

3/4



32
Lm2, N04
N41-38-10
158759

The Antiseptic

A Monthly Medical Journal

Dr. U. Rama Rau, M.L.C. & U. Krishna Rau, M.B., B.S.

MADRAS

CONTENTS.

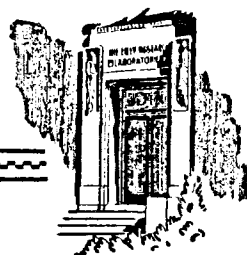
	PAGE.
Changes Wrought by Age. By R. Krishna Rau, F.R.C.S.E., Vizagapatam.	691
The Aged Patient. By R. B. Billimoria, B.A., M.D. (Bom.) Bombay.	698
Old Age—Its Common Ailments and Their Prevention. By K. R. Kini, M.B.B.S., Mangalore.	705
Chest in Old Age. By G. B. Mankad, M.D., M.R.C.P., F.C.P.S., Ahmedabad.	713
The Senile Heart. By R. K. Bhattacharyya, M.B., Nabadwip, Nadia.	716
Disturbances of "The Climacteric Period"—Their Prevention and Treatment. By Y. N. Ajinkya, M.B.B.S., M.M., F.R.C.S., M.R.C.O.G., D.C.H., Bombay.	722
Bio-Chemistry of Old Age. By A. S. Mannadi Nayar, M.B., B.S., Ph.D., Madras.	728
Senile Affections of the Eye. By G. S. Guha, M.D., D.T.M., Shillong.	736
Some Gynecological Aspects of the Diseases of Old Age. By Dr. Francisco Correa, Nova Goa.	742
Problems of Anæsthesia in Old Age. By A. C. Dey, L.M.F., Calcutta.	746
Physical Therapy in Diseases and Disabilities of Old Age. By G. Ghosh, M.B., B.S., D.T.M., Allahabad.	751
Cancer in Old Age. By T. Howard Somervell, M.A., M.B., B.Ch., F.R.C.S., Neyyoor, Travancore.	758
The Relief of Suffering in Malignant Disease. By M. M. Shepherd, B.Sc., M.B., Ch.B., F.R.C.S., Bombay.	764
Senile Glycosuria—The Possibility of its Prevention and Treatment. By Amulyaratan Chakraborty, B.Sc., M.B. (Cal.), F.R.C.P., F.R.S. (Edin.), Calcutta.	766
Chronic Senile Rheumatism—Its Ætiology and Pathology. By S.K. Bose, M.B. (Cal.) Bhopal.	771
Neurasthenia. By Jadavji Hansraj, D.O.M.S., R.C.P.S. (Eng.), L. M. & S. (Bom.), Bhuj, (Kutch State).	775
Benign Prostatic Hypertrophy. By T. C. Basu Chowdhury, L.S.M.F. and Dr. S. Mittra, Agra.	782
Enlarged Prostate in the Old and Consequent Retention of Urine. By K. S. Appu Mudaliar, M.B., B.S., Kumbakonam.	792
Treatment of Chronic Ulcers of the Leg. By Friedheim, M.D., Srinagar, Kashmir.	794
On the Relation of Intestinal Fermentation to Arteriosclerosis and Old Age. By Rai Dr. G. C. Chatterjee Bahadur M.B., Hony. F.R.I. (Lond.) and A. N. Mitra, M.Sc., M.B. and Mati Ranjan Das Gupta, M.Sc., Calcutta.	795
Hyperpiesis and Old Age. By S. R. Rajaram, M.B., B.S., Salem.	803
Nephritis in Old Age. By K. A. Dhairyawan, M.B., B.S., Bombay.	809
Treatment of Senility. By L. A. Ravi Varma, M.B. & C.M., Travandrum.	811
Respiratory Diseases of the Old People. By S. S. Misra, M.D. (Hons.), M.R.C.P. (Lond.) Lucknow.	814
Some Observations of Tuberculosis in 168 Cases in the Age Group of 45 Years and Above. By Dr. I. E. J. David, Nagpore, C. P.	817

Editorial and Publishing Offices: 323-24, Thambu Chetty St., G. T., Madras.

London Office: 34.40. Ludgate Hill, E.C. 4.

Subscription Rs. 5, Burma Rs. 6, Foreign 10 sh. a year. Single Copy Rs. 2.—in advance.

Index to Advertisements, see page 49.



The Lilly Code

To provide the profession with medicinal products of highest quality and unvarying potency.

To contribute to the progress of medicine by developing new and superior agents through research.

To issue information about the uses of the products of the company through professional channels exclusively.

To Control Postpartum Hemorrhage

'Ergotrate H' (Ergonovine Hydracrylate, Lilly) produces a firm and prolonged contraction of the uterus within fifteen seconds after intravenous injection.

To Promote Uterine Involution

One or two tablets 'Ergotrate' (Ergonovine Maleate, Lilly) given three times daily will hold the postpartum uterus in a constant state of contraction.

Distributor: Kemp & Co., Ltd.

BOMBAY • CALCUTTA • DELHI • MADRAS • NEW DELHI

ELI LILLY AND COMPANY : INDIANAPOLIS : INDIANA : U.S.A.

1941]

THE ANTISEPTIC

814.

1

THE RESEARCH LABORATORY,

Telegrams: "IMMUNITY"

MADRAS.

Telephone: 3213.

BLOOD, SPUTUM, URINE, FAECES and other pathological materials examined microscopically, bacteriologically and chemically. VACCINES, STOCK AND AUTOGENOUS, prepared.

WIDAL, WASSERMANN AND KAHN'S TESTS
Compliment fixation test for tuberculosis etc. done.

STERILE SOLUTIONS FOR INJECTION: (e.g.) Calcium chloride, Camphor in oil, Emetine, Hexamine (intravenous), Ferri-Cacodyl, Quinine Bihydrochlor, etc., etc., in stock.

Special solutions made up on request.

Glass slides, capillary tubes for Widal, Sterile capsules for Wassermann test, Culture Media for preparation of Autogenous Vaccines supplied on application with direction for their use.

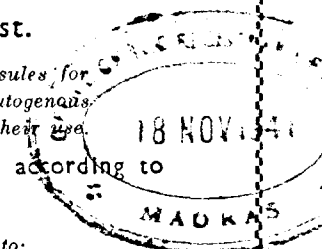
Laboratory stains in common use supplied in solution according to standard formulæ.

For scale of charges and other particulars apply to:

The Manager,

RESEARCH LABORATORY.

Harris Road, Mount Road, P.O., Madras.



CALCIUM

Is Our SPECIALITY

- | | |
|-----------------------------------|-------------------------------|
| Calcium Gluconate | - SIONOL-Injections & Tablets |
| Calcium Gluconate Cum Iodine | - SIONODINE-Injections |
| Calcium Gluconate Syrup | - SIOCOL |
| Calcium Gluconate Cum Parathyroid | - Injections & Tablets |
| Calcium Gluconate Cum Choline | - Injections |

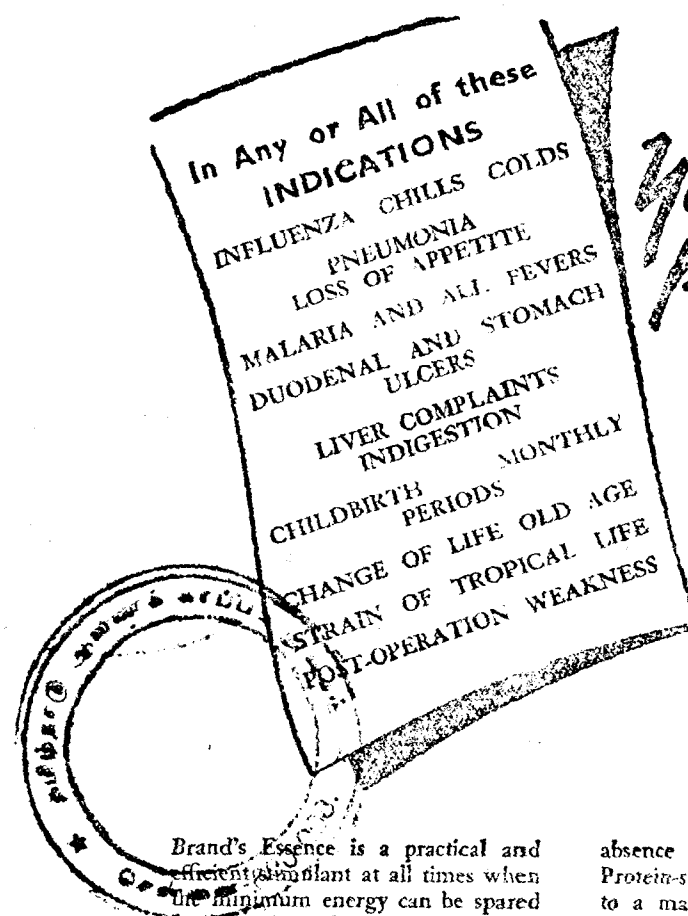
We also prepare

- | | |
|------------------|------------------------|
| Glucose Solution | - Injections |
| Sulphonamide | - Injections & Tablets |

ALBERT DAVID LIMITED,

The House of Calcium, Post Box 586, Calcutta.

When writing to advertisers, please mention the "Antiseptic"

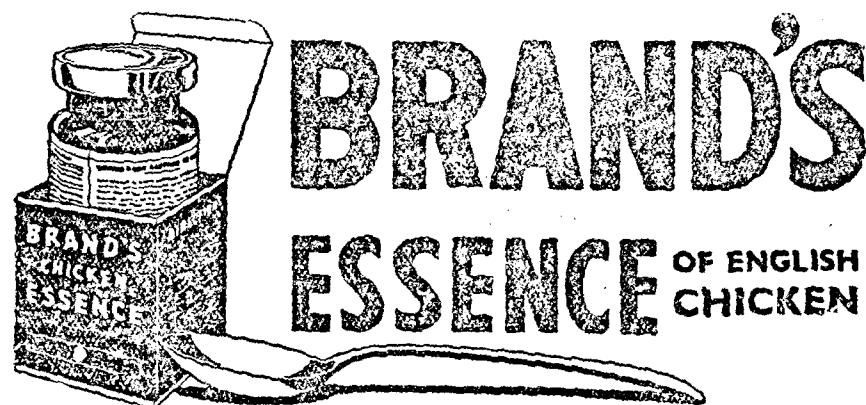


You should prescribe

A tonic which not only strengthens, fortifies and stimulates, but which is readily acceptable by the most enfeebled digestion—able to absorb entirely the gastric juice released to digest it and leaving no free acid. In short, you should prescribe Brand's Essence of Chicken—the infallible stand-by of the medical profession for over 100 years.

Brand's Essence is a practical and efficient stimulant at all times when the minimum energy can be spared for digestive effort. The ease and speed with which Brand's is assimilated are due to a complete

absence of solids and irritants. Protein-sparing action takes place to a marked degree. The essence does not cause thirst and can be given at a moment's notice with a teaspoon.



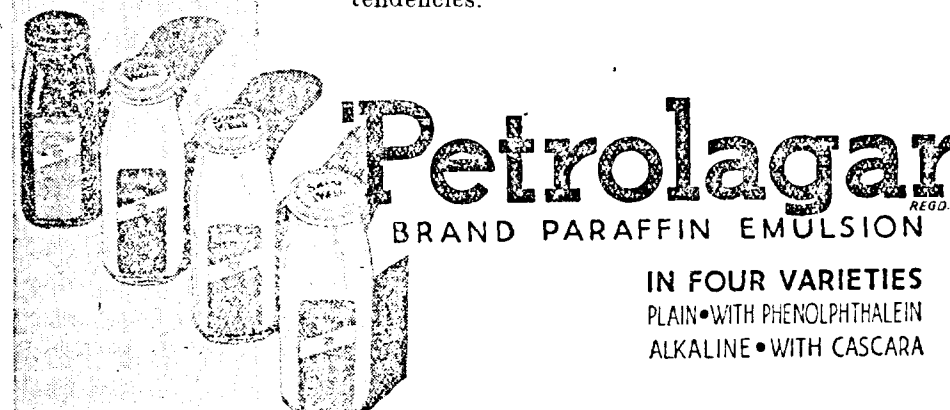
Agents for India and Burma:
GRAHMS TRADING COMPANY, (India) LIMITED.
Calcutta, Bombay, Karachi, Rangoon.

When writing to advertisers, please mention the "Antiseptic"



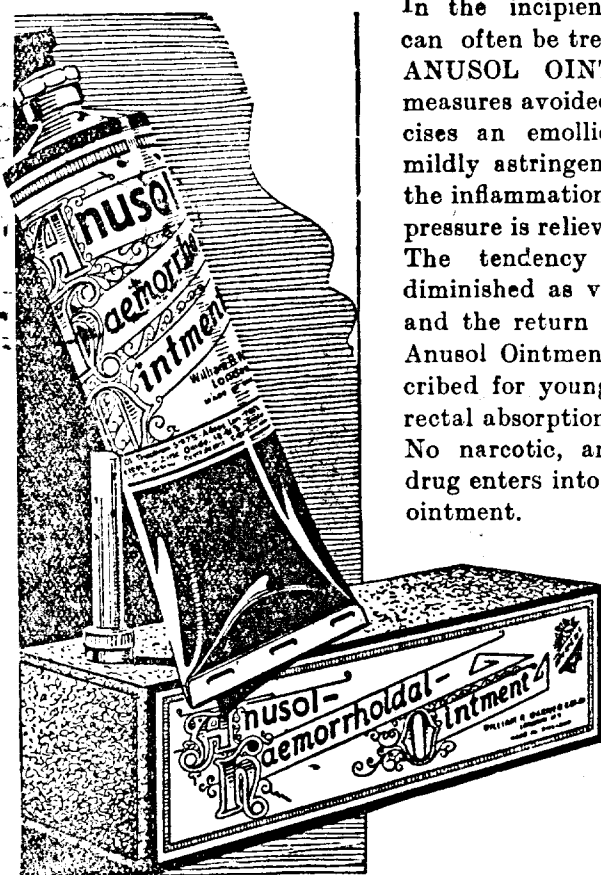
*For this case—
'Petrolagar' with Cascara*

For obstinate and persistent cases of constipation, such as those associated with senile atony, prescribe 'Petrolagar' with Cascara. It combines the gentle softening effect of a fine oil-in-water emulsion with the mild, stimulating action of a special non-bitter cascara sagrada to produce a thorough and comfortable bowel movement. 'Petrolagar' with Cascara is especially suitable for the elderly patient because it can be taken over a long period of time without the dosage having to be increased. It is pleasant to take and has no griping tendencies.



JOHN WYETH & BROTHER LTD., 25, OLDHILL PLACE, LONDON, N.16.
Sole Distributors for Petrolagar, Laboratories Ltd.

The Safe Treatment of HAEMORRHOIDS



In the incipient stages, hæmorrhoids can often be treated successfully with ANUSOL OINTMENT, and surgical measures avoided. The ointment exercises an emollient, decongestive and mildly astringent action. By reducing the inflammation that causes congestion, pressure is relieved and pain disappears. The tendency to bleeding is also diminished as venous stasis is relieved and the return circulation is improved. Anusol Ointment may safely be prescribed for young or old without fear of rectal absorption of any toxic substance. No narcotic, analgesic or anæsthetic drug enters into the composition of the ointment.

*Supplied in
collapsible tubes with
rectal nozzle.*

ANUSOL HAEMORRHOIDAL OINTMENT

Samples and literature on request.

MARTIN & HARRIS LTD. Mercantile Buildings, Lall Bazar, Calcutta.
Also at Bombay, Madras, Karachi & Rangoon

Prepared by WILLIAM R. WARNER & CO., LTD., LONDON, ENGLAND.

When writing to advertisers, please mention the "Antiseptic"



The Weaning Period

From six months of age onwards, the mineral constituents of the infant's dietary assume increasing importance.

Allenburys Malted Food No. 3 is specially adapted for use after six months of age. It contains the necessary amounts of iron, calcium, phosphorus, and of vitamin D.

Allenburys Malted Food has a basis of specially cooked and dextrinised wheaten flour; this is changed by the malt diastase present into a complex of dextrins and sugars which form the infant's introduction to starchy foods.

*Descriptive literature
will be sent on request.*

ALLEN & HANBURYS LTD
(Incorporated in England)

Clive Buildings, CALCUTTA
and at 37, Lombard Street, London, E.C. 3

When writing to advertisers, please mention the "Antiseptic"

MALARIA!!!

USE
JAVA QUININE
TRADE MARK



ALL QUININE SALTS
PLAIN & SUGAR-COATED TABLETS
CINCHONA FEBRIFUGE
AND OTHER
DERIVATIVES OF CINCHONA
ALKALOIDS

High Degree of Purity and Solubility.

Sole Agents for India & Burma:
MARTIN & HARRIS LTD.,
CALCUTTA — BOMBAY — MADRAS
KARACHI — RANGOON.

Some recent pronouncements on the value of QUININE IN MALARIA

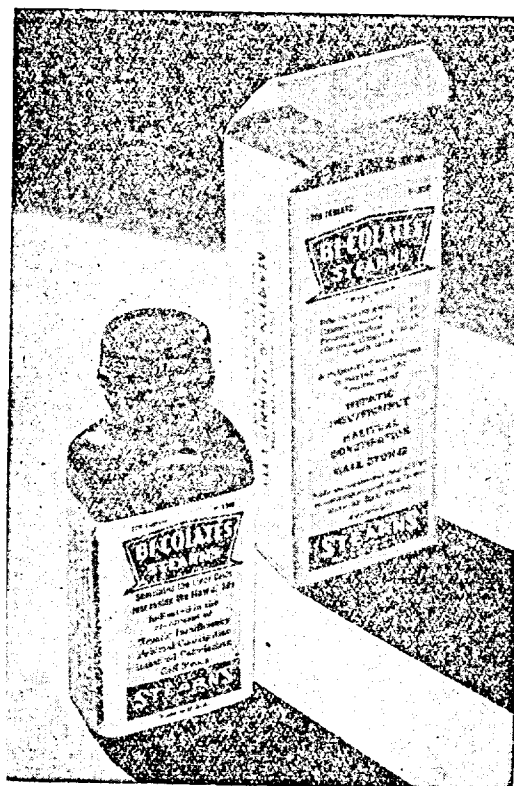
Extract from the
"Resolutions of the Inter-Governmental
Conference of Far Eastern Countries on
Rural Hygiene." Bandoeng, Java,
3rd-13th August 1937.

"...that wide distribution of quinine is a
public duty which, whenever and wherever
necessary, should be organised and paid for
by the State."

"The Conference further is in agreement
that the Cinchona derivatives remain the
drug of choice for mass distribution."

