symptoms of shock, collapse and agitation, were present. The patient was cyanosed, had a convulsion and became unconscious. The uterus extended above the navel and was full of blood-clots—these were expressed—and the abdominal aorta was compressed, through the abdominal walls and the uterus, with the clenched fist. Subcutaneous transfusion of normal salt solution was carried out, the patient's legs were bandaged and elevated and a hypodermic injection of ernutin was administered. When she recovered consciousness she complained of being hot and thirsty, and began to perspire. The uterus contracted and pressure was then applied, by Elliott and his assistant, to the aorta directly through the abdominal wall and maintained continuously for five hours, and during that time not a single drop of blood escaped from the vagina. Between 11 and 12 p.m., the condition of the patient was eminently satisfactory; her pulse 100, strong and fairly full. She had taken and retained nourishment, the bandages had been removed, but the foot of the bed was kept elevated. At 2 a.m., she sprang out of bed for some water on a table near her, fell in a collapsed state on the floor, and soon expired from heart failure.

This case, though it terminated fatally, is a good illustration of the great value of compression of the aorta. Bleeding had ceased for nearly 14 hours before the patient died, and no further bleeding occurred at the time of death.—*The Journal of Obstetrics and Gynecology*.

The Relation of Labour and Labour Pains to the Nose.

Yernsalem-Falkner (*Wiener. Klin. Wchschrft*, No. 15, 1906).—The author's experiments were performed along two distinct directions. In the first place, the reflex action of the nasal mucosa upon the uterus was tested in regard to artificial production of labor pains; in the second place, an attempt was made to influence labor pains through cocainization of the nasal mucosa.

In the first series of experiments the nasal stimulation was performed by massage with a catheter, or by the faradic and galvanic current, all these methods proving painless. The results could not be quite positively interpreted, especially since labor pains were previously present in the majority of cases. The fact was demonstrated, however, that there exists a motor reflex from the nasal mucosa upon the uterus, at least in pregnancy, and especially during parturition. This reflex is more marked in women suffering from dysmenorrhœa. From a practical point of view, nasal stimulation as a pain-producing method in the course of labor can hardly be ranked with the other customary methods, the uterine contractions thus obtained being too weak to effect the expulsion of the foetus. The method may, however, enter into consideration as an assistant measure.

The second, more extensive, experimental series yielded essentially the following results: Women suffering from dysmenorrhœa, other conditions being equal, have more pain during the first stage of labor than have women with normal menstruation. This plus may be corrected by painting the nasal mucosa with cocain or adrenalin. Much relief is experienced in certain cases. The labor pains are not affected functionally.—F. R.—*The Medical Review of Reviews*.

The Use of Sugar in Labour.

G. Keins in the *Revue Pratique de Gynecologie, d'Obstetrique et de Pediatie*, calls attention to the value of sugar in increasing the energy of the uterine contractions in labour. He is in the habit of ordering 25 grammes (about five lumps) in a quarter of a glassful of water, making a concentrated solution. This dose can be repeated once or twice at half hourly intervals. It not only produces an increase in the strength and frequency of the contractions, but also acts upon the rest of the muscles by stimulation. It becomes an oxytoxic and a real tonic, which raises the muscular force of the patient, and hastens the expulsion of the foetus. In induced labour, sugar can be an useful assistant to the mechanical means employed. Keins prescribes, from the beginning of induction, two

or three doses of 25 grammes. It must be given as soon as possible, because, in labour before term, the uterine muscles are not in the physiological condition of labour at term. Labour takes place more quickly, and the patient is less exhausted.—*The Practitioner*.

THERAPEUTICS.

Morphine and Retention of Urine.

In a recent clinical lecture Sir Wm. Bennett relates an interesting experience which may be usefully noted for practical application. The lecture, among other aspects of difficult micturition, related to those cases in which, though the urine either is not or cannot be voided, a catheter of full size is readily passed into the bladder. To illustrate a possible cause of this condition Sir William quotes the case of a young man who at occasional intervals suffered from retention of urine, compelling the use of a catheter. This condition had brought him under the notice of many medical men, but no effective interpretation or solution of the problem had been found. A remarkable feature of the case was the fact that the patient appeared to think very little of the matter, and was almost or altogether free from anxiety and distress—this being, of course, in marked contrast to the acute alarm which inability to pass water usually excites in the ordinary individual. In the course of examination, however, it was observed that on the thighs were a number of spots suggestive of the bites of some insect, and similar spots, some indurated, were present on the forearms. For these, as is invariable in such cases, the patient had an explanation in the shape of an "irritable skin." But it was manifest to the experienced eye that the marks found on his limbs were produced by a hypodermic needle, and thus the conclusion was inevitable that the patient was a victim of the morphine habit, and that the recurring retention of urine depended on an occasional excessive dose of the drug. The case illustrates the necessity of the "detective method" in clinical work, more especially where there is a mystery to be cleared away.—*The Hospital*.

The Action of the X-Rays on the Genital Glands.

P. Ancel and P. Bouin (*la Presse Medicale*, Apr. 10, p. 228).—The action of the X-rays on the genital glands is peculiarly selective, affecting only the sexual elements proper which they cause to degenerate while respecting the stroma. Numerous observations show that this destruction of the germinative cells leads to sterility in both sexes. Important differences

exist in the action of the X-rays on the male and female. While exposure of the testes to the rays destroys the power of fecundation there is evidence that both in man and animals genital activity is otherwise unimpaired, and the penis, prostate, and other portions of the genital tract do not atrophy as after castration. The other organs of the body are normal and the sexual characters are maintained. Though the seminal glands are destroyed the interstitial glands which the writers have shown to secrete the internal secretion of the testicle are generally uninjured. In certain cases the interstitial glands may also be destroyed, when similar changes occur to those which follow castration. The effects of the X-rays on the ovary have been less studied, owing partly to the inaccessibility of this organ in the higher mammals, but it is sufficiently demonstrated that the ovules, with the follicles which contain them, disappear after exposure to their influence. The animal undergoes all the changes which follow castration: rut does not occur, and the genital tract, clitoris, and nipples atrophy. In the female the internal secretion is a product of the corpus luteum which represents the interstitial gland of the testicle. As the corpus luteum is formed from the Graafian follicle it is obvious that when the latter is destroyed the internal secretion of the ovary must also be suppressed, and the organs dependent on that secretion will undergo atrophy. In bats and rodents an interstitial gland is found in the ovary, similar to that in the testicle, which is not acted on by the X-rays, but does not prevent the changes described. This gland is absent in the higher mammals, and seems to have no action except during pregnancy.—*The Medical Review*.

Alypin, a New Local Anæsthetic.

Maestro gives the results of some experiments on alypin—a drug prepared from stovaine, and possessing many of the properties of cocaine, with a lessened toxicity. Chemically, it is a primary tetra-methyl-diamino-ethyl-dimethyl-benzoyl-carbinol-hydro-chloride. It is a non-hygroscopic white crystalline powder, easily soluble in water and alcohol. The solutions can be boiled without losing their anæsthetic action. Complete anæsthesia of the eye can be produced by a 1 per cent. to 2 per cent. solution in about a minute. It is nearly the equal of cocaine in anæsthetic action, and, moreover, can be given in neutral solutions, which is an advantage for infiltration purposes. Orthoform and nervanin, which the author has also tried, are less toxic, but do not give such good anæsthesia. With frogs the toxic dose of alypin is about 1 cg., and death occurs from cardiac paralysis; in rabbits it is from 5 cg. to 6 cg. per kilo.

of weight. Its action on respiration is to accelerate inspiration and increase the duration of expiration. In small doses it has a very slight action on the heart; in larger doses it stops the heart in systole, and lowers the blood pressure, inducing severe respiratory disturbances and convulsions.—*British Medical Journal*, March 30th.

Atoxyl.