"QUININE is not only still the best and
safest remedy against MALARIA,

QUININE is also of proved value in the
prevention and cure of INFLUENZA."



BI-COLATES

(STEARNS)

DEPENDABLE CHOLERESIS and CHOLAGOGUE ACTION

A scientific combination of the bile salts,
Sodium Glycocholate and Sodium Taurocho-
late, with Cascara Sagrada, Phenolphthalein,
and Oleoresin Ginger.

Bi-Colates (Stearns) are particularly indicat-
ed in cases of hepatic insufficiency, either
functional or in association with early cirrho-
sis, catarrhal and other forms of jaundice,
bilious attacks, intestinal auto-intoxication
and the prevention and treatment of gall-
stones.

Bi-Colates (Stearns) are also indicated in all
conditions in which a true cholaretic and
cholagogue is required.

Manufactured by:

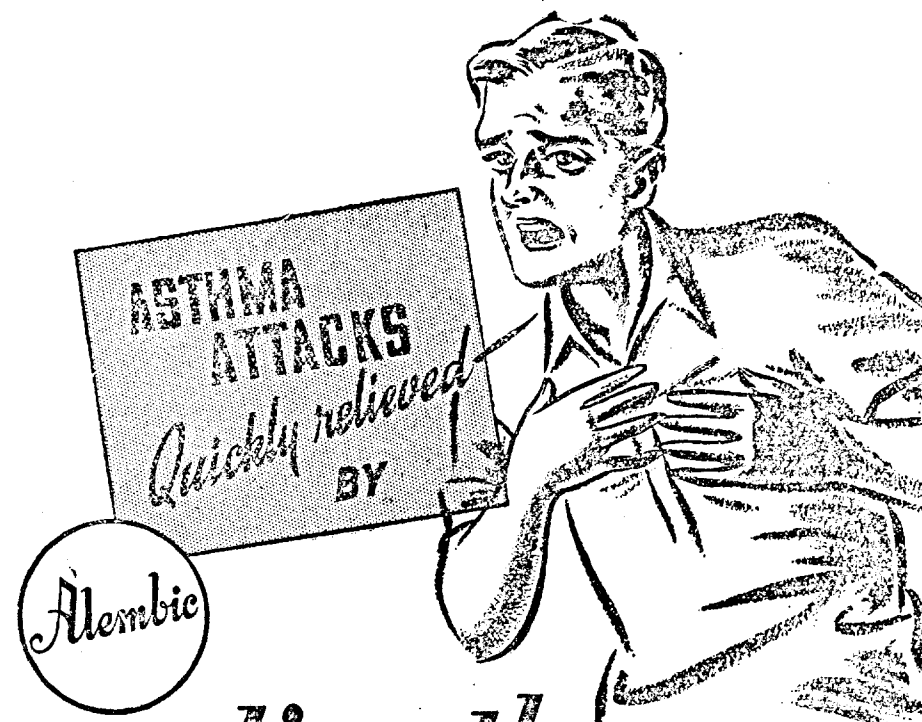
FREDERICK STEARNS & CO., DETROIT, U.S.A.

Sole Agents in India & Burma.

MARTIN & HARRIS LTD.,

CALCUTTA—BOMBAY MADRAS—KARACHI—RANGOON.

When writing to advertisers, please mention the "Antiseptic"



anti-asthma LIQUID

Thousands of Physicians
have found in this unique
compound an ideal remedy
for giving quick relief from
painful attacks of Asthma.
It liquifies and expels the
phlegm, clears the air pass-
ages and ends irritation.

INDICATIONS:

It is a rational remedy for Asthma, Spasmodic
Coughs, Chronic Bronchitis and other
Influenzal and Catarrhal Inflammation of
the Lungs.

COMPOSITION:

Each fluid drachm represents:

Liqr. Arsenicalis	1/4 Min.
Tinct. Lobelia Aether	1 1/2 "
Tinct. Belladonna	5/8 "
Tinct. Euphorbia	1 1/2 "
Tinct. Ephedra Vulgaris	20 "
Syrup. Vasaka	30 "
Liq. Ext. Euth	8 "
Potash Bromide	1 1/2 Gr.
Potash Iodide	5/8 "
Sod. Nitrite	1/15 "
Borax	1/4 "



Alembic Chemical Works Co., Ltd. Baroda

When writing to advertisers, please mention the "Antiseptic."

Discovery

The synthesization of Urea opened a new chapter in the treatment of disease. Even the remarkable development of chemo-therapy will not, of course, make experienced medical men abandon approved prescriptions, though they may be old fashioned.

This note, then, will serve to remind an over-worked profession, enthusiastic as it is as regards the new means of healing, that Hall's Wine is still the accepted tonic in many cases.



This tonic restorative is compounded from an original formula of an English doctor; it is based on a sound red wine, of full character, extra rich in iron salts, with added medicaments which greatly increase its calorific value. This tonic is assimilated without digestive activity, it improves the general metabolism and rapidly increases the haemoglobin content of the blood. A prescription of Hall's Wine has thus a dual effect:

* physically, it assists a weakened digestion, provides energy and tone and improves the circulation of the blood while enabling it to elaborate fresh haemoglobin.

* in treating nervous cases, the stimulus provided by Hall's Wine and its pleasant taste helps to convince the patient of his powers of rapid recovery.

Distributors: J. HALLEY & CO., LTD.,

P. O. Box 133,
Calcutta

P. O. Box 84,
Lahore

P. O. Box 34,
Karachi

P. O. Box 466,
Bombay

HW. 1718 A

When writing to advertisers, please mention the "Antiseptic"



A Menstrual Regulator...

When the periods are irregular, due to constitutional causes, ERGOAPIOL (Smith) is a reliable prescription. Containing superior ergot and apiol (M.H.S. special) together with aloin and oil of savin of the highest quality, this preparation effectively stimulates uterine tone and controls menstrual and post-partum bleeding.

In cases of Amenorrhea, Dysmenorrhea, Menorrhagia and Metrorrhagia, Ergoapiol serves as a good uterine tonic and hemostatic. Valuable in obstetrics after delivery of the child and for the menstrual irregularity of the Menopause.

Prescribe 1 to 2 capsules 3 or 4 times daily. Supplied only in packages of 20 capsules. Literature on request.

As a safeguard against imposition the letters MHS are embossed on the inner surface of each capsule, visible only when the capsule is cut in half at seam as shown.



BACTERODIN

For Solid Defence

Please write for our
illuminating literature
for detailed description

LISTER ANTISEPTICS
CALCUTTA

This specialised non-specific protein therapy rapidly mobilises the natural defence forces in our body by stimulating the reticulo endothelial system and helps to combat infectious diseases and diverse inflammatory conditions. Bacterodin does not give rise to unpleasant by-effects.

Hewlett's Mixture

(Mist. Pepsinae Co. c. Bismutho, Hewlett's)

OVER 60 YEARS' REPUTATION

Useful in all forms of DYSPEPSIA, especially when PYROSIS is a conspicuous symptom, and all DISEASES OF THE STOMACH.

Dose: Half to one fluid drachm, diluted.

LIQ. SANTAL FLAV. c. BUCHU et CUBEBA

(Hewlett's)

This preparation, containing three remedies of proved efficiency in certain cases, has been prescribed with extraordinary success.

Dose: One to two drachms in water or milk.

"HEPATAGEN"

A general aperient and cholagogue, specially recommended in BILIOUSNESS, HEPATITIS and chronic GASTRITIS.

Dose: 10 to 60 minims according to age.

MIST. DAMIANÆ CO.

(Hewlett's)

A nerve tonic and stimulant. Confers renewed capacity for mental and physical endurance in many diseases where there is great exhaustion.

Dose:

One to two drachms, diluted.

MIST. SENECIO CO.

(Hewlett's)

A general uterine tonic and alterative, which has been found to be of the greatest value in long-standing cases of uterine disease.

Dose:

Half to four drachms.

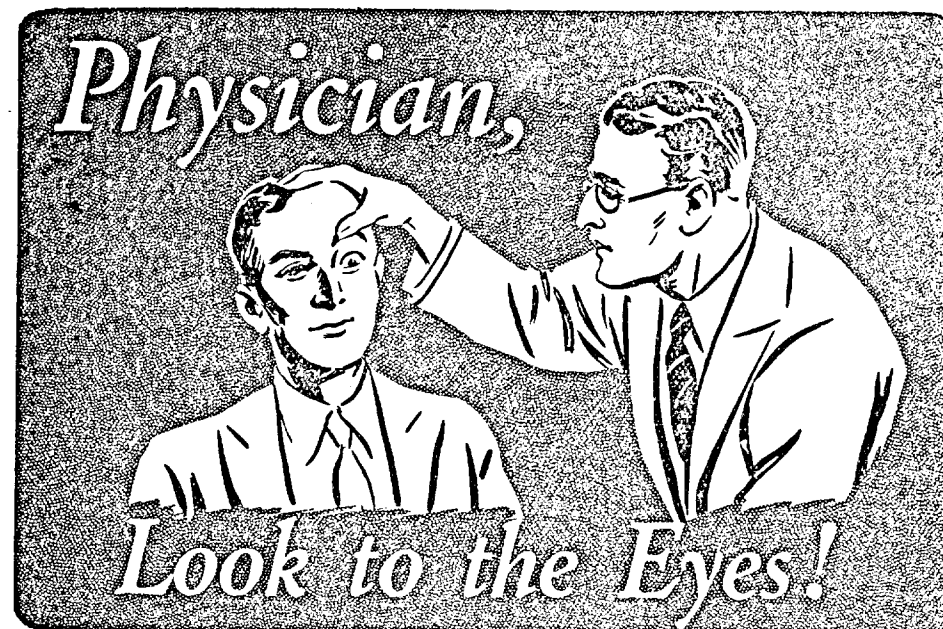
Introduced and Prepared only by

C. J. HEWLETT & SON LTD.

Wholesale Druggists and Manufacturing Chemists

35-43, Charlotte Road, LONDON, E.C.2

When writing to advertisers, please mention the "Antiseptic"



WHEN treating patients suffering from eye affections, the doctor must not only overcome the disease but must also quickly overcome that almost panic fear of the layman: "Am I going blind?"

For this reason Crookes' Collosol drugs are particularly valuable in ophthalmology. They quickly soothe the diseased or injured eye—or, where the treatment necessary unavoidably entails irritation—they cause less pain than when drugs in other form are employed. This is because col-

loidal form ensures a remarkably fine state of sub-division, giving that freedom from any suggestion of grittiness or coarseness so essential in all treatment of the eye.

Some Common
EYE AFFECTIONS
and their
TREATMENT
A booklet dealing with
the treatment of some
common eye condi-
tions will gladly be
forwarded, on request,
to any member of the
medical profession, by
our Bombay branch.

FOR THE
TREATMENT OF
Wounds of the Cornea,
Sclerotic or Conjunctiva
Conjunctivitis
Interstitial Keratitis
Blepharitis
Dacryo-cystitis
Adwt Gonorrhoeal Ophthalmia;
Purulent Ophthalmia
in infants
Ophthalmia Neonatorum
Collosol
ARGENTUM OPHTHALMIC
For
Trachoma
Certain Bacterial Affections
Collosol
CUPRUM OPHTHALMIC
For
Conjunctivitis
Ophthalmia Neonatorum
Purulent Dacryo-cystitis
Hypopyon Ulcer
Collosol Brand
MERCURIOCHROME
For
Styes
Meibomian Cysts
Abscesses on the Lachrymal Sac
All Suppurative Processes
Collosol
MANGANESE

THE CROOKES LABORATORIES (British Colloids Ltd.) PARK ROYAL, LONDON, N.W.10, ENGLAND
BOMBAY: 10 GRAHAM ROAD, BALLARD ESTATE

When writing to advertisers, please mention the "Antiseptic"

HYDROXY ERYTHRIN (Regd.)

SYNONIM

HYDROXY ANTHOCYAN (J. N. MISSRA.)

TO KILL TWO BIRDS WITH ONE STONE

USE

Hydroxy Erythrin—Synonim-Hydroxy Anthocyan (J. N. Missra)—is a wonderful discovery in the modern Medical World for the most satisfactory treatment of **Tuberculosis** of all types and **Asthma** of various dispositions. It works miracles even in the most chronic and obstinate cases where other treatments fail. It is the saviour of lives of the dying millions of India, nay, the **World**. It has the double functions of curing and preventing.

Dr. S. M. Namasivayam of Salem writes—"On studying the chemical compositions and natural contents of Dr. J. N. Missra's "Hydroxy Erythrin", I tried it as per the technique advised to a patient of mine of long standing **Asthma Bronchial**, which had resisted so many other forms of treatment including Auto-Hæmotherapy and Tuberculin injections. As if by a miracle, the patient was completely relieved in about two months and is free even after two years.

Then on finding that it had given a complete cure, I gave it to six more Asthmatic subjects and they are all now doing well. Now I am using it as a regular finishing up remedy to bring about a cure in **Asthma**.

Incidentally, I may add that the same medicine has completely cured my niece of **Tubercular Cervical Glands** which had recurred twice even after the use of other remedies."

Write for literatures to-day.

To be had from:—**GALLENO PHARMACEUTICAL WORKS,**

T. O. & P. O. Waini, Ry. St. Pusa Road, B. N. W. Ry. Dist. Darbhanga. BIHAR, (INDIA).

Main Stockists:—Messrs. SRI KRISHNAN BROS., 323-24, Thambu Chetty St., Madras.

Messrs. E. STELLA & CO., Marshall's Building, Ballard Road, Bombay.

LEXIN THERAPY

NEWER USES OF LEXIN

Snake-bite: Lexin inhalation and injection.

Opium Poisoning: Lexin inhalation and intravenous injection 1 c.c. to 4 c.c. Repeat as required.

Influenza: Put a few drops on handkerchief and inhale deeply for a few minutes; repeat every now and then till relief.

Hysteria } Inhale as above; or put a drop or two into nostril; this breaks
Epilepsy } the fit.

Cholera: Inject 2 c.c. intramuscularly, repeat every hour if necessary. If no pulse, inject 1 c.c. intravenous.

Collapse: Intravenous injection 1 c.c.

Trauma and } Intravenous injection 1 c.c.
Surgical Shock }

Bleeding from any orifice: Inject 2 c.c. intramuscular or 1 c.c. intravenous.

Asthma: In extreme dyspnoea—inject 2 c.c. intramuscular; after 1 hour 2 c.c. intravenous. Only one injection gave prompt relief and permanent cure in many cases.

Pains of Cancer: Inject 2 c.c. intravenous.

Prices: **LEXIN** bot. ½ oz. Re. 1-8-0.

Box of 6 ampoules × 2 cc. Rs. 3.

P. BANERJI, Mihijam, India.

Agents: **SRI KRISHNAN BROS., P. O. Box No. 166, MADRAS.**

When writing to advertisers please mention the "Antiseptic."



DOCTORS
OF REPUTE
prescribe
THE TONIC
OF REPUTE

ZANDU RAKTO-PHOSPHO-MALT, a valuable tonic and powerful stimulant to the blood forming organs and to the functions of nutrition. It supplies phosphorus to the system and its glycerophosphates help the absorption and promote assimilation of organic phosphates by the neuron system and thus act as cell food for the nerves.

In the treatment of weak digestion and corresponding faulty nutrition **RAKTO-PHOSPHO-MALT** will act as a very effective tonic and stimulant to the digestive tract.

Hæmoglobin places **RAKTO-PHOSPHO-MALT** first amongst "Digestive-Nutritive-Recuperative Tonics" and the inclusion of Drakshasava gives it the advantageous Alterative and Diuretic properties.

Indications:

General Debility, Convalescence from exhausting and acute Diseases, Atonic Dyspepsia, Hypoacidity and an acidity of the stomach, Neurasthenia, Exhaustion, Mental worry, Bronchitis, Bronchial Asthma, old age, debility.



the tonic of repute.

The Zandu Pharmaceutical Works Ltd.,
Gokhale Road, BOMBAY, 14.

Can be had from our Authorised Agents all over India.

When writing to advertisers, please mention the "Antiseptic"

UPJOHN
JECULIN
 FLUID AND CAPSULES

For convalescence and suboptimal nutritional states associated with secondary anemias.



Jeculin has proved highly effective in the correction of anemia and suboptimal nutritive states; in convalescence from infectious diseases and surgery, it hastens the return to normal strength and vigor; during pregnancy and lactation, it provides essential vitamins and iron in a readily assimilated form. Pleasantly flavored and palatable, Jeculin is popularly accepted by children and adults alike.

Jeculin fills the need for a reconstructive agent so frequently encountered in daily life. When hemopoietic and tonic medication is needed Jeculin produces rapid subjective and objective response. Its iron, being in both organic and inorganic form, asserts a powerful stimulus on hemoglobin formation. In addition, since it is an excellent source of the important accessory food factors found in liver, Jeculin aids in restoring the appetite and contributes to physical well being.

The usual dosage is two to four teaspoonfuls three times daily after meals.

Jeculin is also supplied in capsule form, one capsule being equal to one teaspoonful of the liquid.

JECULIN is available as a fluid in bottles of 8 oz.
 and 24 oz., and in capsule form in bottles of 84.

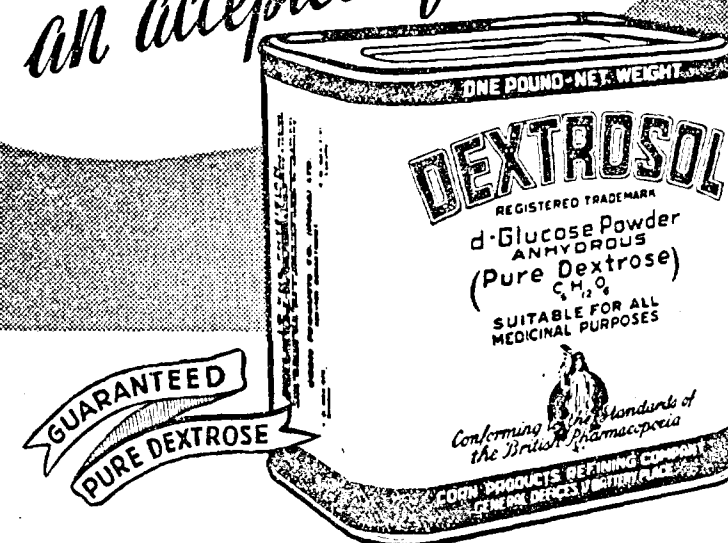
Sole Agents:—

T. M. THAKORE & COMPANY,
 1/10 & 1/10 A, Stringer's St., G. T., Madras.
 Head Office: 43, Churchgate Street, Fort, Bombay.
 Branches: Calcutta, Karachi, Lahore, Nova-Goa, Rangoon.