This arsenical preparation for hypodermic use is rapidly gaining in favor not only in the treatment of syphilis, various skin diseases, blood parasites, etc., but also according to Babes and Vasiliu, of pellagra, with which the authors estimate there are over 100,000 persons affected in Roumania alone. The usual commencing dose was 0.10 gramme repeated in seven days, and then increased to 0.20 gramme every four days until 1 gramme has been administered; this to be followed by a long period in which no atoxyl is to be administered. Pellagra assumes great importance to America, owing to the recent epidemic of this disease described by George H. Searcy, of Tuscaloosa, Ala., as having occurred in the Mount Vernon Colored Insane Hospital. In the *Berliner Dermatologische Gesellschaft* of July 9, 1907, Brulins stated that he no longer used atoxyl owing to its danger, and E. Lesser reported a case of disturbance of vision following its use in Greeff's clinic.—*Medical Notes and Queries*.

OPHTHALMOLOGY.

Extirpation of the Lachrymal Sac.

In the course of an article on the treatment of lachrymal obstruction Mark D. Stevenson read before the Section on Ophthalmology of the American Medical Association he gave the following indications for extirpation of the sac:

1. When pus or mucopus can be pressed out of it, unless the disease yields to a reasonable amount of conservative treatment, which does not demand of the patient too much sacrifice of nervous energy, time and money. On account of the danger of hypopyon ulcers, the demand for removal is imperative in those whose eyes are frequently subjected to injuries, as farmers, mechanics, stonecutters and lumbermen.

2. In cases in which the dacryocystitis is bilateral and the patient has already lost one eye from hypopyon ulcer, the sac should be removed on the side of the healthy eye. Axenfeld states that nearly 80 per cent. of cases requiring removal of the sac are in the working classes, and that in nearly 35 per cent. of cases of dacryocystitis permanent dense opacities of the cornea result.

3. If there is severe ulceration of the cornea, with dacryocystitis, or even lachrymal obstruction, it is often advisable at least to incise the sac and drain it, but do not hesitate to remove such sacs, even during the height of the inflammation, since *ulcus serpens* must be treated vigorously to prevent perforation and loss of the eye.

4. As a preliminary to operations requiring the opening of the eyeball where dacryocystitis is present. If the fellow-eye has been lost by post-operative infection, the necessity of such preliminary operation is imperative. If an immediate iridectomy is necessary for glaucoma, or if for any reason sufficient time is not allowed for healing of the wound before opening the eyeball, it is best, anyhow, to remove the sac completely. Sutures passed around the canaliculi or cauterization of them are poor substitutes for removal of the sac, which should at least be opened and drained if the patient will not permit removal.

5. In cases of chronic lachrymal obstruction without any apparent blennorrhœa of the sac, when normal drainage cannot be restored, as in many cases of traumatic destruction of the lachrymal channels. In such cases it is safer for the eye to remove the sac, destroying completely the lumen of the remaining connecting channels, especially since it is impossible to know how soon an acute or chronic blennorrhœa may replace the apparently simple obstruction and innocent but often dangerous epiphora. Tooke pointed out that the presence of dacryocystitis is often disguised by a high crest on the lachrymal bone, preventing proper pressure on the sac, and sometimes by the increased pressure forcing the contents of the sac into the nose instead of into the conjunctival sac.

6. When lachrymal fistula is present.

7. In cases in which there is necrosis or disease of the bony walls of the canal.

8. A dilated or atonic sac should often be removed, the embracing fibers of the orbicularis being atrophied, and specially in long-standing cases with partial destruction of the walls of the sac and duct, and in which probes have been employed.

9. In certain cases of polypus, or when there is much thickening of the sac lining, sometimes indicated by a lumpy feeling after emptying the sac.

10. In debilitated or nervous persons or any who cannot endure prolonged. De Schweinitz considers it especially valuable in the insane.

11. In dangerous conditions, such as tubercle and malignant growths.

Treatment of Styte.

Sabouraud commends the use of an old-fashioned remedy, the *lapis divinis*, for this troublesome affection. *Lapis divinis* is composed of equal parts of sulphate of copper, nitrate of potash, and alum, with the addition of camphor in the proportion of one-fifteenth of the whole. These are fused together, and form into sticks. For use with stytes, a lotion is made by dissolving 1 of *lapis divinis* in 200 of rose-water. The treatment consists of epilation of every lash showing a styte or even a simple red point at its base. The patient is then told to bathe the lids, 10, 20 or 30 times a day, with the lotion. In a few days the eruption of stytes will have ceased, but should another appear, the affected lash must be epilated, and the bathing of the lids persevered with religiously. The patient must be assured that the lashes will grow again, but it will be a month before this assurance will become a material fact.—*La Clinique*.

OTOLOGY.

The Treatment of Tinnitus Aurium.

Eugene S. Yonge, M.D. Edin. (*Clinical Journal*, Sept. 4, p. 321).—Tinnitus is common in chronic suppurative processes in the middle ear, but the most usual causes are chronic adhesive processes and otosclerosis. Of the last disease it is an early, and frequently a distressing symptom. Tinnitus may result from any condition which causes increased pressure in the labyrinth, such as obstruction of the Eustachian tube and accumulations of mucus, pus and masses of epithelium in the tympanum. Collections of wax and epidermis in the external auditory meatus and polypi and granulations are also causes.

Certain drugs may induce both deafness and tinnitus, especially quinine, salicylates, and antipyrin. The deafness usually passes away before the tinnitus, which may persist for weeks or months. The administration of these drugs to patients with normal ears will cause no permanent ill-effects, but in those suffering from chronic non-suppurative diseases of the ear care should be exercised as an effusion into the labyrinth may be caused which would materially increase the aural trouble. Disturbances of hearing may follow which last much longer and may even become permanent. Kirchner has made some experiments which appear to show how these auditory disturbances are produced. After administering 1 gm. of quinine and 2 gm. of sodium salicylate to rabbits, he found ecchymoses in the mucous membrane of the tympanum and vestibule. This suggests that the symptoms observed are not due to a direct toxic effect on the ear but to vascular changes. The abuse of alcohol and

1907.]

of tobacco may also produce tinnitus with some deafness. In these cases there is apparently both local irritation of the mucous membrane of the upper air-passages, and the general toxic influence on the system. The naso-pharynx and Eustachian tube may participate in the general catarrh, and otitis media may result. On the other hand, Moss suggests that tobacco deafness and tinnitus are due to chronic neuritis of the auditory nerve, analogous to tobacco amblyopia. Alt has also observed alcoholic neuritis of the auditory nerve in a case of alcoholic multiple neuritis.

In the absence of any obvious or probable cause, the etiological factor may to a certain extent be differentiated by observing whether the noises are variable or constant; whether they are influenced by atmospheric changes—the patient in some instances becoming deafer in moist weather—and whether they are affected by artificial ventilation of the tympanum. When the tinnitus is variable or occasional, the cause may be suspected to be Eustachian obstruction, leading to increased intra-labyrinthine pressure. When the tinnitus is continuous and not influenced by weather, or by artificial ventilation of the tympanum, it probably is due to cicatricial contraction of connective tissue formations within the middle ear, which permanently increases the intra-labyrinthine pressure, or to a secondary labyrinthine affection.

Although tinnitus may be associated with chronic suppurative otitis media, it is more common in catarrhal adhesive processes and otosclerosis. In uncomplicated cases of the catarrhal disease it is in the earlier stages, as a rule, neither constant nor troublesome; but as the disease progresses it may acquire a distressing intensity and may become continuous, especially if otosclerosis exists. In pure otosclerosis tinnitus is a precocious symptom, and may be noticed even before the deafness. The prognosis is unfavourable; the tinnitus tends to increase and may become unbearable.

Association with Deafness and Vertigo.—The relation of tinnitus to deafness is variable. In many cases the noises increase with the deafness; in others they cease when the patient becomes deaf; in still others they continue to increase after the loss of hearing. Although tinnitus is generally a prominent symptom in labyrinthine disease, it may be absent in affections of the labyrinth and of the auditory nerve, which, clinically, are severe. Conversely, tinnitus may even persist throughout life without labyrinthine or middle ear disease, and without any loss of hearing. This variety, termed "nervous tinnitus," is observed mostly in nervous excitable individuals who have suffered from severe emotional disturbance, physical exhaustion, anæmia, or other depressing conditions.

Aural vertigo is usually associated with tinnitus, and a gradual increase of the noises often precedes the attack of giddiness. Sir William

Gowers thinks that the vertigo is referable to affection of the semi-circular canals by the same process which, in the cochlea and the vestibule, produces the subjective sounds. If attacks of vomiting are superadded there is the triad known as "Meniere's symptoms."