Manufactured by
THE UPJOHN COMPANY
 KALAMAZOO MICHIGAN
 Makers of Fine Pharmaceuticals Since 1866 U. S. A.

When writing to advertisers, please mention the "Antiseptic."

Once a chemical curiosity
NOW
an accepted fact!



PURE DEXTROSE was for long nothing more than a chemical curiosity but years of exacting research have removed this disability and Dextrose in its PUREST form is now available under the brand name of "DEXTROSOL".

Dextrosol is of guaranteed B. P. quality and is 99.8% pure. It is pre-eminent for use wherever conditions call for the administration of glucose, orally, intravenously or by ANY other method.

DEXTROSOL

Further particulars and booklet "Advances in Treatment with Dextrosol" from
 CORN PRODUCTS CO. (INDIA) LTD., P. O. Box 994, Bombay.



"It doesn't hurt now!"

In abrasions and other soft tissue injuries, Antiphlogistine may be applied warm or at room temperature. There is no sting or pain on application. It may be used on the most sensitive parts.



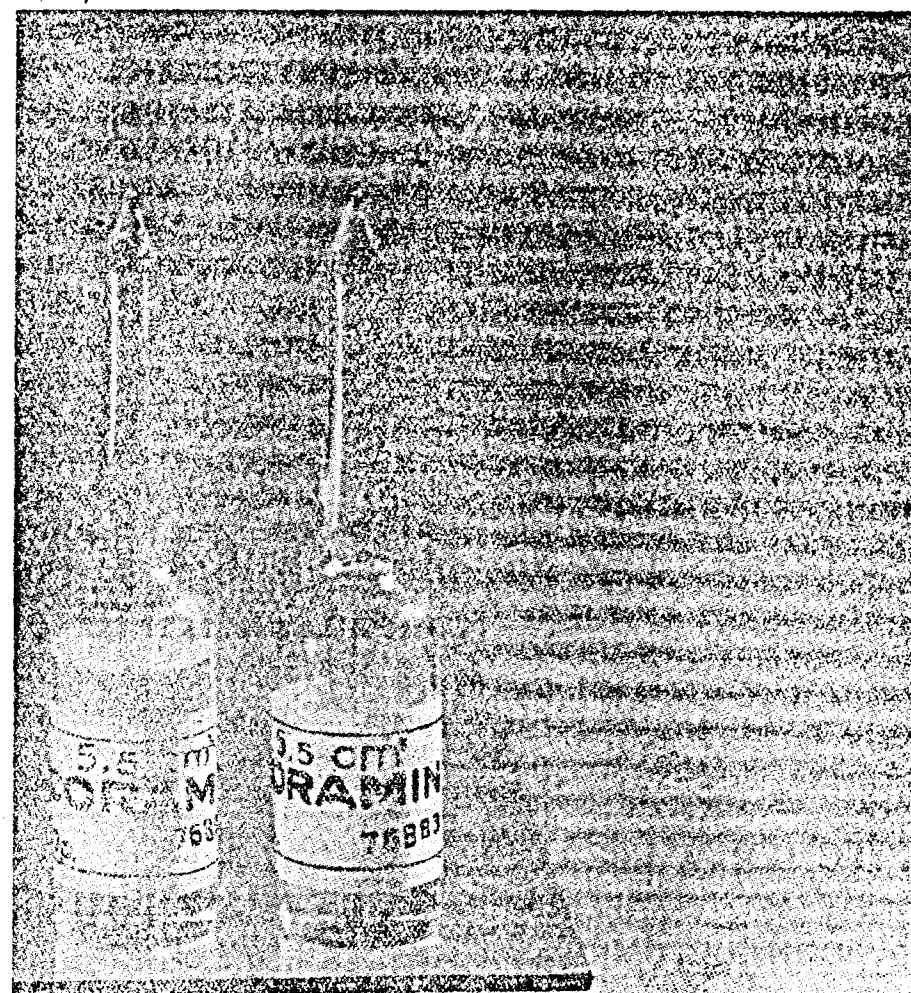
ANALGESIC • BACTERIOSTATIC • DECONGESTIVE • DETERGENT

Antiphlogistine

is kind to injured tissue

The Denver Chemical Mfg. Co., 163 Varick St., New York

Agents in India:—MULLER & PHIPPS (India) LTD., P. O. BOX 773, BOMBAY.

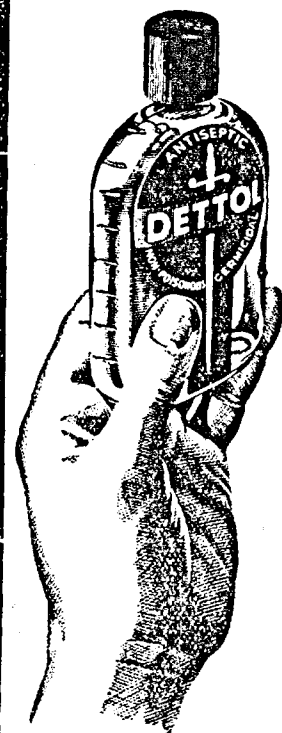


At the critical moment

Coramine!



CIBA (India) LIMITED,
Pharmaceutical Department,
P. O. Box No. 479, BOMBAY.



High germicidal efficiency without danger

'DETTOL' can be used at really effective strengths without danger, discomfort or staining—a marked superiority over carbolic and cresylic antiseptics. It is thus a most useful disinfectant for first aid at home, for personal hygiene, and for gargling and bathing. 'DETTOL' maintains high bactericidal efficiency in the presence of blood, pus and other organic matter, and is the antiseptic now widely used for all obstetrical purposes. 'DETTOL' is a clean, clear fluid, non-poisonous and non-staining, with a distinctly pleasant smell.

'DETTOL'
THE MODERN ANTISEPTIC

Send a postcard for free literature to:
ATLANTIS (East) LTD., (Dept. V. 9) 20/1, Chetla Road, Calcutta.
Marketing Agents for Reckitt & Sons, Hull & London, England

PITCHER WATER
A GREAT AMERICAN REMEDY
A BOON TO WOMEN

A safe and perfect remedy to cure Miscarriage, Morning Sickness, Vomiting, Habitual Constipation, Nervous Disorders, Toothache, and abdominal Pains during Pregnancy. It regulates fountain of Health.

Most Effective and Harmless
Remedy for Barrenness.

Can be had at all Chemists:

Manufacturers:—

THE PITCHER WATER MFG. CO

Wholesale Distributors:—

NAROTAM GIRDHAR & CO.
Sheikh Memon Street, Bombay No. 2.

FOR
INTRAVENOUS
USE OF
STERILISED GLUCOSE
SOLUTION

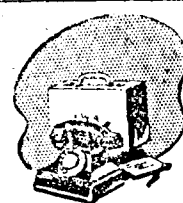
Mention '**VAX**' for they are the best and the safest.

REACTIONS like chill, pyrexia etc. are almost absent on their administration.

Sample to the profession on request to:—

VAX-INSTITUTE,
ULTADANGA, CALCUTTA.

When writing to advertisers, please mention the "Antiseptic."



From one Doctor to another...★

**A reliable counter-measure
against weakness and exhaustion
in post-operative treatment
and convalescence.**

To overcome the prostration after operations and rebuild strength and vitality in all subnormal conditions, WINCARNIS is a most valuable ally. In such cases it is frequently necessary to coax the patient back to health; to rekindle in a weakened system that will to recovery which is so necessary for a speedy return to health. It is here that WINCARNIS is particularly helpful. Extreme palatability renders it acceptable to the most reluctant appetite; it is easily digested and readily assimilable; the gentle stimulation acts as a spur to enfeebled gastric functioning. Easily, swiftly, with no conscious effort on the patient's part, WINCARNIS supplies nourishment and vitality. Interest in life is re-awakened; a healthier out-look promotes rapid recovery.

WINCARNIS is a combination of pure matured red wines with strengthening elements and Vitamin Malt extract (Vitamins A and D). It is constant in comfort and may be safely prescribed in all cases of enfeebled vitality. A wineglass or two a day is the customary prescription.

*One of a series published by the
proprietors of WINCARNIS—the tonic wine*

COLEMAN & CO. LTD., WINCARNIS WORKS, NORWICH, ENGLAND

WINCARNIS ★ over 25,000
recommendations from Medical Men

IM/W/119

When writing to advertisers, please mention the "Antiseptic".

OVER ACIDITY & STOMACH

Troubles



This effective and very valuable antacid will relieve over-acidity, dyspepsia, indigestion, irritation and ulceration of the stomach, nausea and pain after food, intestinal fermentation and putrefaction etc.

It is a well-balanced combination of Carbonates of Calcium, Magnesium Peroxide and Pancreatin, in a soothing and absorbent Kaolin base.

CARBO-KAOLIN IS ALSO AVAILABLE WITH BELLADONNA

ALEMBIC CHEMICAL WORKS COMPANY LIMITED BARODA

When writing to advertisers, please mention the "Antiseptic"

HORLICKS

gives excellent results

in all conditions associated with under nutrition and in which tissue building is called for.

Horlicks is pure fresh cow's milk combined with the nutritive extracts of wheat and malted barley. Fifteen per cent of its caloric value is derived from protein much of which is ready for direct assimilation. Horlicks is readily digested and absorbed and easily utilized in the body. Its mixed carbohydrates — lactose, maltose and dextrin — are well tolerated and possess considerable protein-sparing value. An outstanding result of certain tests with Horlicks was the speed of its effects upon metabolism.

In cases of typhoid and other continued fevers, Horlicks can be prescribed with advantage.



When writing to advertisers, please mention the "Antiseptic"

HÆMATOLOGICAL TECHNIQUE

By L. EVERARD NAPIER, F.R.C.P., (Lond.)

and

C. R. DAS GUPTA, M.B. (Cal.), D.T.M.

Calcutta School of Tropical Medicine.

Price Rs. 3 inclusive of postage in India

CONTENTS: PART I.—The Collection of the Blood Sample; Estimation of Hæmoglobin. PART II.—Enumeration of Erythrocytes in the Peripheral Blood; Enumeration of Leucocytes. PART III.—Enumeration of Reticulocytes; Enumeration of Thrombocytes. PART IV.—Determination of Corpuscular Volume. PART V.—Hyperbilirubinæmia and Vanden Bergh's Test. PART VI.—The Making and Staining of Blood Films. PART VII.—White Cell Differential Count; Cell Identification; Technique of Sternal Puncture. PART VIII.—The Arneth and Schilling Counts; The Erythrocyte Sedimentation Rate. PART IX.—Gastric Analysis. PART X.—The Red Cell Fragility Test; Procedures Employed in Investigating Hæmorrhagic Diseases. PART XI.—Red Cell Diameters; Price-Jones Curve.

THACKER, SPINK & CO. (1933), LTD.
P. O. Box 54, CALCUTTA.

FILARIA

However dreadful and obstinate,
our famous

"ARSENO-TYPHOID"

is a harmless, and excellent
remedy for filarial Scrotum, Legs,
etc. Goods obtainable from all
Chemists.

Particulars from:—

**CALCUTTA CLINICAL RESEARCH
ASSOCIATION, LTD.,**
6, Chowringhee Road, Calcutta.

JOURNAL OF THE Indian Medical Association

EDITED BY

SIR NILRATAN SIRCAR,
KT., M.A., M.D., D.C.L., ETC.

WITH THE HELP OF

A STRONG ALL-INDIA EDITORIAL
BOARD

*The Official Monthly Publication of the
Indian Medical Association.*

Features:

1. Original Articles. 2. Case-Reports.
3. Society Proceedings. 4. Valuable
abstracts from leading Medical
Journals from all over the world.

Published on the First Day of the Month

Annual Subscription Rs. 6 post free.

*Free to members of the Indian Medical
Association.*

AN EXCELLENT MEDIUM FOR ADVERTISEMENT

*For particulars write to Secretary,
Samavaya Mansions, Calcutta*

When writing to advertisers, please mention the "Antiseptic"

SULPHONAMIDE-P

(SULPHANILAMIDE)

Sulphonamide-P is effective over a wide range of infections, especially those of streptococcal, meningococcal and gonococcal origin, and has been used with success against *Bact. coli*, *Proteus ammoniæ*, and other infections of the genito-urinary tract. It may also be of use in gas-gangrene and possibly in early cases of typhoid and paratyphoid fevers. Its use has also been suggested in the treatment of trachoma.

'Tabloid' Sulphonamide-P, 0.5 gramme, is available for oral administration. It presents Sulphonamide-P as a 'Tabloid' product of traditional quality and precision in manufacture, possessing therapeutic efficiency with comparatively low toxicity.

'Wellcome' Sulphonamide-P is available for oral or parenteral administration. Parenteral administration is indicated particularly when oral administration is impracticable as, for instance, when the patient is extremely ill or in a comatose condition.

TRADE MARK 'TABLOID' BRAND SULPHONAMIDE-P

For oral administration. Bottles of 25 products, Rs. 1-2; and 100 products, Rs. 3-10

TRADE MARK 'WELLCOME' BRAND SULPHONAMIDE-P

For parenteral or oral administration. Bottles of 25 grammes, Rs. 1-9; and 100 grammes, Rs. 5

Prices in Bombay to the Medical Profession (liable to fluctuation) subject to Medical Discount



BURROUGHS WELLCOME & CO., LONDON

(THE WELLCOME FOUNDATION LTD. INCORPORATED IN ENGLAND)

and Cook's Building, Hornby Road, BOMBAY

D 720 Ex.

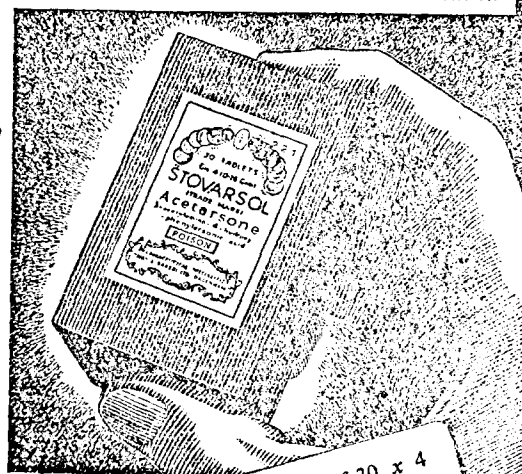
COPYRIGHT

When writing to advertisers, please mention the "Antiseptic"

STOVAR SOL

TRADE MARK

*The
Arsenical
with the
double
action*



Bottles of 30 x 4
grain tablets.

AMOEBICIDAL

STOVAR SOL has a well-established usefulness in the treatment of amoebic dysentery, effectively eradicating amoebæ and cysts.

TONIC

STOVAR SOL exerts a remarkably beneficial tonic action on the system and is of particular value in anaemic and debilitated states.



MAY & BAKER (INDIA) LTD
11 CLIVE STREET, CALCUTTA

When writing to advertisers, please mention the "Antiseptic"

Special Number on "Diseases of Old Age".

The Antiseptic

Estd. 1904.

A Monthly Journal of Medicine and Surgery.

Editors: Dr. U. RAMA RAU, M.L.C., & U. KRISHNA RAU, M.B., B.S.

Editorial and Publishing Offices: 323-24, THAMBU CHETTY ST., MADRAS.

Annual Subscription: Rs. 5; Burma—Rs. 6; Foreign—10 Sh.—Post Paid.

Vol. 38.

OCTOBER, 1941.

No. 10.

Changes Wrought by Age

BY

R. KRISHNA RAU, F.R.C.S.E.,

Andhra Medical College, Vizagapatam.

OLD age is an inescapable phase of life characterised by decay, disintegration, dissolution and death. It has been remarked that death is not a biological necessity. The arguments advanced in support of the contention are that, accidents apart, protozoa are immortal and that animal tissues admit of indefinitely being kept alive under favourable conditions in the laboratory. But death is an inevitable feature of animals advanced in the scale of creation. The plausible but unconvincing explanation that is offered is that death is the heavy price and penalty paid by them for their high degree of individuation, specialisation and intricacy of form and function. According to WEISMANN, the primordial germ plasma is continuously and successively passed on from one generation to the next. Around the germ plasma there develops in each generation a short-lived soma which serves as a vehicle for insuring its transmission and perpetuation. There are thus two fundamentally different kinds of protoplasm, the somatic protoplasm and the reproductive protoplasm, of which the former is transient and perishable while the latter is permanent and immortal. It is reasonable to suppose that no living substance can be truly and absolutely immortal. Somatic death is said to be a character of advantage to the species as a whole acquired through natural selection.

The psalmist's span of life is three score and ten. The vedic span extends over a hundred autumns. Adam, Methuselah, Tared Seth of the Bible and the Uttarakurus of India and other patriarchs are legendary and mythological personalities who are said to have lived for centuries. There are again authentic records of many centenarians such as Jenkins (169), Parr (154), Countess Catherine (140) Zortan (187). In the animal world the elephant, the tortoise and the phoenix are said to live for hundreds of years. They are emblematic of immortality.

MONTAIGNE says that to read CICERO's essay on *Old Age* makes one long to grow old. (*Il donner l'appetit de vieillir*) CORNARO, CICERO, XENOPHON,

PLATO and others have painted rosy pictures of old age. ARISTOTLE who was perhaps more realistic wrote bitterly of old age, but even during the modern days, gerontocracy appears to be the rule. The cabinet and other administrative bodies generally comprise old men. It is so, because old age is the epitome and embodiment of ripeness, mellowness and maturity of wisdom, of the accumulated weight of experience and observation, of the contemplation and philosophical appraisal and assessment of the world about us, of quiet thinking and the creative possibilities engendered by it. The first joys of life are those of the belly and the sex, and the last ones, of the mind. Luckily, the brain functions efficiently even after other organs begin to wane and wilt away. But the commoner type of old age that is more frequently met with in every day is the miserable, crabbed and unhappy one representing the marred and stunted, wasted and wrinkled, thin and lean, bowed and bent, drooping and drivelling specimens of humanity that are pitied, tolerated and ridiculed by friends and relatives. Old age represents the sixth and seventh ages of man of Shakespeare,—the early and late old age, the autumn and the winter, the penultimate and the ultimate, the presenile and the senile periods of "the lean and slippered pantaloons with spectacles on nose and pouch on side and that of the second childishness and mere oblivion sans teeth, sans eyes, sans taste and sans everything".