Prognosis.—The prognosis depends on the cause of the tinnitus and on its duration. When it is due to diseases of the external ear, acute inflammations of the middle ear, or secondary catarrhs, the prognosis is favourable. On the other hand, in otosclerosis, in severe labyrinthine disease, in cerebral cases, and in incurable impermeability of the Eustachian tube, the prognosis is unfavourable. Pulsating tinnitus, if persistent for any time, is unlikely to prove amenable to treatment. With reference to the duration of the symptom as a guide, the prognosis of temporary or occasional subjective noises is favourable, of continuous noises unfavourable.

Treatment.—The primary treatment must be causal, which includes the correction of abnormal conditions in the nose and naso-pharynx, as well as in the ear. Certain special measures may be adopted which may be grouped under the respective headings of local treatment, internal remedies, and general constitutional measures.

Local Treatment.—An endeavour may be first made to reduce the intra-labyrinthine pressure by inflating the middle ear, either by Politzer's method or through the Eustachian catheter. This measure may be supplemented by rarefaction of the air in the external auditory meatus by Delstanche's rarefacteur or some similar apparatus. It is impossible to predict the effect of inflation and rarefaction in a given case. The noises may disappear permanently or they may be unaffected. Between these two extremes are numerous gradations; but even when marked relief is afforded, the improvement, which is most noticeable immediately, has a tendency to cease sooner or later, and the noises may return, although usually diminished in intensity. In certain cases, an improvement is noted at first, but the condition later becomes aggravated, or fresh noises may even be superinduced owing to the treatment being continued too long. Hence the treatment should be discontinued as soon as improvement in the tinnitus and deafness ceases, and should be abandoned in the beginning if the hearing power diminishes and the noises increase. If inflation, while not causing these undesirable effects, does not materially lessen the tinnitus, Politzer advises injection of medicated solutions into the middle ear through the Eustachian catheter. The writer finds that the injection of a few minims of warmed sterilised liquid vaseline sometimes diminishes the tinnitus when the air douche fails. The solutions recommended by Politzer are muriate of pilocarpine (6-8 drops of a 1 per

cent. solution) or sodium bicarbonate (8-10 drops of a $\frac{1}{2}$ per cent. solution). The introduction of vapours into the middle ear is recommended by Gruber and others, but the writer's experience is not encouraging. The vapour of acetic ether, sulphuric ether, iodide of ethyl, or chloroform may be used.

Counter-irritation behind the ear, although not much used now, may be of value in recent cases. It may also be tried when the persistency of the symptom has become unbearable. An alleviation of the subjective noises may also be produced (especially when the meatus is dry and void of secretion) by painting the cartilaginous meatus with a medicated glycerine solution. (Tinct-valerianæ gr. xxx, etheris acetici mxxii, glycerine puri 3v.)

Internal Remedies.—Probably sodium bromide (15-60 gr. daily) is the most generally serviceable drug. It is especially indicated when the noises are intense, and when they cause sleeplessness and are beginning to affect the nervous system. Iodide of potassium is recommended for the tinnitus of otosclerosis and for that associated with aural affections secondary to constitutional syphilis. In the former condition, however, the writer has found the cautious administration of phosphorus of more general value. Strychnine is a useful remedy in the catarrhal adhesive processes, both for the tinnitus and the deafness.

Thiosinamine has, comparatively recently, been strongly recommended by McCullagh for the relief of tinnitus, and he considers that it is, on the whole, the most valuable drug we possess for this purpose. Its use is based on its property of softening new-formed connective tissue; the most striking results are obtained in catarrhal adhesive processes in the middle ear. It is necessary to combine it with local mechanical treatment, such as inflation and rarefaction, to administer it in some cases for a prolonged period, and to withhold it when it is not desired to soften protective scar tissue in other organs. The dose is 1-3 gr. thrice daily. McCullagh reports amongst others 31 cases of chronic catarrhal otitis media in which tinnitus was a more or less prominent symptom. Of these 15 were cured, 7 much improved, 4 improved, and in 5 there was no improvement.

The writer has had no experience of electricity, but judging from the statements of a number of authorities, it seems to be rarely effectual.

Pulsating noises, whether associated with cardiac lesions or not, are often alleviated by digitalis or strophanthus, and in some instances by hydrobromic acid. Dundas Grant has shown the value of compression of the vertebral arteries. Pressure is exerted by the finger and thumb in the sub-occipital triangle on both sides. Weil has reported a case of pulsating

tinnitus, in which constant moderate pressure on the vessels of the neck gave considerable relief, so that the patient wore high, tight collars for the purpose.

Severe paroxysmal noises are sometimes relieved when other remedies have failed, by the "tone-treatment" of Lucae. It is based on the observation that subjective sounds, especially if of a musical character, are often notably influenced by objective sounds produced by a tuning-fork, provided that the objective tones are at a distance from the former in the musical scale—higher or lower. The treatment is carried out by placing the end of the appropriate tuning fork in the external auditory meatus or by using a resonator fixed in the orifice of the ear to intensify the sounds. For cases of entotic tinnitus, due to spasm of the tubal muscles, Lermoyez advises restriction of the amount of salt taken with the food as he considers that it provokes the muscular spasm.

General Constitutional Measures.—A change of air has sometimes a favourable influence, and in conjunction with it iodide baths may be tried. Temporary residence in a health-resort at a high altitude may produce marked amelioration. Schwartze considers that "many persons with incurable middle-ear sclerosis experience relief during a protracted stay in high Alpine health-resorts, on account of their freedom from the distressing tinnitus aurium and the marked improvement in the hearing."

Finally, the patient should avoid anything likely to increase the noises. Thus, in addition to the injunction to lead a regular life, the avoidance of excessive physical or mental exertion and the limited use of alcohol and tobacco may be recommended.

Operative treatment.—The treatment of severe and obstinate cases in which the tinnitus is producing a profound effect on the nervous system, and perhaps suicidal tendencies are shown, becomes a serious question. Bryant, of New York, considers that "in grave cases any means of alleviation, no matter how severe, are justifiable." He advocates intra-dural section of the eighth nerve in selected cases. The selection of the cases is important; it is necessary to be as certain as possible that the tinnitus is peripheral and not central in origin. The following operations (omitting ligation of the carotid) have been undertaken of recent years. Milligan, in 1900, published 3 cases of chronic catarrhal aural conditions, associated with tinnitus, treated by the radical mastoid operation and removal of the stapes. The first case was unsuccessful, so far as the tinnitus was concerned, the second case was completely successful, and in the third the noises were considerably reduced. Ballance published, in 1900, a case of the removal of the semicircular canals for suppuration, in which

1907.]

the tinnitus ceased. In 1904 Lake reported a case of removal of the semicircular canals for vertigo, which was cured, although the tinnitus, which had accompanied it, persisted. Parry reported, in 1904, a case of division of the auditory nerve for tinnitus and vertigo; the tinnitus was considerably relieved but the vertigo was uninfluenced. Subsequently, Armour divided the auditory nerve in a case of tinnitus with an eminently successful result. In 1905 Lake published a case of severe tinnitus and vertigo, in which he removed part of the cochlea, the external wall of the vestibule and the external semicircular canal, with complete relief of the vertigo and almost complete cessation of the tinnitus.—*The Medical Review.*

Syringing the Ear.

Syringing the ear is not so easy to perform as it appears. Indeed, it generally takes a little time before the nurse acquires the "knack" of syringing efficiently. The best instrument to use is a glass syringe of about six ounces capacity and having an asbestos plunger. This form of syringe can easily be kept clean by boiling.

• The fluid for syringing should be comfortably warm, *never cold*. The patient should be seated with the affected ear towards the light and a towel and some waterproof material tucked in round the neck. He should himself hold a kidney bowl under the ear firmly against the neck. It is as well to direct him to slightly incline the head to that side.

The tip of the ear is taken between the left thumb and forefinger and gently pulled upwards and backwards. The nozzle of the syringe is then introduced into the opening of the meatus and the fluid gently ejected *along the roof, side, or floor of the passage*, not straight inwards.

After syringing, the ear should be gently dried.