Notwithstanding the terrible handicaps and infirmities and disabilities incidental to senescence, old people have a 'passionate, absorbing, almost blood-thirsty clinging to life'. It may be so because of the dread of the life beyond death, 'of the unknown bourn from which no traveller returns'. They seem to prefer to stoically 'bear all the ills they have down here than fly to others that they know not of'. Old age except in those lucky individuals who retain full possession of their physical activities and mental alertness is a tragedy. The person becomes unbeautiful and unattractive. He becomes divested of strength and stamina. The loss of good looks entails forfeits in social life. The erotic foundations of existence begin to collapse and crumble. Prolongation of a life of decrepitude is a misery. Death is a merciful termination in cases of gross physical and psychical wreckage.

OSLER speaks of the comparative uselessness of men above forty years of age and the almost complete uselessness of men above sixty. According to him, all the effective work is done between the ages of twenty five and forty. 'A man is sane morally at thirty, rich mentally at forty and wise spiritually at fifty'. He argues that all great advances have come from men under forty and that all great mistakes may be traced to sexagenarians. In a woman after sixty, her influence on her sex may be most helpful if aided by those charming accessories, a cap and a fichu". He himself anticipates opposition to his views but his observations apply to the majority of mankind.

The main aim and object of preventive medicine is to prolong the life of individuals. Improved methods of hygiene and sanitation have never increased the actual average duration of life. It continues to remain more or less the same. All that has been accomplished is just to raise the average longevity through the numbers of lives saved in earlier decades of life. 'More life in each year and more years in each life' is the motto and the goal of preventive medicine. The branch of geriatrics gives the necessary

direction and guidance for the prevention of the premature onset of old age. It may at the most mitigate, if not altogether ward off, the horrors and ravages of age.

The ardent advocates of rejuvenation by surgical and other methods hold tenaciously to the view that the interstitial gland occupies a dominant position in the physiology of mammalian life. The process of aging is not one of regression of the reproductive glands only but of all the organs of the body. Old age is an inevitable major involution. The span of life can by no means be made to flow backwards. Old age is an inevitable phenomenon. Rejuvenation and revivification run counter to the organisational plan of Nature. The onset of old age is due to the inadequate output of the entire endocrine mechanism. The principle of the operations is based on an incorrect understanding and appreciation of the physiological working of the human body. The results of operations have not been encouraging.

The life cycle of man is one of progressive evolution followed by a gradual involution. It comprises the phases of ascent, peak and descent. These are the periods of infancy, childhood, youth, maturity and age, each having its special characteristics of form and function. The progressive phase, culminating in the plateau of maturity, is one of anabolism and integration; and the regressive one is that of katabolism and disintegration, a reversion to simplicity of life—the period of second childhood.

Morbid Anatomy and Aetiology of Old Age.—Advocates of rejuvenation, as has been remarked before, ascribe old age to carency (inadequacy or lack of the sexual hormone.) Aging, according to RUZICKA, is a process of condensation of the tissues attended with a diminution in the amount of water they contain. In youth, the individual cell elements have considerable interspaces and therefore have a low degree of condensation; and as age advances, the cells and particles become more closely aggregated leading to a steady deterioration in the nutrition of the cell. SEIGMUND likens the condition of the tissues to that of a furnace choked with cinders. There is numerical atrophy of cells of the body with fewer mitoses. The highly specialised parenchymatous tissues become replaced by the less organised connective, adipose or myxomatous tissue. The process therefore is one of condensation of chromatin, pyknosis, vacuolation and infiltration of lipid droplets and pigments. The vascular changes comprise collapse, obliteration, fibrosis and reduction in the number of muscle cells and of the elastic tissue. BROWN SEQUARD lays considerable stress on sclerosis of the blood vessels as an important factor in the process. METCHINKOFF attributes senescence to intestinal stasis and putrefaction. VICTOR HORSLEY is of opinion that degeneration of the thyroid is the predominant cause of old age. Thyroid sets the tempo for life. Senescence has been defined by MINOR as an increase in the differentiation of protoplasm. Old age and death are, according to him, natural processes inherent in the cell. Prolongation of life after the cessation of the principal biological function of propagation of life is a distinct disadvantage. LORAND says that death is a definite physiological entity and not a pathological one, as is generally thought by some. Impaired oxidation and combustion are stressed by WARBURG to be the special features characteristic of old age.

Potential longevity is said to be determined by the relative velocities

of anabolism in the cellular and sclerous tissues respectively. After everything is said, the grand arcanum, the elixir *vitae*, lies in barring the potent but inexplicable influence of heredity, leading a life of moderation and abstemiousness, a regulated life with a slow tempo, a life free from cares worries and anxieties. Disposition and temperament greatly conduce to longevity. A temper that is placid and imperturbable, a temper that is not easily ruffled and agitated—*aequanimitas*—is the essence and keynote of longevity. The majority of people are fidgety and easily upset by trifles.

The changes met with in old age affect all the tissues and organs of the body derived and differentiated from the three embryonic layers. The principal tissues originating from the ectoderm are the epidermis and its derivatives, nervous system, epithelium of the organs of special sense, the enamel organ of the teeth and others. The skin gives an indication of the age of the individual. It becomes rough, scaly, shrunk, wrinkled, flaccid and hangs in loose folds. The dryness is due to diminished secretion of the sweat glands. The wrinkling is brought on by absorption of fat and atrophy of the subcuticular elastic and muscular tissues. There are again changes in the tension and tint of the skin. The latter is due to deposits of pigment. The 'pes corvus' is due to puckering of the skin of the outer side of the orbit in which are inserted the temporal fibres of the orbicularis oculi. In the obese type, there is deposition of subcutaneous fat. The nails become soft and brittle. Hair is sparse, grey, rough and lustreless. "Hairs make fallible predictions and many temples early grey have out-lived the psalmist's span of life"; (ROLLESTON). "Hasty grey hairs without baldness is a token of long life, contrarily, if they be accompanied by baldness (LORD BACON). Whitening of the hair is due to the distinctive action of the phagocytes which remove the pigment. Mouth becomes parched owing to failure of secretion of the oral glands. Tongue is coated and furred. The greying is seen first in the temples and thence extends on to the other portions of the scalp. The hairs on the chest are the next to whiten; and this is followed by greyness of the hairs of the forearms and other parts of the body.

Teeth and Jaws.—Though the enamel organ alone is ectodermal in origin, the masticatory apparatus is dealt with as a whole under this heading. The teeth as a rule drop off from their sockets as a result of pyorrhoea. The alveolar margins undergo absorption. The angle of the mandible becomes obtuse owing to the edentulous character of the jaws and to the necessity for the approximation of the lower arcade with that of the upper jaw. The mental foramen is situated nearer the alveolar margin. The coronoid and condylar processes form a more open angle than that in the adult. The toothless jaws give rise to the peculiar nutcracker aspect to the face.

Nervous System.—The nerve cells in the brain and spinal cord become small, degenerated and pigmented. The brain as a whole weighs less. Senile softening of the brain is due to impaired vascularity in the vulnerable zone intervening between the terminations of the two separate systems of cerebral vessels, the cortical and ganglionic. Forgetfulness of names is the first sign that is observed. Memory plays the most extraordinary tricks. The expressions frequently interspersed in the course of conversation such as "Thingummy? Thingumbob? What d'you call him? Mr. So and So?" obviously betray the incipient failure of memory. In later years, there

is amnesia for recent events. Peculiarly enough, old people vividly remember incidents relating to the earlier years of their lives. They delight in narrating their recollections and reminiscences of their juvenile days. 'The surest sign of dotage is anectdotage.' Mental fatigue sets in earlier than usual. Sustained attention and concentration for long periods becomes difficult. There is a morbid and strange blunting of the emotive sphere. It looks as though the hearts of old people get hardened and inured to woes and sorrows.

Sleep:—Sleep is, as a rule, disturbed at nights. It tends to become polyphasic. Insomnia is associated with high arterial tension. Sleepiness in age and sleeplessness in youth are said to be ominous and portentous signs of impending disaster.

Special Senses:—Changes in the periphery of the crystalline lens cause presbyopia which usually sets in at about forty. It is prematurely brought on by intestinal toxæmia. The field of accommodation becomes narrowed from fourteen dioptries in the nursling to twelve at the age of twenty, seven at thirty, four at forty, two at fifty and less than one at sixty. The lens, which is ectodermal in origin, shares in the degeneration of the other ectodermal derivatives. It becomes opaque and cataractous. Arcus senilis is by no means an invariable accompaniment of old age, nor does it appear only in the senile. A good many of the cases of premature arcus are due to uncorrected errors of astigmatism. Impairment of hearing is of the nature of a chronic progressive labyrinthine deafness due to atrophy of the terminals of the acoustic nerve. The sense of smell is closely associated with that of taste. The impairment of these is less noticeable than those of the other organs of special senses.

The mesodermal derivatives are concerned with circulation, locomotion and excretion. The skeleton and the connective tissues are also mesodermal in origin. The important changes are met with in the heart and blood vessels. Myocardial insufficiency is a part of the general senile process of atrophy. The various forms of morbus cordis are hypertrophy and dilatation more often of the left ventricle, coronary thrombosis and embolism, myocardial infarction, angina and arrhythmias. Cerebral arteriosclerosis is the cause of hæmorrhage, psychical degeneration and senile dementia. Increase in blood pressure is met with between the ages of fifty and seventy. It may be followed by a fall in the blood pressure. Varicosity, hæmorrhoids, tortuous temporals, hard and thickened arteries are the usual vascular changes of old age. That 'A man is as old as his arteries' is the oft-quoted maxim of CAZALI. Apoplexy is one of the principal causes of death in old age. There is an intimate inter-relationship between the kidneys and the heart. Nephritis and nephrosis are common accompaniments of old age.

Skeletal System.—In old age, all the bones of the body become lighter in weight, brittle and less dense. The compact layer of the long bones, which is thick, dense and eburnine in youth, becomes thinner in middle age and a mere shell in old age. This leads to a considerable increase in the size of the medullary cavities. This atrophy predisposes to fractures. The commonest fracture in old age is that through the neck of the femur caused by mere slipping off a kerbstone.

Skull:—The changes met with in the skull are synostosis and closure

of the sutures first seen on the inner table of the skull. Ectocranial closure begins from about the age of fifty. There is a tendency to the absorption of the diploe; the dura becomes more firmly adherent to the inner table; the air sinuses become enlarged and extended. There is a diminution in the height of the vault with a synchronous increase in the cranial width. Forehead recedes. The tabular part of the occipital becomes flatter. The upper jaw retreats while the mandible gives an apparently greater prominence to the chin; joints become stiff and disobedient; muscles less springy and supple. Rheumatoid arthritis is the common cause of the bowed back of old age. Cartilages of the ribs and larynx become ossified.

The tissues of entodermal origin are the epithelium of the pharynx and its derivatives. Loss of teeth results in deficient mastication which is a necessary pre-requisite to efficient digestion. Well-fitting dentures make up to some extent for the loss of natural teeth. Appetite does not seem to be much impaired at least in early old age so that dietetic indiscretions are not unoften committed by them. Diabetes usually ends the chapter especially in those given to the pleasures of the table. Spasm of the bronchioles is a disorder of the autonomic system. Chronic bronchitis, asthma and emphysema are sometimes met with in old people. Pneumonia is described by OSLER as 'a friend of the aged' as it quickly relieves from the otherwise 'cold gradations of decay' and lingering death by inches.

Reproductive System.—Potentia coeundi mostly fails as a rule. Potentia generandi in the sense that spermatozoa are found in the seminal fluid may be retained till a late age. The dartos loses its tone; the scrotum becomes flaccid and pendulous. The testes become small and soft. Orgasm is difficult to achieve. The erections become fugitive with a tendency to ejaculation ante portam. There is not much libido. Sexual neurasthenia may follow impotence. Prostate undergoes involution. The term prostatic hypertrophy is applied to the various changes in the structure and function of the prostate in old people. It becomes hard and inelastic. It is the cause of nycturia and disturbed sleep. Many and various are the complications and sequelæ of this troublesome condition. Some people take to drink as an aphrodisiac without knowing that, though it creates the desire, it takes away the performance.

Climacteric:—The menopause in women has been appropriately described as physiological castration. Some are of opinion that there is no such thing as a climacteric in man. Others aver that there is a well recognised stage in man which comes on at a variable age. The changes in the reproductive system of women are due to shrinkage, atrophy and induration of the uterus and its adnexa and narrowing of the genital canals. Menstruation usually ceases between the ages of forty and fifty; wide variations are met with. The mammary glands share in the general major involution. There is no parallel to Steinach's operation in the female. No attempts appear to have been made for rejuvenating the female.

Progeria is a condition where the child skips adolescence, maturity and manhood and passes on to senility. A boy at eleven or twelve looks like a wrinkled and stunted old man.

Summary and Conclusion.—A brief account has been given of the

changes met with in the tissues and organs of the body in old age. Man is mortal. Old age is inescapable. The path of wisdom lies in facing old age and death cheerfully and in a mood of calmness and resignation. The onset of premature old age can be delayed by plain living and high thinking. Its advent is hastened in the votaries of the hedonistic philosophy of life and zealous devotees of Bacchus, Venus, Mars, Vulcan and Epicurus whose life is one of incessant round of sensual pleasures and enjoyment.

I wish to express my thanks to Drs. Mathew and Sitarama Rao for the help rendered by them in the preparation of this article.

References :

1. Schmidt, P.—Conquest of Old Age, 1st Edn., 1931.
2. Warthin, A. S.—Old Age—The Major Involution—The Physiology and Pathology of the Aging Process, 1st Edn. 1929.
3. Williams Leonard—Middle Age and Old Age, 1st Edn. 1926.
4. Sir H. Rolleston—Aspects of Age, Life and Disease, 1st Edn. 1928.
5. Cicero—Essay on Old Age.
6. Lyon's Medical Juris. for India—edited by T. F. Owens, 9th Edn. 1935.
7. W. G. A. Robertson—Manual of Medical Jurisprudence and Toxicology, 5th Edn. 1925.
8. Osteology and Arthrology—Quain's Anatomy. Volume IV, Part I, 11th Edn. 1915.

Maharani petta,
Vizagapatam.

The Aged Patient

BY

R. B. BILLIMORIA, B.A., M.D. (BOM.),

Bacteriological Laboratory, Bombay.

IN spite of the discoveries of PASTEUR and LISTER, people do not live longer. Perhaps it is the reverse compared with the past. Geriatrics is a special science and it must be given the same prominence as pediatrics. The aged, *i. e.*, those between the sixth and seventh decade or over, present quite unique problems, and the common conception that they are to be treated regarding the dosage of drugs etc. on the same standard as children, without any special consideration, is extremely fallacious. The aged have undoubtedly a low average of tolerance. In this respect, they are like an infant or a baby. But one must not forget that an infant is growing, has the greatest power of regenerative capacity, which is quite the reverse after the age of sixty.

An accurate and concise definition of old age, from a medical point of view, is a difficult subject. As defined in the Century Dictionary, it means the latter part of life. A medical man does not measure it by the number of years, but takes into consideration the infirmities, if any, with which an individual was born, his past illnesses, results of his mode of living, his indiscretions and what not, and last but not least, physical condition at the moment.

It has been aptly said that one of the prime factors of old age conditions in an individual dates back many years before he was born. The question of heredity, particularly in diabetes, atherosclerosis and heart conditions is a factor, which no medical man can afford to ignore. I have notes of a family where the history—going back to three generations—of cerebral hæmorrhage on the female side, and sudden death (coronary thrombosis) on the male side, had been handed down to all the members of the subsequent generations. Aging is as physiological as is growth, both being inherent in the germ plasma. It is a pity, when coming into this world, we cannot choose our ancestors. "To live long, one must select long-lived parents." Until someone successfully completes the quest of *Ponce de Leon* for the fountain of youth, degenerations in tissues must set in with time, and aging must be the result.

A scholarly and excellent description of the approaching senescence is given by BARKER: "Beginning with failure of accommodation in the eyes, change in the colour and abundance of hair, gradual loss of the teeth, diminution of sex potency and increased fatiguability, a whole series of other changes are prone, sooner or later, to become evident, until, if life continues long enough, the fully developed picture of senility is presented. The height is slightly reduced, the stooping posture is assumed, the body weight decreases, the bony prominences become more marked, the joints stiff and the muscles flabby, the skin is wrinkled and shows hyperkeratosis, the arcus senilis appears, the breast and abdominal wall become pendulent, the thorax grows rigid with shallow respiration and tendency to bronchitis, the arteries thicken, become tortuous and some what calcified, varicose veins and hæmorrhoids are common, digestion is slowed with diminution of hydrochloric acid in the gastric secretion, and with tendency to flatulence and constipation. In men, there is the difficulty in starting the flow of urine, and of complete emptying of the bladder owing to hypertrophy of

OCT. '41]

THE AGED PATIENT—R. B. BILLIMORIA

699

the prostate, atony of the bladder or both; the genitalia atrophy, the endocrine glands are less active and the sensory functions, motility, and co-ordination become more or less impaired."

Senility is a physiological entity like childhood and not a pathological state of maturity. The essential histological change is a waste, not a destruction, through damage of tissues, which are not replaceable by fresh tissues of the original type with the same physiological function, but by tissues of a lower order, requiring less blood supply and incapable of carrying on the function of the original tissues. Besides this, we cannot forget, that owing to the hardening of the blood vessels with greatly diminished elasticity, especially in the terminal arterioles, the amount of blood supply to the still present original tissues is markedly affected. Thus, even the existing original tissue is further handicapped with resulting lessened and even altered activity. One must as well give a serious thought to another very important factor *viz.*, the perversion to a lesser or greater degree according to the damage of the harmonious inter-relationship between associated functions of different organs, including those of the internal secretory glands, the importance of which is coming more and more to light with the recent advances in this branch of medicine.

Disease in an old person, then, is a pathological condition in an organ which is physiologically degenerated. The attempt at treatment is to restore such a diseased but physiologically degenerated organ to a state of normal senility and not to the condition normal in maturity. Naturally, drugs do not act upon such degenerated tissues in the same way and with exactly the same pharmacological effects as they do upon healthy or diseased tissues of maturity, leaving aside the equally important question, of the elimination, accumulation etc. of the drug from and in the system. Keeping these conditions in mind, one cannot repeat too often that, in the treatment of the aged, moderation on the part of the doctor is just as necessary as moderation on the part of the patient to prevent the wear and tear of the senile tissues. Resorting to drugs to retard the tissues from aging is nothing short of courting trouble.

That alcohol and tobacco are the causes of senile degenerations have received absolute rebuff at all hands. Moderate use of these and the like substances has proved their innocuousness; and in fact alcohol—whisky, is the main drug of value in the pharmacopœia for the aged, like opium and its alkaloids.

If anything has any share in increasing the rate and extent of senile degeneration, it is worry. Emotional stress, either business, political or domestic, is a far more potent cause than even excess in alcohol and tobacco. It is so aptly remarked by some one that the present international situation is going to kill more those at the helm of the State than the soldiers. "My life is in the hands of any rascal who chooses to worry and tease me," said John Hunter.