The use of instillations or ear drops is carried out as follows: The patient is directed to lie down on the sound side, and the ear is filled with the drops to be applied; this can be done by means of a lipped bottle or an ordinary medicine dropper. The patient retains the drops for the period ordered, and they are then sopped out with wool or the ear syringed (if ordered.) All drops, *with one exception*, should be warmed before use. The one exception is peroxide of hydrogen, which, owing to its chemical instability, requires to be used cold.—DR. MACLEOD YEARSLEY, in *Brit. Jour. Nursing.*

LARYNGOLOGY.

Hoarseness.

BY

ST. CLAIR THOMPSON, M.D., F. R. C. P., F. R. C. S.,

(Clinical Journal, June 26, p. 166.)

Hoarseness is a subject which is not appreciated either by the public or the profession. Patients gradually get hoarse, or, have a hoarseness left after a cold, and get so used to it that not only do they not complain, but deny that their voice is altered. In the same way, so long as a patient speaks without pain, the practitioner may hardly note that his voice is somewhat hoarse. The patient talks boldly, giving an impression that his tone of voice is natural. Even relatives may not notice any difference. The writer distinguishes between huskiness and hoarseness. He uses "huskiness" to embrace alterations in the enunciation of the voice, such as occurs in peri-tonsillar abscess. This will produce "the tonsillar voice," which means that the vocal cords are not impaired, but that the movements of the root of the tongue are interfered with. The vocal cords are quite clear, but the mucus there rattles about and interferes with the voice.

Hoarseness is caused by some affection of the vocal cords. There may be an affection of the larynx without hoarseness but there cannot be hoarseness without an affection of the larynx. It is, therefore, not enough for patients to have their larynx examined simply because they are hoarse; certain cases ought to be examined even when they are not hoarse. A patient sought advice, not for anything connected with the throat, but for deafness. The writer discovered by accident a cyst on the epiglottis, nearly as large as a pigeon's egg during the routine examination of the ear, nose, and throat, which he habitually makes. It was causing no symptoms.

Another condition must be distinguished—hoarseness of the singing voice. There are many people whose voices are not at all harsh or hoarse when they are talking, and yet when they sing they become distinctly hoarse. In a case of "singers' nodules" there may be either one nodule, or, more usually, symmetrically placed nodules. The patient is probably able to talk in a very strong, clear voice, and to sing as a baritone or bass, or, in the case of a woman, as a contralto. But if he or she attempts to sing as a tenor or a soprano, the voice cracks—it is harsh on the higher notes. People's voices are said to vary at different times, and that depends on many conditions. Thus a tenor with singers' nodules talked well, but did not sing well. The longer he sang the better his voice

1907.]

became. When he felt vigorous and sang boldly his voice was very good. By much increasing his expiratory blast, he forced up the nodules so that the two cords came together. Singing and activity lubricate the larynx, and after sleep or resting the voice becomes husky. Towards evening it is better than in the morning. The ventricle of Morgagni secretes mucus which, on swallowing, is passed over the top of the vocal cords, and passes out through the inter-arytenoid space into the œsophagus, where it is unconsciously swallowed.

Hoarseness generally appears when the cords are affected by a new formation; in certain forms of paralysis there may be no hoarseness. When the cords adduct properly and are smooth along the edge, they let the air come through imperceptibly, and on singing the note is clear. But if the cords are parietic, do not meet, and leave a little gap in the middle, the voice will be weak, but not hoarse.

The cords may meet properly but not open properly—when the abductor muscles are affected—yet the patient may not be hoarse. For instance, a man has a curious pain round his waist; perhaps he says it is in his stomach; there is a tightness round there, and he feels uncertain about walking at night. His patellar reflexes and his pupils may be normal, and yet he may have—although not usually so early—abductor paralysis from locomotor ataxy. He may be able to say a strong, clear "ee," and his vocal cords may meet, but on taking a deep breath the cords fail to open to the proper extent, perhaps one more than the other. If the condition is found on one side only, look for some local lesion—goitres in the neck, enlarged cervical glands, mediastinal tumour, aortic disease, malignant disease of the œsophagus, etc. When the affection is bilateral, look for some central lesion—locomotor ataxy, etc.—although it may be due to peripheral neuritis.

Hoarseness is most marked in acute laryngitis. The disease infects the muscles and often the arytenoid joints, which are painful to use. In growths of the cords hoarseness may be trifling or absent. The hoarseness may vary as it depends on many conditions—fatigue, etc. To a large extent it depends on the accumulation of mucus, which ought always to be flushing all round the air-passages like the lubrication of a motor-car. If it does not flow evenly "misfire" results. Hence the patients say their voice is very often clear at times. Thus in early conditions the hoarseness may be absent, slight, or variable. But there is another condition: the amount of hoarseness is proportionate to the degree in which the free border of the cord is invaded and also the anterior commissure. There may be a tuberculous or syphilitic deposit in

front of the arytenoid, but above the level of the vocal cords. Although this may make the patient husky because of the collection of phlegm, it is not likely to make him hoarse because the lesions are away from the free margin of the cords. In prolapse of the ventricle of Morgagni, which does not reach the free margin, the patient may be hoarse only occasionally. The prolapse may even be between the cords, and the cords may contract so powerfully that they will squeeze between them any growth or infiltration, and the voice will scarcely be altered. The cords meet and there is no waste of air. A small fibroma on the free border of the vocal cord, and towards its anterior commissure, will cause a great amount of hoarseness compared with a much larger growth in the posterior commissure. Hence patients with growths in the anterior region, like singers' nodules, or small fibromata, often seek advice, whereas many will let a deposit in the neighbourhood of the posterior commissure go on for long before they will be struck with their hoarseness.

To find out why a patient is hoarse look into his larynx. But not every one can do that. However, short of that one can sometimes surmise. First ascertain whether the condition is acute or chronic by obtaining a careful history. No one should be allowed to be hoarse continuously for more than a month, or intermittently hoarse for a couple of months without a skilled laryngoscopic examination being made. If the practitioner does not feel justified in doing it, he should not incur the responsibility of treating the case. No patient should be allowed to drift into permanent hoarseness without a diagnosis, any more than an eye should be allowed to drift into blindness without careful examination. Endolaryngeal epithelioma is of extremely slow growth. One patient was hoarse for 18 months before the writer operated on him, three years ago, and there has been no recurrence. There is no part of the body in which cancer occurs which is more favourable for cure than inside the larynx, and there is no part in which it is less favourable than when it has become extrinsic. Hence the importance of early diagnosis of hoarseness in elderly people. But the same applies to young people, not only because of the simple growths mentioned, but for two other reasons. A diagnosis of a general condition may often be settled by seeing into the larynx. A syphilitic deposit in the larynx causing slight chronic hoarseness may be diagnosed. In many cases the laryngologist can diagnose tuberculosis when the most skilled examination of the chest will not reveal it. In young people singers' nodules are often the result of faulty voice production. Singers, teachers, orators and barristers might often be saved loss of health, time, and money if they were told that they were using their

voices wrongly, and that they must either stop talking for a time, or adopt a different method.

Other points in relation to hoarseness must be borne in mind. Some people are only slightly hoarse but have a great deal of obstruction. A patient may say his voice is a little bit rough, yet on exertion or falling asleep there may be much stridor. This may be due to the fact that there is an acute inflammatory affection, and that the cords will not separate for deep breathing, because of the congestion of the arytenoids. Or it may be due to the fact that there is œdema above the vocal cords; or there may be œdema in the sub-glottic space, any yet the voice is only slightly altered. Many of these cases are deceptive because what is called acute septic laryngitis or pharyngitis—and the two are often combined—produces slight alteration in the ring of the voice, more a huskiness than a hoarseness. But these patients not infrequently die suddenly from cardiac failure, or from acute œdema of the glottis, which should have been prepared for, and perhaps protected against, by a laryngoscopic examination.—*The Medical Review.*

MEDICAL JURISPRUDENCE.

•How to Perform a Post-Mortem Examination: The Experience of a Lifetime, and its Practical Teaching.

BY

SIR HENRY D. LITTLEJOHN, M.D., L.L.D. (Edin.)

Late Professor of Forensic Medicine, University of Edinburgh.

GENTLEMEN,—For upwards of 50 years I have been lecturing to medical students, and this is the first time I have had the opportunity and the pleasure of addressing medical practitioners. I can assure you I esteem it a very great honour indeed. I am only sorry that what I am about to give you is, possibly, not more worthy of your attention.