How worry works one cannot say. But we all know well by now that most body functions, from conception to death, are under the control of our glands of internal secretion and we know how mental factors—worries, anxieties, grief etc.—control these, particularly the thyroid. The gradual reduction in the energy production per surface area of the body in the aged suggests that the thyroid plays a very important part in this process of

aging, and, considering the wide inter-relations of thyroid with other glands of internal secretion (and even the secretory glands), one has to conclude that aging is a complex process, depending more on the geneology, the life career and the surroundings of a person than his own supposed misdeeds. Some one may argue about syphilis, but a syphilitic reaching the age of seventy is hardly syphilitic any more; at least, he does not suffer from the mischiefs of the spirochæte.

Just as we have a list of drugs for special consideration as to dosage, idiosyncrasy, toxicity etc. in pediatrics, so also we have a list for geriatrics, that is, the treatment of the aged. The commonest sedative for the psychological behaviour of the aged that one uses is a salt of Bromide. Indiscriminate use of this in a person with the increased permeability of his degenerated cerebral vessels, causes the drug to diffuse out more readily from the blood stream into the cerebrospinal fluid, which gets over saturated with the salt in a short time, and the consequent symptoms not being well understood by the medical attendant, are made still worse by further and higher doses of Bromide. The normal blood-bromide level to that of cerebro-spinal fluid of 3:1 cannot be maintained with degenerated cerebral vessels.

The drugs of the Barbiturate group require healthy kidneys for their elimination and so one has to be very careful in their use. At times, they act more as excitants.

Similarly, Cannabis Indica has more effect on the cerebral centres of hallucination. Atropine and hyoscyamus too behave similarly, besides carrying the risk of glaucoma. Digitalis often produces psychotic behaviour as an indication of cumulative effect or over-dosage. Quinine requires consideration because of its effect on the conductivity of the cardiac muscle. All renal irritants had better be discarded. I have seen great cerebral excitement, almost like acute delirium, after intravenous administration of Urotropin. The dosage of thyroid gland substance for myxœdema - a condition often met with in the aged, must be very small to avoid the danger of coronary thrombosis.

Whisky stands pre-eminently as the best sedative for the aged, and tops the list of useful drugs in geriatrics. Nothing can beat it in relieving the prolonged agonising pain of angina. Another most useful drug is Opium and its alkaloids:—Papaverin, Codeine and Morphine. A very good Chinese gentleman once remarked to me that taking very small doses of Opium after the age of forty is the secret of longevity. And we know the sedative effect on the mind at the age when the worry is at its highest, and hence on the blood-pressure, and the effect particularly of Papaverin on the coronary circulation.

CABBOT laid down three conditions as the commonest causes of death in the aged: (1) Cardio-vasculo-renal disease. (Congestive failure, cerebral-vascular catastrophe and uræmia.); (2) Malignancy; and (3) Terminal septicæmia (almost non-pathogenic, and germs of low virulence becoming virulent for tissues degenerated with very poor resistance.)

Malignancy, usually carcinoma, is much less active regarding its progress in the aged; and it is more often the mechanical interference with the growth than the growth itself, that gives symptoms. Thus, the diagnosis too is often a very late one.

Of all the diseased conditions which are characteristic specially of the aged, the most important is the psychological condition. However, much one may try to ignore, however much it may be an unpalatable thought, the fact remains that the brain, and particularly the mental factor, begins to degenerate when maturity has reached its height. The brain in the aged is affected in two ways:

(1) Affection of the brain substance as such, shown by diminished brain weight, thickening of the membranes, shrunken convolutions, widened sulci, dilated ventricles, and increase in the cerebro-spinal fluid; and,

(2) Two types of changes in the blood vessels: the progressive type, mainly due to syphilis, and the regressive type causing either (a) atheroma of larger vessels, or (b) colloid-calcareous degeneration, or (c) arteriocapillary fibrosis. And though one would so much dislike to acknowledge and accept it, these regressive changes must and will develop in the human brain when maturity has been reached.

To attempt to treat the underlying syphilis in the hope of curing the mental symptoms in the aged, is thus an impossibility. I remember how, quite recently, an attempt at vigorous antisymphilitic treatment in a man of 76 caused acute arsenical symptoms and death. But one can often expect some definite amelioration in the symptoms by attacking a focus of sepsis, the commonest site being either the urinary tract—pyelitis, or the teeth.

In all cases, the relatives require far more education than the patient. They must be made to realize that the change is a natural and normal one. An emotional storm has little depth and will pass off in no time; arguments are useless. It is no use trying to persuade him to give up his old environments. These patients will hardly ever consent to change their habits, old residence, political and other views, will always be complaining of want of attention. They constantly feel that they are neglected. They will be obsessed by the idea that people are after their money, and will keep on comparing, 'the good old days' with the present ones. One cannot expect "an old dog to learn new tricks", and so, it is desirable to keep these patients occupied, even though the outcome of that occupation be more destructive than useful. It is a great thing not to permit loneliness. Weariness, inertia, fretfulness, and unrest are then no more complained of. It is all well to say that the whims of the aged, due to mental deterioration should not interfere with the lives and the gaiety of the younger members of the family; but a tactful, considerate and humane attitude is the rightful claim of the aged which the younger members cannot deny. In India, where greater reverence had, till the last decade, been paid to the Fifth Commandment, and to break which was considered one of the greatest sins, it is unfortunate that, with the so-called political upheaval, false pride and a spirit of arrogance that are so universal a characteristic of the younger generation, should be mistaken for independence and free thinking. Tragedy for the older parents is thus becoming more tragic, particularly when you find euthanasia being boasted as the best solution that this generation can find in geriatrics. We have recently heard of this in Hitler's regime in his own country, and one fervently prays that the old spirit of devotion and self-sacrifice will be accepted by our younger generation with perfect submissive grace, thus setting an example to the West.

Another characteristic is that aged patients are more sleepy in

day time, with insomnia in the night, when whisky comes to their aid as a great comfort. Barbiturates make them more peevish and fretful, Bromides more excitable. It is worth while taking the hint of my Chinese friend regarding small doses of Opium.

Constipation may be due to atonic condition, and hard faecal masses may result, giving a dry dirty tongue with sordes, apathy, feverishness and symptoms like those of uræmia.

A low feverish condition must always arouse a suspicion of deep-seated pneumonia. Pulse and respirations give no indication, physical signs in a rigid thoracic cage are nil. An X-Ray picture alone can help, and by the time one thinks of that, the patient is beyond help. Pneumonia in the aged comes on "as a thief in the night". OSLER called pneumonia "the best friend of the aged", because the patient is carried away within a short time without much suffering, escaping those "cold gradations of decay" that make the last days of life a burden. We know that, if death is due to circulatory or renal failure, the patient's tissues are so well fixed for living and accommodating themselves to these altered conditions, that one has to give a very guarded opinion as to when the final curtain will drop. A young practitioner must not be in a hurry to call the relatives and children from far off places to attend at the supposed death bed. The end is prolonged, and prolonged in a way that one does say with OSLER that *pneumonia is the best friend of the aged*.

Slow, progressing cardiac failure can only be prevented by good, long periods of rest, restriction of over-eating and flatulence, and humouring the patient in order to save him from wasting his energy in arguments and discussions with consequent insomnia. "The dangerous age" in the elderly is between fifty and sixty, just as we have the dangerous age in the growing youth. It is at this period that they want to over-strain themselves, the out-come of their inferiority-complex. They do not want others to think that they are now growing old and infirm. They will climb steps rapidly, try to board a moving train or tram, lift up their own luggage as if to show the youth that they are still fit and perfect. What is saved at this period of the "dangerous age" will delay the miseries of cardiac failure later on. All our efforts must be to impress on our patient, the importance of temperance in all activities, habits, food etc. as well as in politics, discussions and what not. Degenerative arterial conditions cannot be prevented by restrictions in diet. I have seen the highest blood pressure in strict vegetarians. To allow these old patients to select their own food keeps them happy and contented. No drastic dental extractions can be permitted to suit the whim of some members of the profession that all the evils are due to pyorrhœa. Quite recently, I had the case of a female patient with complete mental apathy, not even swallowing food, with a very filthy condition of the mouth. Only a few days of very careful and frequent cleaning woke up the patient, so much so, she could recognise me having met me over 7 years ago. Bitter wines are excellent appetizers, along with Pepsin and vitamin B₁. A few injections, unless resented by the old man, of liver extract often surprisingly bring back the appetite. Sometimes, small doses of Digitalis give gratifying results. But one must as well remember that stomachs grow weak in the same way as do the eyes. Unfortunately, one cannot provide spectacles for the stomach as for the eyes.

Malignancies of the digestive tract had better be left alone in the aged,

except for symptomatic treatment. Supposed malignancy of the pelvic colon fairly often turns out to be diverticulitis and its complications. A young, over-enthusiastic friend of mine, finding gall stones in an elderly lady of over 70, insisted on an operation dreading it would lead to cancer. She died from the operation. Some cases of paroxysmal tachycardia are said to be cured by a gall bladder surgery, but one has to select the lesser of the two evils.

Pulmonary tuberculosis in the aged is very much dreaded because of the wide-spread havoc that such a patient can work. He does not die but he kills. An infant dying of tuberculous meningitis must put us on our guard at once to seek the source of infection, and very often it is *granny*, or an old favourite servant in the house.

An aged diabetic must be given a liberal latitude in diet. No attempt must be made to make him sugar-free. I have, times out of number, seen that mild diabetics, when they approach the age of sixty, become sugar-free with normal blood sugar levels. WOODYATT in 1924 called attention to this in his article entitled *Elderly Persons with Arteriosclerosis*. In emergency, it is better to have recourse to depot Insulin than ordinary Insulin.

Typical allergic asthma can make its appearance for the first time in the life of an individual after the age of sixty and over. I have on record several such cases. With a strong attack at night one is naturally put out: whether it is a case of cardiac asthma or a bronchial spasm.

Carpets and rugs and China mattings, and rooms over-crowded with furniture have often been the cause of fractured necks of the femur bone, with a miserable life to follow.

Finally, a word about the testicular extracts and the hopes entertained not only by the patients but also by medical men, to rejuvenate their aged patients. As said at the very beginning, nothing can restore a decayed tissue, still less, when it is replaced by another tissue of the lower order. In the very illuminating book by WARTHIN, *Old Age, the Major Involution*, the notion of deferring old age and the rejuvenation of the senescent individual is pooh-poohed as idle and foolish talk. "We may be assured that there is no rejuvenation possible for the senile individual; and that the idea of physical rejuvenation is but a myth of ancient lineage, designed in quasi-scientific garments. After the sixty-fifth year, the exercise of the sexual function is best relinquished; at any rate, it should never be forced. The closing of this chapter is the most difficult period of the senescent's changing life, and great restraint and thoughtful control are needed by many men at this time. Particularly unfortunate is he who retains and nourishes a physical desire when physical potency is gone";—a word of warning regarding the wide unrestricted advertisements in the lay papers. Strychnine is the dangerous fundamental drug, and the very thought of its use by an old man with his sclerosed, degenerated blood vessels must make all medical men in India rise up in arms and insist for a real, sound Food and Drugs Act.

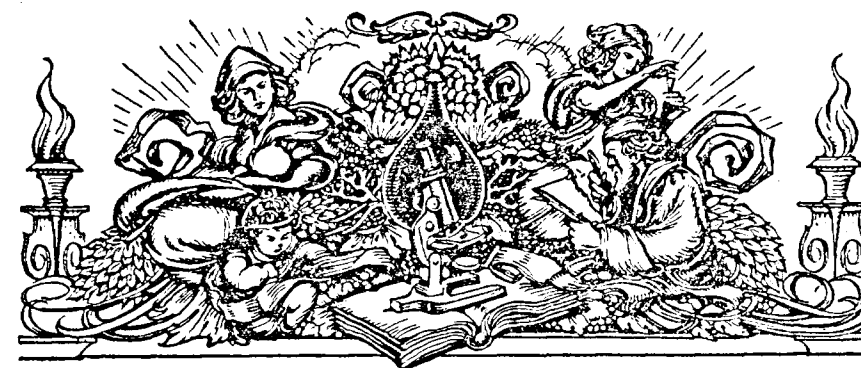
To conclude: he who has to treat an aged patient should have a heart-sympathy for his patient's infirmities. The aggressive children, who seek revenge as it were for the early discipline imposed on them in their own childhood, and who always have complaints against their *grannies* and *grandpas* not obeying them, must not be encouraged. The infirmities of

the patient must be spoken of lightly to the patient himself, giving hope and cheer instead of making him feel the hopelessness of his condition and dependency, with that ever dreaded thought—"paralysis and bed-ridden life". Let the old man enjoy his pipe, the old *granny* her tea. It is not fair to think that all old people have gone ga-ga. The world has scores and scores of these aged who have shone in public life after sixty.

Regarding drugs, SHATTUCK's words apply with greater force in geriatrics. SHUTTUCK lists *eleven* drugs as *very* useful, and *fifteen* as being useful. But even these are not to form a polypharmacy for the aged. HOUSTON, for example, gives an instance of "an old lady who has some chronic bronchitis, who has had anginal pain, has been suffering from congestive failure, who has flatulence and discomfort after eating, who is constipated, subject to neuralgia, has a moderately troublesome arthritis, sleeps poorly, feels weak, and is without appetite. Suppose something is prescribed for each of these symptoms and she is taking Iodine, Aminophylline, Digitalis, Cascara, Analgesics, Cinchophen, Salicylates, Hypnotics, Bitters with Alcohol, Iron, Arsenic and Quinine. With pious faith in her doctor and druggist, the poor soul might be quite willing to make of her body a mixing vat for a little of all these substances.

Rest is the main treatment for the elderly. The sclerotic cerebral blood vessels prevent them from relaxing. Man, particularly, should have a mid-day rest and nap. It is said that men's failure to do this explains the greater longevity of women.

Grant Road,
Bombay.



'OVALTINE'

The Natural Reconstructive Nutrient

AS an energizing and reconstructive nutrient, complete in all the essential food elements, "Ovaltine" is an ideal stand-by for the physician in the treatment of wasting diseases.

The problem of replacing tissue wastage and loss of energy associated with wasting diseases is complicated by the fact that there is frequently an associated anorexia and enfeeblement of the digestive and assimilative processes.

This consideration is fully met by the use of "Ovaltine" which

is invariably well-tolerated even by disordered stomachs, and is almost completely absorbed into the blood-stream.

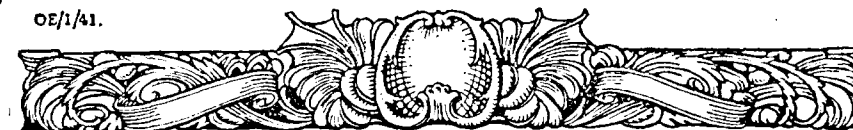
The unique dietetic value of "Ovaltine" is derived from its content of fresh food substances—ripe barley malt and pure creamy cow's milk, together with valuable natural phosphatides and vitamins. It is further noteworthy that "Ovaltine" has a high percentage of maltose and is entirely free from cane sugar, starch and other undesirable constituents.

A liberal supply for clinical trial sent free on application to the Distributors:

Indian Distributors: Messrs. GRAHAMS TRADING Co. (India) LTD.,
Caithness Hall, Third Floor, 310-311, Linghi Chetty St., Madras.
Also at Calcutta, Bombay and Karachi.

A. WANDER LTD., 184, Queen's Gate, London, S.W.7.
Laboratories and Works: King's Langley, Herts., England.

OE/1/41.



PRODUCT OF THE
GLAXO LABORATORIES

RATIONAL TREATMENT of DIARRHOEA

It is necessary to control diarrhoea, of whatever etiology, as rapidly as possible. "Pectasorb", now introduced by Glaxo Laboratories, has been specifically designed for this purpose, and is a combination of two important therapeutic agents, Pectin and Magnesium Trisilicate.

PECTIN The raw apple treatment of diarrhoea is of proved value in many cases, the treatment having received particular notice in America and on the Continent.

Various theories have been put forward to explain the effect of raw apples, but the view that is commonly accepted is that it is due to pectin. This theory is supported by the fact that preparations of pectin are as efficacious as the raw apple pulp.

As a result of their absorptive capacity pectins are able to fix bacteria and toxins, rendering them inert. Fluid secretions can be taken up, assisting in the conversion of a fluid stool into a formed one. By its buffer action, it can help to limit fluctuations in the reaction of the intestinal contents.

MAGNESIUM TRISILICATE Apart from being antacid, magnesium trisilicate is a powerful adsorbent of bacterial and food toxins. It is probably the most effective substance of this type.

PECTASORB which combines the properties of Pectin and Magnesium Trisilicate has a powerful controlling influence in diarrhoea, in both the chronic and acute forms. It arrests the absorption of toxins into the blood stream, protects the mucous membrane from irritants, and checks excessive peristalsis.

DOSAGE

It is an additional advantage that the dosage is small, one teaspoonful every four hours being usually satisfactory. The usual precautionary measures, such as the administration of fluids and careful selection of diet, should be observed.

... PECTASORB ... is in granules, and should be given suspended in water.

Representatives in India:-

**H. J. FOSTER &
CO., LTD.**

BOMBAY · CALCUTTA
MADRAS · LAHORE

PECTASORB

GLAXO LABORATORIES LTD., Greenford, Middlesex, ENGLAND.



When writing to advertisers, please mention the "Antiseptic"

A Standard Prescription IN ASTHENIA AND MALNUTRITION

The search for the perfect tonic - reconstructive never flags and the choice at the disposal of the prescriber is ever increasing. Among the most effective, Waterbury's Compound marks a distinct advance in the treatment of asthenia and malnutrition. The outstanding merits of its formula will be at once apparent

from its components — fresh liver and spleen for blood-forming, cod liver oil and malt extract to promote nutrition, hypophosphites for remineralization. Waterbury's Compound is usefully employed in tubercular conditions, in the anæmias and in convalescence.

Rx

Waterbury's Compound

Supplied PLAIN, or with Creosote and Guaiacol. A bottle of each form is at your service. May we send them?

MARTIN & HARRIS Ltd.