I shall to-day look back on the records of my life, and review the pitfalls into which I have fallen, so as to guide you against falling into them in your own careers; and also to give you, as general practitioners, hints as guides in your forensic work. We cannot always have an expert at our elbow, and the general practitioner who is first called in to a case, trained as he is to habits of observation, sees what others may readily overlook. You, gentlemen, notice the things which are of the most vital importance. Never have I forgotten that case which occurred during the later years of Napoleon III's Empire, when

• An address delivered at the Medical Graduates' College and Polyclinic, London.

there were certain mysterious movements in the air forecasting the downfall about to come. Prince Buonaparte quarrelled with a musical critic, sounds of firearms were heard, and when people rushed in they found that the poor journalist had been shot. They sent for a practitioner who lived five or six houses off. He came, and was the first to see—what? The position of the furniture in the room, certain changes and marks upon the furniture, and, therefore, he could give most important information. He was passed over, and M. Tardieu and Bergeron made the post-mortem examination. They never thought of calling in the practitioner; he was beneath them. The case came to trial, and, to everyone's astonishment, the medical practitioner was called for the defence, and overthrew all the evidence of the experts. I beg of you to remember that you are not experts, but men of observation, who can see things which are of vital importance in the detection of crime. You remember what happened to a greater man than any of us, Sir Astley Cooper. He was summoned to Deptford to see a Mr. Rose, who had been shot in his office. It was in the days of coach-horses, and Cooper drove rapidly down, but Rose was dead when he arrived. He had to wait to get fresh horses to come back to London; and they said, "Do you care to go into the office to see where this poor man was sitting?" He said, "I have nothing to do for half an hour; I will go." Then he said, "What side was he shot on?" He then hazarded the opinion that he thought the man who fired the shot must have been left-handed. There was a partner of this Mr. Rose of the name of Patch; he had been a most intimate friend of Mr. Rose and appeared to be the last man in the world to be guilty of the crime. But it happened that various facts began to come out, and Patch was examined. He was handed the Book to kiss, and he put out his left hand for it. That drew attention to Sir Astley Cooper's remark. Finally, Mr. Patch was tried, and executed for the murder of his partner. Many similar cases have occurred in my own practice.

THE POST-MORTEM EXAMINATION.

I shall now give you one or two hints with regard to the examination of dead bodies.

When is the post-mortem to take place? It was only on Friday last that the Editor of "Chambers's Encyclopædia" came over to my office and produced a leaf of his encyclopædia, and showed me a little article which he had put in many years ago, in which the man who wrote it stated, "No post-mortem should be performed until after the expiry of 24 hours from the time of death," and the Editor said, "What is your experience?" The Editor was a gentleman from the Midland counties,

1907.]

and a doctor had written to ask whether there was any legal authority for that statement, and the Editor came to ask me. I said, "There is no legal authority, at least I know of none, either in England or Scotland, but I may tell you what are the regulations of our great hospital, the Royal Infirmary of Edinburgh. They allow a post-mortem, if deemed advisable, to take place within 10 minutes or 15 minutes of death; and the relatives can remove a body from the infirmary in as short a time." I remember that certain hospitals in England have made the by-law that no body should be removed until after the expiry of 24 hours. I think that was to give the medical staff an opportunity of bargaining with the friends as to a post-mortem examination. Two medical men ought to conduct every post-mortem examination made in connection with legal proceedings. It is a scandal to find, in important trials, when a man's life, remember, is dependent on the medical opinion, that only one inspector was present at the post-mortem examination. There must be two. It is a perfect pleasure to me to have a plain, ordinary educated practitioner to be my colleague. He can always say, "I saw this; or I saw that." He may not be able to fence with a barrister so well as an expert, but I have the satisfaction in giving evidence that I know it can be corroborated by an honest-minded practitioner. One examiner must take notes while the other performs the examination. "Who is to draw up the report?" One of the two must do it, and the two must agree on the terms of the report. "Who shall sign first?" These petty questions occur. I have the easiest way out; look at the register and find who is the senior, and let him sign first. I remember a well-known "chestnut" with regard to a Highland chieftain. His foster-brother, who acted as a kind of servant to him, said, "Well, chief, at the banquet I did not think you had your proper position." "Oh," said the chief, "Macdonald, wherever I sit, that is the head of the table." The first step is to make an external examination. If you turn a dead body over a quantity of fluid escapes from the mouth; turn the body back, and that fluid passes into the air-passages and then when you come to examine the air-passages you coolly report that you found a quantity of fluid there. Who put it there? Yourself. Therefore you must keep the body on the back until you have finished the examination.

THE IMPORTANCE OF BODY MARKS.

We observe the post-mortem rigidity and lividity, and, of course, we look at any suspicious mark. I have the honour of examining for the Fellowship of the Royal College of Surgeons of Edinburgh, and my subject is forensic medicine. I have intelligent men before me, and I ask them, "If you find a suspicious mark upon a dead body, what is your duty?" "Our duty is plain, we incise it." "Right. Why?" "In order

to distinguish it from a mother's mark." "You have answered remarkably well." Now comes the question, "What other important lesson have you gained from making that incision? You have made out there is effusion of blood, and that that must have been the result of a bruise. What is the other important lesson?" I seldom get an answer. It is to make out the AGE of the bruise. This may be of vital importance to a person charged with crime. A commercial traveller has a drunken wife. He comes home, after a week's work, finds the woman lying drunk at home, with no food, and the children crying. The neighbours say they heard violent language, they heard one or two falls, and they thought they heard something like blows. A doctor examines the body, and says, "Ah yes, bruises. Dear me; these are most suspicious." How important, now, it is, gentlemen, that you should make out the age of those bruises. Here is a drunken woman tumbling about that house for days, falling against the fender, falling against this chair and that, and though there are bruises, not one of them is of recent date. If you report in such a case that death is believed to be due to violence, the poor fellow is apprehended, an examination is made, and the doctor says, "There is no doubt, my lord, that the bruises on this woman's body were probably sufficient to account for death." I have had the great pleasure, in the course of my long experience, of rescuing a man like that from this very foul imputation. Whenever there are marks of violence on projecting parts of the body you must allow in the witness-box that they might have been produced by a fall. It will not do for you, when in the witness-box, when a man's life is hanging on your evidence, to ask whether you need bother about this. I say yes, allow that all injuries at the back of the head, on the shoulders, hips, and other projecting parts of the body might have been the result of a fall. Now, you see the importance of estimating the age of a bruise. Of course, if we find bruises on certain parts of the body, such as the arm-pit, and other places where they could not be accounted for by falls, these throw a lurid light on the causation of the other bruises.

WHERE TO START.

Now, gentlemen, you have got a knife in your hand, the body is before you; how shall you commence? It is very hard for me to contradict such a man as Virchow, who in his celebrated book upon post-mortem examinations, says: Commence with the head. I say nothing of the kind. The first thing to be observed is the condition of the heart, so far as its fulness or otherwise is concerned. Where will you begin? Two inches above the pubes. Make your incision very carefully. I then

put in my fingers, and pull up the abdominal parietes, and with the thick border of my knife downwards I incise, always avoiding the distended intestines. In 90 per cent. of cases of sudden death there is an enormous distension of the stomach. To penetrate the stomach, especially if there are any persons watching you—possibly solicitors—is unfortunate, and if it is a case of suspected poisoning you lose some of the contents of the stomach, and you may possibly have to confess that in the witness-box. In cutting upwards towards the surface in this way you save all injury to the stomach, liver, and intestines. Then make an incision from the sternum to the ensiform cartilage and divide the attachments of the diaphragm on either side. Pass in your hand and break up the adhesions in the mediastinum. You may find an aneurism, and, to people's astonishment, you say, "I think the cause of death has been made out." If there is no aneurism you cut through the ribs at their attachment to the sternum. If in doing so you find, in a man of 40, ossification well commenced, you have learnt something. Don't cut through the sternoclavicular joint and remove the sternum. Leave the upper portion of the sternum intact, so that when the friends see the body they do not observe the deep sulcus which would otherwise be left. In that case they may think you have removed half the interior of the chest.

THE HEART AND LUNGS.

Now examine the heart and lungs. The heart is the first organ to be examined, therefore I incise the pericardium, and I see marked distension of the right side of the heart, and I see that the left side is contracted like a cricket-ball. I do not open the heart, because if I did it would spoil my dissection, but I put my fingers on the right auricle and on the right ventricle, and I can tell, by mere palpation, the character of the blood—whether it is fluid or coagulated. You cannot step into a witness-box and speak of a case as one of asphyxia unless you can say the blood was fluid. Having done that, I can follow Virchow's directions, and proceed to examine the head. Have you ever attended a post-mortem examination in the pathological theatre of any of the hospitals? They always begin with the head. They take out the brain, and the head falls over the end of the table, and there is a gush of blood. It has come from the right auricle and ventricle, and the report afterwards says the heart was found empty. Think of the great Taylor reporting recent cases of death from drowning and saying, "I have got it from the practitioners themselves that the heart was empty." I can quite understand that, when they begin with the head, according to the rules in the books, and do not examine the heart first of all.

THE STOMACH AND INTESTINES.

If I were asked by the Crown to be present and watch the results of a post-mortem examination, I should be pleased if the gentleman in charge instantly ligatured the stomach and put it aside for special separate examination. With your sharp knife you are apt to injure it; and if you pull away the liver and the intestines you are apt to force the contents of the stomach upwards into the œsophagus or down into the duodenum. You can judge of the effect of that in any case of poisoning. Think of the comedy which was carried on at the celebrated post-mortem examination on John Parsons Cook, poisoned by Palmer. They gave the stomach to the oldest gentlemen there. It was opened, and Palmer took care to cannon up against him, and the contents of the stomach were spilled. That accounts for the remarkable fact that Taylor, with all his skill, failed to detect any trace of strychnine in the stomach of John Parsons Cook.

We now examine the head, making the incision from ear to ear. You may think I am romancing when I tell you that I think I have made eight post-mortems conducted by myself and the Army authorities at Edinburgh when they had already begun the dissection. The army surgeons made the incision from the forehead to the back of the head. Think of the mark when the friends of the poor soldier come for the body. Now we use the saw. I do not know of a more trying thing than to remove the skull-cap in the presence of a lot of people who are watching you. Think what the great Liston did. There was a large tenement house to be taken down. He went to the contractors of the buildings, and said, "I should very much like to saw the rafters for you into any length you please." It took him a whole week. But he was a tall, fine fellow, and it gave him an unrivalled facility with his saw, and that was one of the things which made him famous. Contrast him with his great rival—an equally great man—Syme. It was an opprobrium to surgery to watch Syme saw. We thought every awkward harsh movement of the saw involved intense pain, and we hissed. Symes looked up to see who hissed. He went on until we hissed again!

WHAT YOU MAY LEARN BY REMOVING THE SKULL-CAP.

If I were asked what is the perfection in opening the skull, I should say to saw the external table all the way round, and as you have a brittle internal table, by putting the chisel in, crack the internal table round, and then show that the brain is untouched. I cannot do that. I always injure the membranes of the brain a little. But even in taking the skull-cap off we learn something. We have a very large Irish population in

Edinburgh, amounting to some 40,000, and they are somewhat turbulent at times; and when I have examined some cases from the Irish quarter I have found that the scalp comes away only with great difficulty, because these are the remains of former bruises and wounds. Again and again I have noted that. In removing the skull-cap you also notice something else. The dura mater is remarkably adherent to the bone. I hold that that shows an alcoholic tendency. As you tear it off you should note this and it should go into your report. Having removed the skull-cap, incise the dura mater. Then what do we see? We are at once attracted by the appearance of the arachnoid. We first notice the opacity of the arachnoid, secondly, a large amount of sub-arachnoid effusion, and, lastly, those delicate little adhesions between the two sides of the arachnoid. I shall show you that, in the witness-box, you cannot speak with certainty about the alcoholic history of any man unless these points are specially attended to. Before applying the saw, I always pay great attention to the condition of the temporal muscle; and if I find it infiltrated with blood, I am of opinion that the injury causing it has been severe. Now cut through the membranes, and before doing so note the adhesion of the dura mater and such like points.

THE BRAIN.

How shall the brain be removed? Shall it be removed *en masse*, or sliced down horizontally? If you remove the brain *en masse*, you lose the fluid from the lateral ventricles; and in making out whether a person has been in a debauch shortly before death it is important to preserve the ventricular fluid to enable the alcohol to be detected. Slice it horizontally and look carefully for any minute aneurisms: look especially at the condition of the cerebral vessels, as to whether they are atheromatous or not. Then examine the base. Strip the membranes off completely, and carefully smell the brain and its cavity. Again and again people have written to ask me how they shall describe the various parts of the brain. They ask, "If they tackle me in the witness-box about the pineal gland, how shall I get out of it?" My reply is: Say the "brain and its appendages" were normal. A barrister, eager to make a point, says, "I do not see that this has been mentioned in your report, doctor." I say, "Oh, you are mistaken, it has." "Well, here is your report; I shall be exceedingly obliged if you will point out the part relating to this portion of the brain which you say you have mentioned." "The brain and appendages were normal"; that includes everything connected with it.

Then there are effusions of blood. An axiom in medical jurisprudence is, "Any blood effused between the dura mater and the bone must be due to external violence." If you find blood there, the middle menin-

geal artery must have given way, there must be a slight fracture running across the track of the artery.

In your pathological examinations you use a mallet; after sawing through the outer table the skull is struck and you hear a decided crack, showing that the internal table has definitely given way. A professor I know made this mistake. He used a mallet, and the barrister, who had got a hint as to this, procured a mallet, and he said to the professor, "You describe, sir, in your report, this fissure. You used a mallet, didn't you?" "That is the ordinary thing used in our pathological theatre." Indeed. "Is this something like the instrument which you used?" "Now, gentlemen of the jury, here is a gentleman speaking of hair-like fissures. I say that that man produced those fissures by that awful instrument." Blood effused into the tissue of the brain is, as you know, apoplexy, and it is essential that you should be able to speak of the condition of the vessels.

THE THORACIC VISCERA.

The chest has already been opened, and we now open the pericardium and examine the heart more carefully. If the pericardium contains blood there must be rupture of an aneurism. Remember that an aneurism may burst into the pericardium by a very minute opening, and unless you are very careful not to remove the heart until you make out that small opening, you are apt to do what has been done repeatedly—namely, make an incision that implicates the minute opening, and the case is described as a wonderful instance of effusion of blood into the pericardium, but how it got there no one can tell. Remember, you must not remove the heart until you have made out the minute opening into the aneurism. It is very common to have an aneurism bursting into the pericardium. If you see a bluish condition of the pericardium, the cause of death is pain, for it is rupture of an aneurism into the pericardium. I open the pericardium, and there is a large clot covering the heart, together with a quantity of serum. A member of our profession, of the name of Stroud, published a first-rate book on the physical cause of our Saviour's death; and I ask you, as a favour to myself, when you see that book on a book-stall, to purchase it. You will find the author makes out most completely that our Saviour's heart must have given way, because when the Roman soldier's spear entered the left side of the chest, out came both blood and water. That is exactly what I have found again and again; a clot and serum. Therefore, when you go to the Continent and see some of those scenes of the Crucifixion, you will be amused to see that sometimes the artist makes the spear enter the right side of the body. It must have been the left side, because there the pericardium was entered, and blood and serum came away.

Examine, of course, the competency of the valves of the heart; pay great attention to that. Watch the mouth of the coronary arteries; with a pair of blunt-pointed scissors cut up their track and see if there is atheroma. It is nonsense to bother about the sudden death of a person if we find the coronary arteries involved, because with that involvement we have a marked impairment of the nutrition of the tissues of the heart.

Now we come to the lungs. Remember that when the blood is fluid it gravitates, and, therefore, when you examine the lungs you see what is called hypostatic congestion, which has been produced by gravitation. It is easy to distinguish between the mechanical congestion of the lungs in death by drowning and the congestion due to bronchitis, incipient pneumonia, etc. One point I would impress upon you. Having taken out the lungs, pass your hands on both sides of the chest in order to discover whether there is a fracture of the ribs. If a man has one, or two ribs fractured, and rigidity has set in, you must put your hand in and press downwards upon the ribs, so as to make out the fractured ends.—*The Hospital*.