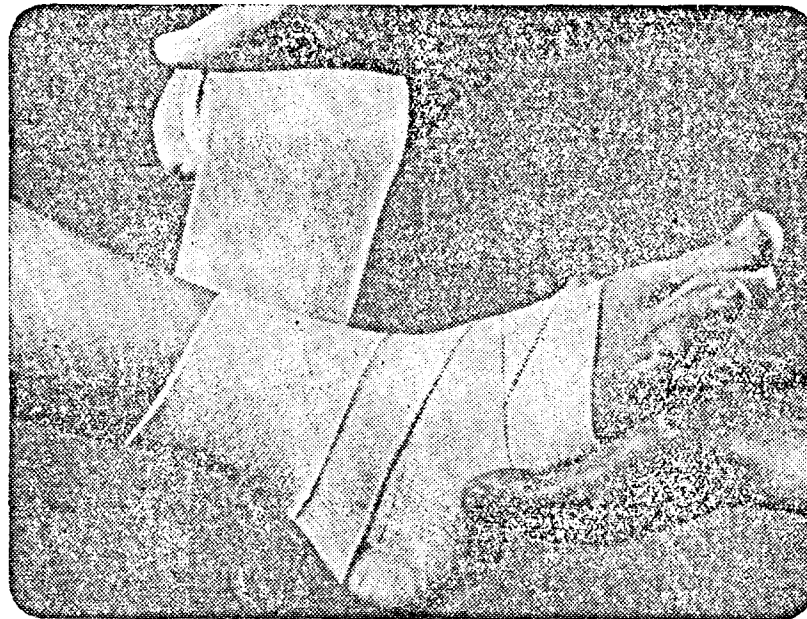
Mercantile Buildings, Lall Bazar, Calcutta.

Also at Bombay, Madras, Karachi and Rangoon.

Made by Waterbury Chemical Co. Inc., New York and St. Louis, U.S.A.

When writing to advertisers, please mention the "Antiseptic."

E.B.6



'Elastoplast' in the treatment of Sprains

PAIN is relieved, swelling controlled and hæmatoma formation prevented by the use of an 'Elastoplast' Bandage applied over the joint, muscle or ligament.

Early application permits the patient to use the injured part and shortens the period of incapacity.

The bandage should extend for several inches above and below the affected part; for example, in sprains of the ankle joint, it should commence at the base of the toes and finish at the upper part of the calf.

The tension of the bandage must be considerable—a loosely applied bandage fails to relieve symptoms.

In the 'Elastoplast' Bandage the combination of the particular adhesive spread, with the remarkable *stretch* and *regain* properties of the 'Elastoplast' cloth, provides the exact degree of compression and grip.

Distributors :—

INDIA :
Ralph Paxton,
10, Lall Bazar, Calcutta

BURMA :
E. M. De Souza
& Co., Rangoon

CEYLON :
Cargills Ltd.
Colombo

'Elastoplast' products are made in England by T. J. Smith & Nephew, Ltd., Hull

AS SUPPLIED TO THE GOVERNMENT OF INDIA

Old Age—Its Common Ailments and Their Prevention

BY

K. R. KINI, M.B.B.S.

Mangalore.

OLD age is a physiological condition of the human system, when the activities of the various cells in the body are diminished, with loss of vigour, and the power of regeneration of cells being limited. The vicissitudes which the organs have to pass through as a result of trauma and disease, with the stresses and strains of life during the earlier periods, leave their own scars, very often indelible, and hasten the advent of the senile condition. The symptoms usually appear at the 50th year, in the average Indian, with slight variations on either side of the limit. The changes are marked most in the nervous system.

Contributory Factors.—A consideration of the factors which influence the appearance of old age will be of interest.

1. *Climate* :—Cold and temperate climates help to keep the body active for a longer time than hot and enervating ones. In the semi-tropics and tropics, old age comes on earlier than in the cooler parts of the hemisphere. People from temperate climates under tropical conditions age more quickly than their countrymen in their natural environments.

2. *Environments* :—Overcrowding and insanitary dwellings undermine health early. In the villages, despite smaller houses, people live to a later age than in towns because of active outdoor life.

3. *Disease* :—Acute and chronic infections, venereal and all other debilitating diseases lower the vitality of the individual. The body activity suffers at an early age under these conditions.

4. *Diet* :—It is not possible to assess the influence of diet on the appearance of old age. Vegetarians, who use only milk, vegetables, cereals and pulses, attain old age as late as non-vegetarians who take a mixed diet. Yet a balanced diet, in suitable quantities, with avoidance of overeating, tends to a later appearance of old age.

5. *Habits* :—Active and regular habits with avoidance of alcohol and sexual excesses, keep the body in a sound condition. Open air life in the country or even in towns, makes for better health. Thus, old age under these habits comes later than with irregular and intemperate habits.

6. *Occupation* :—The vocations followed by the individual have a great bearing on the age of advent of the condition. A hard outdoor life of a manual labourer or an agriculturist, keeps the body processes active for a longer period than the sedentary life of an office worker who comes in contact with Nature to a far lesser degree. Military career with its regular and active habits keeps a man healthy longer than that of a civilian. The Industrial worker with his hard work for long-hours, shut up within four walls and with the dust and fumes of the industry inhaled in large quantities, loses his health early.

7. *Alcohol and drug habits* :—Whether in small or large quantities,

alcohol and other drugs bring about the lowering of body activity early. Old age and infirmity appear early in these addicts.

8. *Sex*:—Due to the strains and stresses the female sex is peculiar to, body processes lose their activities much earlier in them. So, relatively, females age earlier than men.

9. *Psychic strains*:—Mental conditions influence the advent of old age considerably. Frequent domestic calamities, financial and business worries, frequent abortions in women, mental shock from any cause and anxiety, all tend to lower the vitality of the individual. This leads to lowering of the body activity, thus resulting in earlier appearance of old age.

Phenomenon of Old Age.—The advent of old age is usually gradual. There are certain characteristics common to both the sexes and certain others peculiar to each sex. These may be grouped under four broad headings, though these appear more or less simultaneously and very often, merge into each other. 1. Physical, 2. Nervous, 3. Psychological, and 4. Climacteric.

1. *Physical*:—The failing sight, loss of muscle tone and their increasing stiffness, particularly in the back and waist, gradual stiffness in the joints with pain on movement, skin getting dry and wrinkled and hair turning grey are some of the first physical signs noted. The circulatory disturbances are usually hyperpiesia, sometimes hypopiesia and breathlessness on exertion. There is increasing tendency to lung affections. Tremors of the extremities, from the slight and unappreciable to well marked ones, are present as age advances. Digestion and appetite are slowly impaired. Tendency to constipation is seen in some people. Sleep is limited and in some cases remarkably diminished. There is frequency of micturition, particularly at nights. Gradually wasting takes place and extremities lose their power. Hearing is defective in some. Due to loss of teeth, speech also is defective. As age advances, the individual prefers to be "in bed" despite the urge for activity. The body easily becomes a prey to infection, particularly the lungs, bowels and kidneys. In case there is no debilitating disease, like diabetes, hyperpiesis, cancer etc. which are aggravated now, the person slowly wears down and a physiological death ensues.

2. *Nervous*:—Nervous characteristics are common and constant, sometimes very distressing. Headache, peripheral neuritis and various neuralgias such as lumbago, sciatica or intercostal neuralgia are present in every case in some form or other. The neuritis of the hands and feet and failing circulation are present in quite a fair proportion of people. Paresis of the extremities is found in a few. In women, the nervous symptoms of the climacteric is a recognised entity and as such some of the vague nervous symptoms may be attributed to it.

3. *Psychological*:—The mental condition shows early changes. A person who was sedate, well balanced and broad in outlook, gradually or sometimes suddenly, shows a remarkable change. The mind is unable to stand the strains and stresses of life, thus showing a greater tendency towards anger. Pessimism in the outlook of life becomes marked. Selfishness, both personal and familial, shows a remarkable increase, the judgment being often marred by it, even among "the unselfish." The usual expression, "In our younger days, life was happier and people were better, but now the world has deteriorated and youth is gone bad", is common

enough. So, youth is looked upon with suspicion, if not with contempt. The progress of science and men is viewed with contempt, if not positive hatred, though the person would like to have all the luxuries the world could provide for. The tolerance to pain is less. Reasoning is disliked and is very often obscured. Memory gets poor. Dogma and authority are insisted upon. Change of moods is quick and very often unexpected. As age advances, mental wandering may take place and in very debilitated individuals, the mental condition may border on stupor, sometime before death.

4. *Climacteric*:—Though research work has recognised this condition in both the sexes, it is the female that shows markedly this state. Hence it is taken as a peculiarity of the latter sex. The symptoms are too well known to require any description. The nervous, the vasomotor, mental and physical manifestations are a peculiarity and entity by themselves. Only a few unusual and interesting symptoms are described. The following case illustrates some of them.

Mrs. G. R. aged 54 years. Cessation of periods about 8 years back. Keeping good health all this time and had all normal deliveries. Complained of creeping sensations all over the body, followed by slight itching. On scrubbing the body slightly to relieve itching, a lot of whitish dark coloured skin peeled off from all parts of the body. This was attributed to a skin infection and the patient isolated herself. She also complained of the sensation starting from the umbilicus and the usual vasomotor symptoms of alternate cold and heat in the abdomen. On examination, she was found to be very anæmic, mentally depressed, the skin very dry and peeling off easily. There were slight cramps now and then of the extremities. There were also arthritic pains in the various joints. She also used to get oedema of the feet with suppression of urine. She was treated for anæmia before she was seen by the author with liver extract injections and vitamin B for the nervous sensations. For the oedema and suppression of urine, she used to get Mersalyl injections, though the urine was free from all abnormalities. When the author saw the case, she was diagnosed as a menopausal manifestation, and Stilboestrol one mgm. was given three times a day, continuously for four days at a time, with a break of two days, along with liver extract injections, the Mersalyl being stopped. The effect was remarkable within a fortnight. The mental depression was relieved immediately, the creeping sensations stopped and the oedema, arthritic pains, abdominal and urinary symptoms have disappeared completely. The patient is satisfied that there is no skin trouble. The skin desquamation has markedly decreased, though not completely disappeared. The patient is now attending to her daily duties and mixing with the other members of the family.

The points of interest in this case are:—(1) The generalised kraurosis of the skin with desquamation. (2) The nervous feeling of creeping sensations before desquamation. (2) The suppression of urine with oedema of the feet relieved by Stilboestrol.

From the foregoing it will be seen that the menopausal syndrome is so comprehensive as to resemble any disease. The author feels that vague symptoms without any well marked organic changes, in people past the climacteric, may safely be taken as menopausal and treated accordingly. He never has had any cause for regret. Fortunately, in the recent hormonal

preparations and their synthetic substitutes, we have dependable remedies which make the patient revert to cheerful optimism from a life of depressed pessimism.

Management of Old Age.—Though the medical man is rarely called upon for treating old age as such, if the handicaps enumerated above are in mind, treating the aged will be easier and their life can be made happier.

Though it may sound preposterous, prophylaxis plays an important part in managing the aged. All religions teach us that with advancing age, a person should think more of God and less of the world. Hindu religion, particularly, has divided a man's life into four stages, the third of which *Vanaprastha*, though it literally means "going to the forest", only enjoins on the individual to retire from active work when his children have grown up to the earning stage. At this stage, a man should only direct his children in the right path, giving them the gist of his experiences in life, teaching them how to avoid the pitfalls of life and to satisfy himself that they are well settled. Once that is done, he is to follow the last stage of *Sanyas* which literally means complete renunciation of all worldly ideas, good or bad, and fix his mind on God. All the various religious teachings make us infer that the ancients made a scientific study of old age. They came to the conclusion that the various faculties of the body lose their vigour and a person will be unfit for active work or to mix in society with an optimistic outlook. So, man is directed to keep aloof at this age, when he grows more selfish, and think only of salvation for himself, so that the selfish faculty may be properly directed. The present swing to psychological treatment admits of this fact and it is the duty of every medical man to apply himself to this line of treatment to all his patients.

As age advances, the individual should be taught to expect a lowering of his vitality and mental faculties. Diet should be suitably altered. Mental occupation suiting to the surroundings should be prescribed and the maintenance of an equanimous temper should be emphasised. Exercise suited to the individual should be marked out. Habits should be suitably altered. This is more easily said than done. It is here that interest in religion, interesting hobbies and general social work will be useful and help in reforming habits. Avoidance of controversial subjects will make for a happier old age. Regularity in the daily routine, with time spent in reading, will be very useful. For the woman, looking after the youngest members of the family, like infants and children, particularly grand-children, will keep the mind busy and the body active. For medicinal treatment, each case is to be judged on its own indication.

Common Ailments.—Only major ailments will be considered. These may be divided into two classes. 1. Common to both sexes. 2. Peculiar to each sex. In describing these ailments, a description of the different symptoms will be avoided and only any unusual ones will be noted. Treatment will be described in general.

I. COMMON TO BOTH SEXES.—(1) Hyperpiesis or arterio-sclerosis. (2) Hypotension or low blood pressure. (3) Diabetes. (4) Pyelitis. (5) Lung affections. (6) Cataract. (7) Malignant disease.

II. (a) COMMON TO MALES.—(8) Enlarged prostate.

II. (b) COMMON TO FEMALES.—(9) Kraurosis. (10) Ovarian tumours. (11) Uterine tumours. (12) Functional uterine bleeding.

1. *Hyperpiesis* :—This is by far the commonest in old age. It is

unnecessary to go into the details of causation, signs and symptoms as they are too well known. The only remarkable experience worth recording is that there are some people without any symptoms of the disease, which must be within the knowledge of most doctors.

TREATMENT :—General measures of rest, diet, regulated life free from worries and cares, avoidance of tobacco, alcohol and stimulants, are all too well known and more easy to preach than practise.

The number of drugs both pharmacopœial such as Iodides, Bromides, Nitrites, Theobromine, Barbiturates and their combinations have, each, their advocates. The proprietaries are a legion, particularly pluriglandular extracts, various herbal extracts—all with or without iodine—and Theobromine combinations, each having its own advocate among doctors and patients. Out of these, any Iodine or Theobromine and Barbiturate preparations and the herbal extract of *Serpentina* under the proprietary name of "Serpina" have been found useful, and each case is a law unto itself. The physician has to find out the drug suitable to each case and treat the patient.

2. *Hypotension or low blood pressure* :—This affection is very often overlooked, and as such, is more common than we know of, as the recorded cases are few and the literature is very limited.

The causation of the condition is due probably to myocardial degeneration. The blood vessels are soft and have a certain amount of elasticity, there being no calcareous deposits found. The patient complains of easy fatigue, quick mental irritation, slight giddiness, muscular weakness and general debility. There are no symptoms referred to any other system. The patient can carry on his daily routine without much discomfort. On examination, the patient is generally pale and anaemic, slightly plethoric and unable to do sustained physical exertion. The heart sounds are normal or slightly softer than normal. There is hardly any palpitation on moderate exertion. The blood pressure ranges from 98 mm. to 110 or 115 mm. systolic, 60 to 75 mm. diastolic. Urine does not show any abnormality. There are no other signs, and the condition is noted accidentally, when the patient comes for some other complaint.

TREATMENT :—There is no specific treatment. The anaemia is corrected, though the response to treatment is poor. The author has tried Strychnine, Pituitary and Adrenalin without much success. Fortunately the patient does not complain much of the disability except weakness, for which each case can be treated with a general tonic suiting to the individual.

3. *Diabetes* :—Though this is a disease which affects any age, there are certain marked features when the disease is first seen after the 50th year.

The patient complains of general weakness, neuralgias, tingling sensations in the extremities, fainting fits resembling epileptic fits, dimness of vision and sometimes transient amblyopia, praecordial distress, gastro-intestinal colic and disturbed sleep. Very often, as in the two cases of the author, only constant muscular spasms or repeated gastro-intestinal colic are complained of. Sometimes, the sugar was found accidentally on a routine examination of the urine. The classical symptoms of polyuria, polyphagia, polydipsia and autophagia, as found in younger people, are conspicuous by their absence, except probably the last one. Acetonuria comes on quickly. Wounds and pyogenic infections which do not yield to treatment, have been

the occasions to detect sugar in the urine, all the while the individual feeling himself quite healthy. These patients develop anaemia, hypertension and albuminuria more quickly than younger diabetics. As it is the opinion of the author that this is a specific disease among the aged, a lengthy description has been attempted. It is a golden rule that the urine should be examined periodically after the 40th year.

TREATMENT.—These cases respond to treatment fairly well. The main part of the treatment is dietetic. Carbohydrate should not be cut off immediately and its tolerance found out. Glucose in suitable dose should form part of the diet. Complete or partial starvation once a fortnight, with only glucose as diet during the fast, controls the disease well. The diet should be so adjusted that it is properly spread over the day and the night diet should be light and nutritious. Diet to keep the patient sugar-free should be found out and prescribed. As far as possible, worry is to be avoided.

MEDICINAL.—Alkalies, Codeine, Jambul and Arsenic have been found to be effective. The pluriglandular extracts of pancreas etc. have been disappointing. Insulin has its limitations. Acetonuria, pyogenic infections and surgical interference are the only indications for its use. Routine use is to be avoided, if not deprecated, as Insulin is no cure for diabetes. Liver extract, oral or parenteral, is of great value in relieving anæmia. Vitamin B relieves intractable neuralgia and neuritis.

4. *Pyelitis*.—This is a fairly common and distressing disease, easily attacking the aged. Old people in bed, particularly in debilitating diseases and after surgical interference, are prone to it. It is unnecessary to describe the etiology and symptoms. Suffice it to say that *B. coli* is the organism that predominates.

TREATMENT.—This is very difficult. In the olden days, Urotropine was the sheet anchor. With the advent of chemotherapy and Mandelic acid, treatment is easier and the patient's life tolerable. In the early stages, one of the two drugs gives quick relief, particularly Mandelic acid or its salts. If there is persistence, one of the Sulphanilamide preparations clears up the condition. Bladder irrigations have to be resorted to with caution, as these weaken the already debilitated patient. But, with all these, the treatment is very unsatisfactory.

5. *Lung Infections*.—Lung gets infected quickly in the aged. From a mild tracheitis to pneumonia is not a long way. The infections try the patience of the doctor and the patient. Very often, the treatment is unsatisfactory and pneumonia is one of the terminal infections of the aged. Bronchitis, basal congestion and pneumonia are the commonest infections. These common diseases do not require any description.

TREATMENT.—General measures are: complete rest, good ventilation, avoidance of draughts, application of heat, preferably dry, suitable diet and constant change of position. Skin of the back and other dependant parts are to be carefully protected to avoid bed sores.

Iodides, Creosote and expectorants were and are still, the mainstay. With the advent of Sulphapyridine, the results of treatment have been encouraging and satisfactory. But a word of caution seems to be necessary. The doses recommended by European authors are too large for Indians. More recent communications by some American authors also tend to show that the doses used so far are high. The average Indian requires less than

half the dose, average being 3 to 4 grammes a day, the optimum being between 2 to 3 grammes for the first day with $1\frac{1}{2}$ to 2 grammes for the next two days, with a break of a day or two after a total of 6 grammes. Subsequent dosage need not exceed 2 grammes a day for short periods and that too if there is any indication. This scheme has been found to be extremely satisfactory by me. When once the disease is got over, suitable tonics help in restoring normal health. Oxygen and stimulants have their own use at the proper stage.