(To be continued.)

HYGIENE.

Second International Congress on School Hygiene.

HELD IN LONDON AUGUST THE 3RD—9TH, 1907.

(Reported by Dr. M. D. EDER.)

Section II.—GENERAL METHODS OF MEDICAL INSPECTION IN SCHOOLS.

Dr. Fr. Cuntz, Wiesbaden, had undertaken at the first congress in Nurnberg to prepare a report on the method that might be universally adopted. It was important to have some comprehensive scheme of universal application if the results were to be estimated comparatively. The following should be the guiding rules for the school doctor:

The First Examination of the Children.—Each child must have a card in which the date of the inspection should be noted, as well as the observations of the teacher on the physical and mental condition of the child during its school attendance.

An inquiry should be sent to the parents or family physician for information as to past illnesses, accidents, physical or mental defects.

At this first examination the data required are:

- (1) The full name of the child (to be given by the teacher).
- (2) Height and weight.
- (3) Chest measurement; at all events in all delicate children.

- (4) General physique to be marked as good, indifferent, or bad.
- (5) General mental condition.
- (6) Former illnesses.
- (7) An estimate as to how these illnesses are likely to affect the child in its studies.

(8) A statement as to whether medical treatment is required or further examination by a specialist (to be communicated to the parents).

(9) Is special attention needed? Separation of those requiring it, and also of the delicate children.

The examination must be thorough. It should be conducted in a special room. The best time is in the second or third month after the opening of the school. A preliminary rapid examination should be made if possible in the first few days so as to reject any children quite unfit for ordinary school life. The examination of sight and hearing should be deferred to another period.

The children should be examined once every six months whilst at school to detect any new cases of illness, and to see that the buildings, etc., are kept in thoroughly hygienic conditions. This will, of course, include lighting, heating, etc.

There must be a final examination at the completion of school, carried out precisely as was the first one. This must include sight testing, auscultation of the heart, examination of the spine in all children. In many cases suitable advice as to the child's future occupation could be given from a result of this final examination.

The school doctor should always co-operate with the principal and the teachers, and be prepared to advise and help in all matters affecting the hygienic condition of the children. This may refer to the duration of the lessons, sequences of studies, etc.

Dr. Oebberke, of Breslau, was appointed with Cuntz. He undertook to draw up the details of the required examination. Special stress is laid upon the examination of the teeth, mouth, nose. The proposed schedule is comprehensive and yet is one easily carried out after a little experience.

Thiersch, of Leipzig, had carried out the school inspection for some years at Leipzig. He finds the best time for this is during the second term, when teachers and children have become accustomed to one another. The parents are invited to attend the examination, which they are glad to do. Before the inspection he delivers a short preliminary lecture on some question of personal hygiene, which should not last more than half

an hour. The children are then examined singly in the presence of mother and teacher. The examination is thorough, the children being stripped to the waist. If anything abnormal is found the parent is told to obtain treatment. The examination of forty children takes from one and a half to two hours. Subsequent examinations take place at least twice a year.

The Incidence of Ear Disease in 1000 East-End Children.

Miss IVENS found nearly one third had defective hearing. Of these 49 per cent. were suffering from adenoids alone, 11 per cent. from enlarged tonsils, and 48 per cent. from otitis media. From tables furnished by the teacher with regard to the mental capacity of the children it was found that bad hearing led to bad educational results. Removal of adenoids and subsequent training in mouth-breathing led to improvement in the mental capacity of the children. The habit of nasal breathing, and the use of the handkerchief should be taught.

Dr. STACKLER had examined 753 children in Paris and found that 36 per cent. had defective hearing. Neither the parents nor the teacher were aware of this. But of these 36 per cent., 7 per cent. had fair hearing at times, in 17 per cent. it was always defective, whilst in 12 per cent. it was very bad.

The Eyesight of the Poorer City School-Children.

The eyesight of 52,493 Glasgow school-children had been examined by the teachers; 35 per cent had defective vision. Of these 14 per cent. were functionally defective only. The functionally defective increased among the children living in the densely populated parts of the town. Among children living on the outskirts, who had better opportunities for using their eyes at long distance, this particular defect was at a minimum. Some of this bad vision was due to malnutrition. Sewing must be abolished in the infant schools. [Dr. Kerr has been successful in doing this in London.] Proper feeding would eliminate some of the disease. It would be an economy, since bad eyesight prevents the children being full wage-earners and so swells the ranks of paupers and criminals.

STACKLER examined the eyesight of 753 children in Paris, and found 13 per cent. defective. In 6 per cent. of these cases the parents were not aware of this.

Sir William Osler, in an introductory address, claimed that medical inspection, treatment, and school anthropology were the most important of all questions. If as much attention were paid to the rearing of children as was paid to the breeding of cattle, horses, and dogs in this country, our results would equal those of the breeders of pedigree stock. There was

no progress to report in this country since the last Congress of three years ago. There is still an entire want of co-ordination, and our efforts are merely half hazard dashes. Great Britain is far behind most other countries—behind even Servia, Russia, Bulgaria, The Argentine. There is here no direct control from Government. We want a comprehensive scheme, and because there are difficulties we must not lay aside all effort. Sociological difficulties are found in the fact that 13 per cent. of our school-children suffer from malnutrition. Then, again, 25 per cent. are found to be very dirty, whilst 50 per cent. are stated to be verminous. The neglect of the teeth is a national disgrace; 90 per cent. of school-children suffer from decayed teeth. Again, there is the terrible evil associated with ear, nose and eye trouble. In Bradford 28 per cent. of the children are mouth-breathers. Perhaps, in addition to general school doctors, we require travelling specialists, who should journey from one centre to the other. In many of the schools the temperature is too low in winter and too high in summer. The school doctor must step in and remedy all these defects. If these suggestions savour of Socialism this is not any objection; the well-being of the people is at stake, and this is the most important of all questions for the nation. The dentist should make a quarterly inspection. Should the school doctor be under the medical officer of health, or under a separate Educational Medical Board? Should the doctor in villages be in connection with the village dispensary? These and many other matters must be carefully considered. At all events the doctor must control the situation.

Dr. Hayward then opened a discussion on the co-operation of doctor, teacher, and nurse in school hygiene. He considered it desirable that a nurse should accompany the school doctor on his visits; the children were less frightened, and the nurse was useful when examining girls. The class teacher should be asked to accompany the doctor. A daily medical inspection is impossible, but a health register should be kept. The chief part of medical inspection is that relating to mental capacity. Here doctors are just commencing to grope their way; the doctor must become a specialist here. Special teachers' classes should be held, when informal discussions could be held.

Mr. Sykes claimed that if any good is to come out of medical inspection the doctor must be (1) a reasonable man; (2) he must work with the teachers; and (3) he must have full power to remedy all evils. The Board of Education must have a medical department. Teachers welcome the doctor, and the children grow to like him. He hoped they would have a greater sense of responsibility than the certifying surgeons. In Bradford alone there are 100 children half-timers; over 50 per cent. of

these are girls. These are in the mills winter and summer at 6-30 A. M. and work there for six hours, attending school from until 4-30. What sort of mothers or fathers could one expect? Yet no certifying surgeon has rejected a single child in Bradford as physically unfit for this double life. Four thousand such children have passed through his own school and to his certain knowledge a great many were not physically strong enough to do the work.

Dr. Duncan Forbes read a paper upon which we comment elsewhere

Dr. Marion Hunter wanted medical inspection and treatment as a first step to improve the national physique. If curable conditions were remedied in children we should have less expenditure upon asylums, prisons, infirmaries and hospitals.

Dr. Cuntz, Wiesbaden, said that in Germany they were glad enough to get the doctor into school, and he could do all that is really required. No doubt a nurse would be a very pleasant help. It was unfair to teachers to make them responsible for medical investigations, for instance, taking the temperature, as Dr. Hayward had advocated. The teacher has enough work thrust upon him.

Dr. Blake, delegate from Western Australia, informed the meeting that during a recent visit to Japan he found that there was the most complete system of medical inspection. There is a doctor attached to every school. The Japanese believe that the health of the children was the important factor in the development of any great nation. They meant to spare no money in attaining this object. In Western Australia it was also regarded as of paramount importance and purely as a state affair.