6. *Cataract*.—This is one of the commonest diseases of old age, and very often, it heralds the advent of the condition. It is a slow process. The disease is too well known and does not require any description.

TREATMENT.—Beyond surgical measures, there is no remedy known that will either prevent or cure the disease.

7. *Malignant Disease*.—This affection afflicts the human system at old age in the majority of cases. There is no organ in the body that can escape it. Certain trades and industries leave their mark at old age, by the development of this disease. The only organ which is rarely affected primarily, is the liver, though secondary deposits are common. Yet the author has seen three cases during these last twenty one years, of primary cancer of the liver.

The causation, signs and symptoms are too numerous to be mentioned in this short article. The only point worth stressing is that the earlier the disease is diagnosed, the greater is the chance of relieving the patient and making his life livable, with the aid of modern lines of treatment.

TREATMENT.—Surgery, specialised treatment with Radium or deep X-rays or a combination of both, are the lines of treatment. For the average patient and the average practitioner, surgery is the only course open, as facilities of modern methods are not within the reach of every one—patient and surgeon. But an early diagnosis with prompt and careful surgical intervention will minimise the sufferings of the patient and make the surgeon's task easy. Complete excision of the affected area, well outside the infiltrated tissues, removal of all lymph glands and, above all, avoidance of soiling of healthy tissues from the diseased area in the course of the operation, are the three essential requisites of successful surgical treatment. If, after this, a few exposures to radiation are given, the results will be very satisfactory. In the later stages, when fungation and infiltration of large areas and masses of lymph glands have taken, it is doubtful whether any treatment will be useful. The only hope of both the doctor and patient is the "divine remedy"—Morphia.

8. *Prostatic Enlargement*.—With advancing age, the prostate changes, giving rise to a train of urinary symptoms which make a man's life miserable. The disease may come on gradually or be suddenly brought to light by complete retention of urine. Whichever way it may usher in, the bladder and kidneys are infected, sooner or later, and complicate the picture. If the disease takes a malignant turn, there is hardly any hope of recovery.

TREATMENT.—Palliative measures like regulated life, avoidance of exposure, urinary antiseptics or chemotherapeutic drugs to overcome infection, and catheter life are some of the measures adopted. Glandular preparations like Orchic Prostate compound, Testosterone Propionate injections have their own advocates. How far these measures help in overcoming the trouble, has yet to be assessed. The only safe and certain method is surgical removal of the offending organ. A word of caution as

to surgical interference will not be out of place. The surgeon should be familiar with all the details of the technique he adopts, before he attempts this operation and it is better not to interfere than feel sorry for any failures.

9. *Kraurosis*.—This condition is peculiar to women. Though it is primarily confined to the vulva, a case of generalised condition of this trouble has been reported earlier in this article. It is a distressing condition and makes the life of the patient very miserable. It is generally a menopausal disturbance.

TREATMENT.—Ointments, oils and demulcent applications give very little relief. Oestrogenic hormone or its synthetic substitute has a better effect in controlling the disease. Local injections of various drugs have been tried with varying results.

10. *Ovarian Tumours*.—Though these may appear at any age, they are more common as age advances. They are usually benign and cysts are the commonest. Unless these are attended to early, they may give rise to complications.

TREATMENT.—Surgical removal is the only treatment. It had better be done in a well equipped hospital under suitable conditions for operation.

11. *Uterine Fibroids*.—Though found at all ages, these are more common at old age. The causation, signs and symptoms are to be found in any text book.

TREATMENT.—Surgical removal, including hysterectomy in bad cases, is the best line of treatment. Recently, deep X-ray therapy has been advocated. In one case of the author's, treated with this method by a specialist, the results have been disappointing. An authoritative publication on the results of this line of treatment is yet to appear.

12. *Functional Uterine Troubles*.—The only one of note in advanced age is sudden uncontrollable bleeding from the uterus during the menopause. This has been attributed to fibrosis uteri. Though this is not very common, yet it is distressing enough to cause anxiety both to the patient and the doctor. There is no organic cause such as submucous fibroids or cancer, to be found.

TREATMENT.—Palliative treatment succeeds for the time being, when the bleeding actually takes place. Yet, it leaves the patient very weak and exhausted. The only treatment is hysterectomy, short of which nothing succeeds.

Prevention of Diseases of Old Age.—To attempt to describe methods of prophylaxis will be too stupendous a task and probably may be too presumptuous. Yet, as the task has been undertaken, it will be attempted. The only method feasible seems to be to follow the good old maxim, "Plain living and high thinking." Beyond this, one cannot suggest anything.

Conclusions.—(1) An attempt has been made to define and to assess the contributing factors of old age. (2) A description of the phenomenon of old age with its classification has been noted. (3) Management of old age and prophylactic measures from a medical view point have been described. (4) A few unusual symptoms of the climacteric are described. (5) The common major ailments have been enumerated with their treatments. (6) Prophylaxis of ailments has been commented upon.

Chest in Old Age

BY

G. B. MANKAD, M.D., M.R.C.P., F.C.P.S.,

Ahmedabad.

DEATH is inevitable. The more distant it is in some individuals, the more likely these individuals are to pass through longer periods of old age; and the more gracefully they travel through that part of their life-journey, the better. Knowledge of the actual changes taking place in the organism is essential. If we are not capable of counteracting them, we may at least try to adapt ourselves to the altered frame and avert avoidable suffering.

One of the most important biophysical changes in the old age is progressive loss of elasticity. This impairment of elasticity on the physical side is noticeable in the lens, skin, ribs, lungs, arteries, etc.; on the physiological side—in the gait, movement, and articulation, and on the psychological side, the inelasticity is exhibited in the fixed ideas and decisive behaviour progressing to obstinate temper. These latter are compensated, however, by a wealth of experience, intelligence, judgment, discrimination, renunciation, etc. Thus, the old age is not only made easily liveable but loveable as well.

This biophysical change of reduced elasticity affects the chest in old age. The skin of the chest, like the skin any where else, becomes wrinkled and the subcutaneous veins become tortuous and visible. The shape of the chest alters. It becomes unduly deep antero-posteriorly. The shoulders and the ribs are over-elevated with the inter-costal spaces and the intercostal angle widened. The spine becomes kyphotic. The range of the chest movements becomes limited. The percussion elicits a full note showing the presence of air in the lungs in a fair amount, but the expansion of chest and the exchange of gases are diminished. Auscultation reveals the expiration to be prolonged and all sorts of foreign sounds: high pitched, deep-toned, piping, crepitant rales or wheezing rhonchi are heard all over the chest. The heart sounds at the apex are sharp and clear with accentuated ringing second sound at the aortic cartilage.

The diseases of the respiratory system, peculiar to old age, are chronic bronchitis and its complications, pneumonias of all types and malignant neoplasms.

Chronic Bronchitis may be called a friend of the aged in the sense that once established it tends to remain with the patient. The usual clinical history is that there was, probably in the distant past, an attack of influenza or pneumonia and, after the attack, there are periodical recurrences of cough and expectoration on slight exposures. These recurrences are noticed on more and more 'trivial provocations' and their duration becomes longer until a small part of the year is the only interval of freedom. Bouts of asthma with these attacks of cough make the patient more miserable. The asthma at this age may be bronchial, cardiac or renal. Repeated attacks cause emphysema, the latter inducing the bronchitis and thus the vicious circle goes on unbroken.

The physical signs are as described above. It may be remembered that constant occurrence of bronchitic sounds at any one particular spot should suggest an area of fibrosis following pneumonia or broncho-pneumonia. The treatment of such a condition is mainly by respiratory exercises

properly graded. They serve to distend the alveoli well and also ensure their more complete emptying. They help to clear up the secretions of the bronchæ which would otherwise be stagnant in over-inflated bronchial ramifications. Besides these exercises, correction of defective posture is a much needed measure. Thus, the impairment of the elasticity may be prevented or postponed.

Local septic foci in the sinuses, tonsils and teeth will aggravate or initiate an attack of bronchitis. Due attention to them is imperative. If the secretion be very viscid, drugs like Pot. Iodide and Ammon. Chloride would help to make it less viscid and more easily expectorated. Pot. Bicarb. grs. 10 in 3 or 4 ounces of hot milk, slowly sipped, answers the purpose admirably. Avoidance of extremes of climate and dusty atmosphere is essential.

Pneumonias of different types *i. e.* lobar, lobular, hypostatic, post-operative etc., come next in the incidence of diseases of the old. They are old men's friends in the sense that the patients are removed by them from the turmoil of the world gently and swiftly. The signs and symptoms of lobar pneumonia in the aged lack in their usual prominence of symptoms noticed in earlier age. The temperature may be lower or normal on account of poverty of defence. The thickened arterial walls render the pulse deceptive. The usual sthenic response of the young to this infection by cough, expectoration, dyspnoea, fever, rapid pulse and leucocytosis may be partly or wholly replaced by asthenia in which the patient is limp and listless without much cough or fever or leucocytosis and with low muttering delirium. Hour by hour, he is drifting steadily to complete dissolution.

The treatment consists in keeping the patient at rest in a well lighted and well ventilated room. The diet should be nutritious, of high caloric value and of small bulk. Bowels should be regulated. Sleep should be helped, if necessary, by hypnotics. Such patients are more comfortable when propped up properly in their beds. To this end, it is convenient to have a good back rest right up to the head with a pillow in the small of the back to keep the abdominal wall extended and thus allowing full play of the diaphragm. To prevent the patient slipping down, the foot of the bed should be raised by blocks about twelve inches high.

Unproductive cough should be allayed by sedatives. Morphine should be used when there is need for it, and with great care and caution. If the expectoration is viscid, it should be liquefied. Oxygen inhalation lessens cough, relieves dyspnoea and induces sleep, and thus it is a very useful and necessary measure, particularly when cyanosis is present.

If the pneumonia be inflammatory and not hypostatic, it can be treated by Sulphopyridine in the absence of the usually known contraindications *e. g.*, leucopænia, albuminuria diarrhoea etc. The patients receiving sulphopyridine treatment should have liberal supply of fluid as preventive against renal complications. Opinions about the efficacy of alcohol in pneumonias vary. I belong to the school which teaches that alcohol does not play any part in the treatment of pneumonia. I never use it and have never regretted its omission. To those who habitually take it, I allow small quantity only to pretend non-interference in their daily customary routine. The pneumonia in the old is more likely to turn into pulmonary abscess: and if diabetes be present, this complication is very

common. With diabetes, tuberculosis of the lungs in old age is very frequent. Repeated sputum examinations should be made in any elderly subject with bronchitis when he is diabetic. It should be borne in mind that pulmonary tuberculosis in the aged like the pneumonia at this age is apt to be insidious and, therefore, overlooked unless inquisitive search be made for it by X-Rays and laboratory methods.

Some practitioners are under the impression that tuberculosis is not common in old age. OSLER's remark that "cases are met with in the sucklings as well as in the octogenarians, and that no age is exempt", depicts clearly the age incidence of this disease. The pulmonary tuberculosis in the senile tends to take the slowly progressive fibroid form of insidious onset; and the collapse therapy by artificial pneumothorax is not applicable as one of no avail.

In old age, malignant growths are common in the lungs or pleura as anywhere else. They may be primary or metastatic. When pleural, large amount of effusion, sanguinous or otherwise, may collect and require repeated aspirations to give relief from respiratory distress. When bronchial, the consequent obstruction may lead to bronchiectasis or pulmonary abscess etc. Deep X-Ray therapy and radium are offered as therapeutic measures but are of little avail.

There are some senile affections of the heart and aorta. Aortic regurgitation due to deformed aortic cusps is an instance. Large calcareous nodular masses developed on and near the cusps cause an accompanying stenosis. Pure aortic stenosis without regurgitation can also be met with at this age. The differential diagnosis between the two conditions is not so easy. In regurgitation with the diastolic murmur, a systolic murmur is often present without the stenosis existing. When diastolic murmur alone is present, the correct timing is difficult. Systolic murmur alone in the aortic region can occur in anaemia or in any other condition when cardiac action is accelerated. For the diagnosis of aortic disease, therefore, the thrill, the murmur and the character of the pulse, and the blood pressure readings etc. must all be considered.

The heart affections peculiar to senility comprise the degenerations of the myocardium, intermittent claudication, spasmodic angina, coronary thrombosis. Besides these, a few instances are there where the heart failure takes place in a less conspicuous way *i. e.* without any of the above mentioned major recognisable antecedents. As age advances, nutrition gradually fails, the tissue wear and tear is not sufficiently repaired, the reserves fade. The heart muscle becomes increasingly incompetent, until, in the event of some unavoidable undue stress of activity, injury or infection, it finally fails to "keep the body and the soul together."

Mirzapur Road,
Ahmedabad.

The Senile Heart

BY

R. K. BHATTACHARYYA, M.B.,

Nabadwip, Nadia.

I

FREUD, in his book *The Ego and The Id*, has postulated that the great life-principle contains within it the principle of death; that is, the urge that produces the manifestations of life and growth also produces ultimately the manifestations of decay and death. This may be expressed paradoxically as—"The beginning of life holds within it its end."

The latter part of life manifestation is called *senility*. With such a complex mechanism as the human body, and modern complexities of the problem of existence, the approach of senility to the individual person varies within a wide range. It is, however, conventional to regard the age of sixty as the beginning of old age. With its approach, the person gradually loses the power of his body and mind. There is muscular infirmity, loss of memory, diminution of power of grasping complex ideas. The hair becomes dry and scanty, the skin atrophied; the powers of sight and hearing are impaired and sexual power is much lowered or lost altogether.

When decline comes on in old age, there is a universal tendency to structural degeneration of the specialised and active parenchymatous tissues, with increase in the lower form of supporting tissues in all the organs and other structures of the body. Auto-intoxication used to be considered as a cause producing the above changes. But the modern concept is that all these are produced by a failure of the comity of internal secretions. Modern life, producing intense and prolonged emotional and other psychic activities with indiscretions in food, drink, smoke, rest, exercise, etc., tends to invite senility prematurely. But the mechanism through which these factors act is the group of glands of internal secretion.

Perhaps the most serious effect, that seriously affects the longevity of the old, is that produced by degeneration of the cardiovascular system. There is the good old adage—"A man is as old as his arteries;" in addition to this, may be formulated a new one—"The old man lives as long as his heart". There are die-hards in old age who refuse to die because their hearts would still carry on under the most distressing circumstances of other organs. And there are the opposite class who die often and suddenly, either of acute or chronic heart failure. With a damaged cardiovascular system, the infirmities of thought, speech and action, producing the typical decrepit, come on more rapidly and lower the expectation of life to the level of nullity.

II

We have seen above that the main feature of decline in old age is the rapid downfall of all specialised parenchymatous tissues and their replacement by the lower form of fibrous tissue. This change in the case of the cardiovascular system leads to cardiosclerosis and arteriosclerosis. So, this is the principal pathology of the old man's heart. CABBOT says that in this sort of pure senile or "*decrecent*" arteriosclerosis, hypertension and cardiac hypertrophy are often absent. In these cases, there may be no

complaints at all or only those of angina pectoris. Physical examination shows only—

1. Rough stiff tortuous arteries, especially brachials.
2. Dilated aortic arch (percussion and X-ray).
3. Loud ringing aortic second sound.

The heart and circulation may be otherwise normal, excepting the old man's limitations of physical exertion. The heart's strength and its functional efficiency depend upon its reserve force. Normally, it has a wide range of variation in different individuals. In old age, the individual's reserve force is gradually diminished.

A type of arteriosclerosis of old age has been differentiated in PRICE's *Text Book of Medicine* as Morckeberg's degeneration. The cause is here stated to be undoubtedly a senile degeneration of the elastic tissue and the muscle of the large muscular arteries and a deposition of lime salts in the dying tissue. The lime salt is deposited more or less symmetrically within the media in plaques which encircle all or part of the lumen—(ring calcification)—generally the arteries of the legs below the bifurcation of the femoral, and those of the fore-arms are thus affected.

III

So much for the purely senile heart and its vessels. But the old man suffers from various cardiac troubles, and death from diseases of the heart is a respectable factor amongst the causes of death in the old.

Besides the physical signs previously mentioned, the old man may be conscious of his heart's existence in the chest. The pulse rate is easily affected by external stimuli and premature contractions are frequent. With a good reserve power of the heart, these may be ignored, but, otherwise, it may be a warning of commencing myocarditis. Wherever possible, an electro-cardiographic reading may be obtained to help in the correct interpretation of the heart condition. In the absence of symptoms of cardio-vascular disease in the old, however, the hidden cardiac lesion can rarely be demonstrated by electro-cardiography. In an investigation carried out in America, it was concluded that there are no characteristic signs of commencing old age in the electro-cardiogram—*Medical Annual*, 1934.

Old patients frequently complain of a fluttering of heart, which may be a transient tachycardia or the beginning of auricular fibrillation. The fluttering may also prove to be the premonitor of an impending congestive heart failure. Heart block may be met with, with or without Stokes-Adams attacks. Any tendency to anginal pains must be attended to with due seriousness.

IV

Cardio-sclerosis is fibrosis of the myocardium, in which heart muscle is replaced in varying degrees by fibrous tissue. Disease of the coronary arteries is a predominant feature in many cases. In fact, it is regarded to be the commonest cause of fibrosis, acting by producing ischaemia of the heart muscle.

The term arterio-sclerosis has been objected to in PRICE's *Text Book of Medicine*. The pathological condition has been divided into the following four types:—(1) Arterial, (2) Inflammation. (3) Degeneration. (4) Hypertrophy

and Infiltration. However produced the ultimate result is a notable decrease in elasticity in old age. Elasticity has been defined in SAMSON WRIGHT'S *Applied Physiology*, as the percentage increase in the volume of the artery with each millimeter mercury increase in blood pressure. It has been calculated for different ages; and it has been proved that there is a notable and gradual decrease in elasticity as age advances from infancy to old age. This means that with the same cardiac output, the blood pressure is raised during systole more in the old than in the young, as less fluid can be accommodated in the stiffer arterial system of the former. Thus, hypertension is one of the commonest maladies of old age. As regards coronary circulation, it has been stated by SAMSON WRIGHT that the mean aortic blood pressure is one of the main factors which control the coronary circulation. By mean blood pressure is meant the mean of systolic and diastolic pressures. Thus an increase in the mean blood pressure raises coronary flow while a low blood pressure impairs supply to the coronaries.