Mrs. Kirk did not consider a nurse essential; the teacher can do all that is required to help the doctor. Verminous children must be excluded from school.

Dr. Quirsfeld had made a special investigation into 1,014 children. He found that the majority of myopic children were of delicate constitution. A very noteworthy condition is the appearance, in the last two years of school life among girls, of right scoliosis and myopia.

The Care of the Teeth and School Life.

Mr. C. Edward Wallis had made a detailed examination of the teeth in a London elementary school in a poor district. Out of 245 children only four were found to have the normal number of healthy teeth. The permanent teeth often become carious within two years of eruption; therefore treatment should be begun early. There is appalling absence of cleanliness and a total absence of dental conservative treatment. There is close connection between oral sepsis and the enlargement of the

submaxillary glands. In nearly all cases of extensive dental caries the physical measurements are below the average.

Dr. Jessen, of Strassburg, said that the care of the teeth is an essential part of school hygiene. The first Congress recognised the great importance of the question. Educational officials, architects, physicians and teachers are working now-a-days in co-operation. They are determined to build up a healthy people, the most valuable capital of the nation. The care of the teeth is all important in this regard. Not less than 90 per cent. of children have diseased teeth. In Strassburg free treatment was authorised—

In year 1903 for	17,119 children
„ 1904 „	17,054 „
„ 1905 „	18,073 „
„ 1906 „	18,667 „

The cases dealt with were—

	Children examined.	Children treated.	Stopping.	Extracted.
In 1st year . . .	5,343	2,666	699	2,912
„ 2nd „ . . .	6,900	4,967	4,832	6,530
„ 3rd „ . . .	4,372	6,824	7,065	7,985
„ 4th „ . . .	834	7,491	8,340	8,552

The cost was £115 in 1902, and reached £450 in 1907. As to the effect it might be seen in the answer given by the teachers to an inquiry addressed to them by the chief inspector. All were agreed that (1) absence from school had greatly diminished; (2) the general health of the children had improved, (3) very little school time was lost; (4) the parents were glad to avail themselves of the school dentist for their children.

On August the 9th Dr. Cronin, of the New York Department of Health, opened a discussion upon medical treatment at school. He said this had been forced upon his Board because the Education Department had complained that the exclusion of children, for long and indefinite periods, meant the growing up of an army of illiterates. These children would never become full wage-earners, and would be a great loss to the nation, who would have finally to support them. So far treatment has been confined to a few conditions in about one third of the schools. Dr. Cronin demonstrated by lantern slides, of children "before" and "after" treatment, the enormous improvement in the physical condition of the children, substantiated on the mental side by the teachers' reports and the class positions of the children. The economic value was undoubted; the untreated cost the city by their exclusion \$ 4,000 daily. The expense

of treatment is a portion of this sum. He considered it advisable that the medical man should be municipalised. There was a close analogy between the state control of transmissible diseases, such as smallpox, tuberculosis, etc., and conditions favourable to the spread of contagion. Hospitals should be provided for proper treatment. The objections are only of theoretical importance; practical experience is in favour of such a system. The cost compares favourably with the necessary expenditure involved in securing the treatment of defective children by means of parental responsibility or through voluntary agencies. New York employed in the session 100 physicians at a salary of \$ 100 per month, and fifty nurses at \$ 75 per month. Treatment at school was justified not only by results, but also on social, economic, and professional grounds.

Dr. Stocker said there was a school polyclinic now in Lucerne, and the results had been admirable. It was free, but not obligatory for all children attending the public schools. Only, if children were not being treated after notice had been served upon the parents, they were compelled to attend the school clinic. It consisted of a general and a special child department. Only ambulatory cases were treated. Prescriptions were given, but the chemist could only repeat them with the doctor's signature. Tooth brushes, spectacles, trusses, etc., were given in the same way. The school clinic was not in competition with, but was welcomed by the medical men in general.

Anthropometry in Schools.

A strong case was made out by Mr. Gray for collecting data as to the conditions of the school-children. This was the only possible method of national stock-taking. Till successive generations could be comparatively examined the talk about physical or mental deterioration was a vain beating of the air.

Dr. Shrubsall said a simple schedule could be advantageously used. This comprises: (1) *Stature* without boots, *weight* in dressing-gown previously weighed; (2) racial characters: *colour* of hair and eyes; *cranial measurements*: maximum length of labella to point furthest away upon occiput, maximum breadth, wherever found above plane of ear lobes; (3) chest dimensions, full and empty at juncture of fourth rib cartilages with breast-bone, diameters of chest at this level; (4) bi-acromial, bi-trochanteric, and height of head.

Dr. Guttmann claimed that the birthday should be selected for making observations, and steel measure should be employed.—*The British Journal of Children's Diseases.*

THE ANTISEPTIC.

DECEMBER, 1907.

The Decentralisation Commission.

UNLIKE most other Commissions the scope of which is clearly and accurately defined and which pursue certain definite lines of inquiry the Decentralisation Commission has begun to grope about in search of some possible remedies—of which the members themselves seem to have no clear conception—for the evils of centralisation and concentration of authority. It is not apparent in what respects and to what extent the Medical and Sanitary Departments of the Madras Government will be benefited by the operation of the process of decentralisation. Mr. Morley has in view the diminution of routine work and redtapeism, with a view to the establishment of personal influence. Personal influence is implied in the work of a medical man, and to a less extent, perhaps, in the work of the Sanitary Department. Medical men and the members of the Sanitary Department are not tax-gatherers or active limbs of the law. They are experts paid to look after the health and sanitary needs of the people. In this case, whether they will or no, personal contact is a necessity, and if they possess the requisite personal qualities and professional skill personal influence is easily established on a most durable basis. But with respect to their work as well a combination of circumstances, or more correctly the obligations imposed upon them by what are called the exigencies of the service, often act as a barrier against the effective and satisfactory discharge of their more legitimate duties. It is to find out and remove this grit in the machinery that the Commission decided to get a full view of the inner mechanism of the local Medical and Sanitary Departments through their official heads. We do not know if what the Sanitary Department stands in need of is a distribution of more power and authority among its subordinate members in order to enable them to exercise a more salutary and direct influence on the people at large. If these men have the knowledge, the training, the sympathy and the tact necessary to enlist the co-operation of the people among whom they work, the Department is sure

to confer more solid benefits on the population of this Presidency. What is wanted is less of *ipse dixit*, and more of knowledge and skill such as would enable the Department to keep pace with the progress of the science of sanitation. Higher salary is not always a test of merit. If greater thought is bestowed on the study of Indian conditions and if the principles of sanitation are applied with care—insight and intelligence, there will be perceptible improvement in the work of the department. Desk work and routine are easy enough, and any reasonable reduction of either would not sensibly affect the usefulness and efficiency of the Department. Nearly all these general observations apply with equal force to the Medical Department as well. Money spent on this department is capital well invested. But the creation of more fat berths is certainly not the best way to enhance its usefulness. It is a matter of common knowledge that the subordinate medical service contains a more or less efficient body of men. But their emoluments and their general status require to be raised in the interests alike of the service and the people concerned in accordance not only with their qualifications, but still more, with the quality of the work turned out by them. In his evidence before the Commission the Surgeon-General admitted that “the Hospital Assistants in this Presidency in his opinion had the best training in India.” He also said that there are not less than 343 dispensaries in charge of Hospital Assistants. But what do these men get? Their pay varies from Rs. 25 a month to Rs. 50 according as they belonged to the fourth grade or first grade. Comment is needless. It is unnecessary to point out how harassed these and other subordinate members of the department of a higher grade are by transfers and by a number of other things—in the name of the exigencies of the service. We are not sure whether the present state of things would have continued to this day if the heads of the department in the various districts and elsewhere had always a thorough knowledge of the working of hospitals in the mofussil and the requisite skill in administration.

Promotion of Hospital Assistants.

Nos. 569 and 581 should have their 2nd promotion (viz to the second grade) on 1-4-07 as they had their first promotion on 1-4-02, whereas they were promoted to the 2nd grade on 1-7-06. Nos. 571 and 573 are promoted in April 1907 in accordance with the rules.

S.F. 259A-6-1,000-30-1-24.