The vascular needs of the heart muscle are so enormous that there is a rich anastomosis in the whole capillary system, and this becomes more effective and more extensive with advancing years, so that, the heart of a man at sixty is better prepared to withstand the effects of occlusion than the heart of a young man. If a coronary vessel is slowly narrowed, an adequate compensatory circulation is gradually established, and ultimate occlusion may do no harm. Otherwise, coronary occlusion may prove fatal either instantaneously, or in some hours or days; or death may occur later from gradual heart failure. Cases, however, are on record of unusual longevity after coronary thrombosis, the longest period recorded being seventeen years, from the age of sixty-three to that of eighty. Clinically, coronary occlusion is characterised by pain. Many anginal attacks are thus produced.

V

It will thus be seen that apart from the condition of quiet natural atrophy of senility in which the weakened heart may carry on indefinitely without producing symptoms, the old man is prone to various cardiac affections which may ultimately seal his fate. The following are the most important:—

- I. Hypertension.
- II. Angina pectoris and coronary thrombosis.
- III. Auricular fibrillation and other arrhythmias.
- IV. Cardiac asthma.
- V. Heart failure in general.

As it is not within the purview of this theme to deal with the above disease conditions exhaustively, only some passing remarks will be made on each.

I. Hypertension.—Though the truly senile type of arterio-sclerosis rarely causes hypertension or cardiac hypertrophy, yet what is called *essential hypertension*, is essentially a disease of the elderly man, the prematurely senile and the old—fully ninety per cent of cases occurring between the ages of forty and seventy.

The patients suffer from a vertigo specially on stepping downstairs or walking, more rarely even while at rest. He may complain of an occipital headache, intense or of a dull throbbing nature; buzzing sensation in the

ears, or flashes of light before the eyes. There may be sudden sensations of faintness, palpitation, early fatigue, shortness of breath on exertion, and a sensation of weight in the chest may be felt. A varying degree of cardiac pain may be complained of; and in some patients, mental disturbances like irritability, loss of memory and of the power of concentration are observed.

In grave cases, cardiac, renal and cerebral involvement are gradually apparent. Signs of hypertrophy of the left ventricle are found. The end result is death through uræmia, coronary occlusion or thrombosis, or congestive heart failure.

In controlling cases of hypertension, it should always be remembered that any attempt at drastic treatment is a disservice to the patient, and that much depends on careful supervision and management of the mode of life and habits of the patient. A weekly or fortnightly or monthly record of the blood pressure readings, under identical conditions as regards time of examination, posture—(recumbent), the arm examined, muscular laxity and mental tranquility of the patient at the time of examination, should be the guiding principle. Drugs are of secondary importance. Of course, they have their uses, if judiciously applied to meet symptoms and complications. Old men can thus be led on for years without harm.

II. Angina Pectoris and Coronary Thrombosis.—Angina pectoris occurs most frequently after the age of sixty. It rarely affects those with congestive heart failure or auricular fibrillation. Moreover, if either of these supervenes in a case of angina pectoris, usually no further attacks occur.

The pain in these cases is a viscerosensory reflex; the sense of constriction,—a visceromotor reflex, giving rise to spasm of the intercostal muscles. Sudden death is frequently the result of ventricular fibrillation.

Angina pectoris may range from slight discomfort or oppression or constriction to the most intense anguish which may even be fatal. The same individual may experience different grades of pain in different attacks. But generally from occasional mild attacks, it gradually becomes more frequent and more intense.

In about ninety per cent of cases examined postmortem, some form of coronary disease is found. In most cases, some degree of aortic atheroma is present. Anginal pain may arise in the absence of evidence of organic coronary disease. There are numerous theories regarding how actually the pain is produced, such as cardiac exhaustion, over stretching, ischæmia, anoxæmia, presence of pain fibres in the nerve plexus round the coronary vessels, etc.

In a typical attack of coronary thrombosis, the main symptoms are pain, shock and heart failure. The patient may already be a sufferer from anginal pain. Coronary thrombosis is not related to effort as in angina pectoris. Unlike the pain of angina, it persists and increases in intensity, and is not relieved by nitrites. The patient is markedly restless in contrast to the immobile state in angina. A condition of severe shock develops. Dyspnoea or Cheyne-Stokes breathing may appear. The temperature generally rises in a few hours, and a febrile condition may persist for a few days with an enormous leucocytosis.

III. Auricular Fibrillation and other Arrhythmias.—In auricular fibrillation of the old, there is usually a history of long continued arterial

hypertension, cardio-sclerosis, and increasing myocardial degeneration. A heart beating irregularly and at a greater rate than 120 to the minute, and the presence of an absolutely irregular pulse—*delirium cordis*—is practically certainly a case of auricular fibrillation. It usually persists for the rest of life when appearing in old age. The fibrillating auricle beats at an astoundingly fast rate, (400 to 600 per minute), and is, in fact, the seat of innumerable incoordinate contractions each limited to a range of waves of its own. In both flutter and fibrillation, the auricular muscle is responding to stimuli from a central circulating wave, from which off-shoots or subsidiary waves pass in all directions towards the periphery. The auricle as a whole remains in the diastolic position. It is likened to a pool of water on the surface of which various ripples arise and conduct themselves at one and the same time. The circulation can go on despite this stage, so long as the ventricles are able to maintain it.

Pre-systolic gallop rhythm and *pulsus alternans* are met with in left heart failure and auricular fibrillation. There are other arrhythmias that appear in old age but these tend to be corrected by effort or exercise or caution.

IV. Cardiac Asthma.—It is a sort of paroxysmal dyspnoea of the asthmatic type which consists of an abrupt attack passing off as suddenly as it began. These attacks seldom last more than half an hour or may even be shorter. These generally come on during sleep, and make the patient sit up, but occasionally, they come after exertion or over-eating. Cardiac asthma is mainly due to acute hypertension in the pulmonary vessels arising from congestion in involvement of the left ventricle. The attacks may be mild or agonising, and in advanced cases of cardiac failure, may come on repeatedly during the day and night, and the poor sufferer can seldom lie down to rest. It denotes great embarrassment of the left heart in particular. The prognosis is always bad.

V. Heart Failure.—It should be understood that the essential cause of cardiac failure lies in the heart muscle, and is due to changes in it which render it unable to maintain an efficient circulation.

It can be conveniently divided into two types, congestive and ischæmic. The type of failure associated with chronic venous congestion, either pulmonary or systemic, is often described as congestive failure. When the left ventricle only is involved in heart failure, congestion of the lungs occurs without any signs of engorgement in systemic veins. Congestive heart failure may result from various causes, but auricular fibrillation heads the list. Such failure with a normal cardiac rhythm is comparatively rare, and generally occurs in old cases of high blood pressure, syphilis of the heart or aorta, or in chronic lung diseases such as emphysema.

The type of heart failure, in which anginal pain is the most prominent symptom, is believed to be due to myocardial ischæmia. In view of the enormous amount of sustained work carried out by the heart, it can easily be understood how interference with the coronary circulation may handicap it.

Summary.—1. FREUD'S postulate of the great life principle, formulating that the mysterious urge of life is self limited and ultimately declines and ceases, is a great help to understand how decline must naturally arrive and culminate in death.

2. The main pathology of this decline that produces the signs and

infirmities of old age is a more or less rapid degeneration of special parenchymatous tissues and their replacement generally by the lower form of fibrous tissues.

3. Thus, the great endocrinous system degenerates and helps to produce the typical decrepitude.

4. Modern exigencies of existence tend to precipitate senility prematurely.

5. When the degenerating process affects the cardio-vascular system, it produces cardio-sclerosis and arterio-sclerosis. But in the pure *Decrescent* stage, hypertension and cardiac hypertrophy are often absent; and saving the old man's limitation of cardiac efficiency, there may be no other complaints.

6. But the old man suffers from various heart diseases that are only frequent in the old and the elderly. The most prominent of these are:—(a) Hypertension. (b) Angina pectoris. (c) Coronary thrombosis. (d) Auricular fibrillation and other arrhythmias. (e) Heart failure and cardiac asthma.

7. Amongst the causes of death in the old, heart disease occupies a very prominent place.

Bibliography :

- | | |
|--|--|
| 1. Freud—The Ego and the Id. | 6. Medical Annual 1934. |
| 2. Price—A Text Book of the Practice of Medicine, 5th Edition. | 7. The Wander Journal of Current Therapeutics—Volume I, No. 4; Volume II, Nos. 9 and 10. |
| 3. Cabbot—Physical Diagnosis, 8th Edn. | 8. Burroughs Wellcome & Co.—Notes on Some Cardiac Affections. |
| 4. Wright—Applied Physiology, 3rd Edition. | 9. Carnrick & Co.—Organotherapy in General Practice. |
| 5. Savill—A System of Clinical Medicine, 4th Edition. | |

Disturbances of "The Climacteric Period"— Their Prevention and Treatment

BY

Y. N. AJINKYA, M.B.B.S., M.M., F.R.C.S., M.R.C.O.G., D.C.H.

Hon. Asst. Obstetric and Gynaecological Surgeon, Bai Yamunabai Nair Hospital, Bombay,
Tutor, National Medical College, Bombay.

THE full span of life is divisible into three chief phases. The first is the period of growth; the second, of maturity or menaeme; and the third, of senescence.

The transition from the first to the second phase occurs during puberty when somatic growth becomes completed and reproduction becomes possible. The second transition occurs from the stage of maturity to that of senescence and marks the termination of reproductive period. It is known as "the climacteric" or "the critical age". It is not a sudden isolated occurrence but a complex process of indeterminate duration, with far reaching consequences, during which various functions of reproductive organs are approaching their termination. It is important to recognise that the cessation of ovulation and menstruation in women, which is correctly known as menopause is *but a single* though most significant event of the climacteric period. In men no such clear cut event signifies the onset of climacteric epoch. Yet, men also do suffer, to a variable extent, from mental and physical disturbances, when the functions of reproductive organs are coming to an end.

In my profession, I deal only with fair sex, and it would be unfair for me to pass remarks about the opposite sex; and hence I would restrict my article to affairs of women only.

The Causes of Climacteric Disturbances.—In order to interpret these disturbances with intelligent reasoning, one must briefly survey the role of hormones in the climacteric period. The endocrine glands chiefly affected are the ovaries, the pituitary, the thyroid and the adrenals. The climacteric must be considered as a pluriglandular manifestation and variable display of the functions of the endocrine glands makes it extremely difficult to analyse minutely the role of individual hormone in the production of symptom complex.

Changes in the Ovaries.—The ovaries atrophy and show progressive increase in the stromal tissue at the expense of the epithelial elements and extensive thickening of their external tunics. Though actual ovulation may cease, the ripening of follicles may occur at irregular intervals and keep the body supplied with some quantity of oestrin. At some phase, there might be actual distention of a number of immature follicles—poly-folliculin stage, and this may be followed by oligo-folliculin stage. The major symptoms of the climacteric are apparently due to gradual decline of ovarian function and consequent loss of oestrin influence over the vegetative nervous system.

The Pituitary Gland in the Menopause.—The inhibitory influence of the oestrin having been lost, the basophilic cells of the anterior pituitary body undergo hypertrophy and hyperplasia with the resultant increase of sex hormone (gonadotropic hormone) in the blood and its increased excretion in the urine. The cells controlling the metabolism (thyrotrophic cells)

simultaneously underfunction, and a true state of pituitary dysfunction results. The lowering of the basal metabolism and accumulation of fat leads to obesity. Accumulation of adipose tissue also occurs in the synovial membrane, its villi giving rise to osteoarthritic changes of the climacteric epoch. The size of the pituitary gland increases due to the presence of certain castration cells and this may be responsible for constant headache complained of by some of these women.

The Thyroid Gland in the Menopause.—As stated above, there is usually a decrease in the thyroid activity as recognised by the lowering of the basal metabolic rate. The gland shows increase in the amount of colloid material and a flattening of acinar epithelium. The vasomotor and nervous symptoms accompanying the climacteric must not be attributed to hyperthyroidism without the control of basal metabolism tests, for they are usually due to ovarian deficiency, and are often relieved by the administration of oestrin.

Occasionally, the syndrome of hyper-thyroidism may ensue. The activity of the thyroid gland during this "critical period" depends on the pre-existing physiological condition of the organ. A pre-existing hyper-thyroidism may become augmented, while pre-existing hypofunction usually becomes more marked during the crisis.

The Adrenals in the Menopause.—Transitory hypertension, vasomotor disturbances, moderate hyperglycæmia and glycosuria are clinically manifested by these women and this makes one assume that there exists hyperadrenalemia in this condition. These symptoms are similar to those obtained by intravenous injection of Adrenalin and women who complain of flushes show increased sensitiveness to Epinephrine.

Hypertrophy of the suprarenal cortex at the climacteric is evidenced clinically in certain women by the development of secondary masculine characteristic changes in the physical form of the body, alteration in the voice, masculine distribution of hair, and alteration in personal character, i.e. virility.

Age at Onset.—I am supposed to be writing on the *Diseases of Old Age*. To what extent these climacteric changes disturb the normal health, both physical and mental, of any person will depend upon the individual make-up, the speed with which the changes occur, and the ability of the individual to adopt quickly to the altered circumstances.

As regards the age, it is very difficult to define what *Old Age* is. It varies in different countries, with each individual, and his mode of life. "A man is as old or as young as he feels". However, it is certain that the reproductive organs diminish or cease functioning long before other organs. Naturally, the climacteric period comes on at an earlier age than the actual old age. The average age is between 45 and 50, but in our country where nutrition is inefficient, where demand on reproductive organs is great as seen by rapid succession of pregnancies, the exhaustion of the gonads occurs earlier. Climate, race, heredity and general health have much to do with the age of onset.

The Duration and Intensity of Climacteric Disturbances.—The climacteric disturbances last, on an average, for two to three years, by which time a new endocrine balance is set up. In some women, it may be a matter of only a few months and in some others, the changes may be so gradual

and the disturbances so insignificant that they are barely aware of the transition. On the other hand, the clinical manifestations of the climacteric may be so marked as to approach a state of morbidity. The more sexually mature a woman is, and the longer her system has been under the influence of what is known as *Sex Complex*—(a term devised by BLAIR BELL to denote harmonious working of various hormones), the more is she likely to suffer from a break in the factors which compose the Sex Complex.

Symptomatology.—1. *Cessation of Menstruation*:—This is the most important event of the climacteric period. The menstrual cycle may terminate abruptly, but usually the periods become irregular and scanty while the intervals gradually lengthen until complete amenorrhœa ensues. The transition may take several months or years, it being but a mirror of the progressive loss of ovarian function. Metropathia hæmorrhagica may set in and it is probable that an ovulatory menstruation often characterises the terminal cycles. At times the flow appears at shorter intervals and also may become prolonged and profuse. Such cases require careful physical and pelvic examination, including uterine curettage with microscopic examination of the scrapings in order to eliminate the possibility of malignancy.

2. *Local Pelvic Symptoms*:—With the loss of ovarian function, there is atrophy of the accessory genital organs. This is specially noticeable in the sequelæ of senile vaginitis. The glycogen content of the vaginal epithelium disappears, the acidity of the vaginal secretion diminishes, the Doderlein's bacilli can no longer thrive, and consequently the lining membrane of the vagina becomes vulnerable to the pathogenic organisms. Sanguineous leucorrhœa results, which irritates the vulval skin giving rise to pruritus vulvæ. The local skin becomes thickened, cracked and ulcerated showing patches of leukoplakia which may end in cancer of the vulva. Kraurosis vulva occurs in younger women deprived of ovarian hormone. With the shrinking of the vagina, dyspareunia may result, and adhesions may form between the mucosal surfaces.

Periurethral tissues also undergo shrinking giving rise to difficulty in micturition. Caruncles may develop at the urethral opening.

Women who had previously undergone operative labours or had rapid succession of pregnancies, lose the tone of the supporting structures in the pelvis which is likely to be exaggerated in the old age resulting in cystocele, rectocele, and uterine prolapse.

3. *Circulatory and Nervous Symptoms*:—Vasomotor symptoms which mainly consist of flushes, free perspiration, chills, and vertigo may be attributed to the lack of oestrin influence upon the autonomic nervous system. Hemisrania, palpitation and hypertension are probably due to excess of adrenal activity. Headache, dizziness, neuralgias, disturbances of sight and smell, as well as tingling, formication, pruritus and numbness of extremities are some of the varied complaints related to her doctor by a climacteric woman.

4. *Psychic Symptoms*:—Irritability, inability to concentrate for any length of time, mental depression, restlessness, insomnia etc., arise in a number of women during the climacteric. These symptoms are likely to be more pronounced in women of inherited or acquired neurasthenic tendencies. An adverse mental effect may result from the anatomical changes of the climacteric, such as vaginitis causing dyspareunia with a consequent

disruption of a previously normal sexual life, or uterine bleeding leading to a cancerphobia.

The most characteristic psychic phenomenon of the climacteric is an *emotional instability*. All emotional stimuli—sadness, joy, fear and impatience—evoke responses which may become violent. At times, the woman acquires an energy and aggressiveness unknown before and undergoes a transformation into the proverbial "mother-in-law" type, ready to pounce upon her subordinates or servants at the slightest provocation. In the majority of women, however, with sound mental and physical constitution, these psychotic or neurotic reactions do not occur at all, or are so mild as to be scarcely perceptible.

5. *Changes in the Appearance*:—These are partly due to accumulation of fat resulting from lowered metabolism, over-indulgence in food, and sedentary habits; and partly due to old age as well as virilism. Abnormal growth of hair occurs on the face at the same time pubic and axillary hair is lost.

6. *Miscellaneous Disturbances*:—Many women at this period suffer from joint pains, so called "menopausal arthritis." Some attribute these to focal sepsis while others believe them to be due to endocrine imbalance, giving rise to accumulation of fat in the synovial membranes and synovial villi.

Gastro-intestinal disorders, gall bladder diseases, vague pains throughout the body are occasional disturbances of the climacteric, but these may as well be due to old age.

TREATMENT:—Climacteric and the menopause are physiological processes and they cannot be prevented. There is a necessary period of readjustment and only symptomatic treatment can be given to make the few months or years of women's life less miserable. Only a small percentage of women in the climacteric suffer severely, and many of them can be made happier by proper instructions in cleanliness, personal hygiene, dietetic restrictions and mental attitude.

The number and intensity of nervous and psychic manifestations of the climacteric may be greatly influenced by a helpful talk with a sympathetic physician. It should be pointed out to her that there need be no serious interference with her usual way of living. Relief of her fears and anxieties will encourage her to develop an optimistic outlook. Sedative drugs such as Bromides and Barbitol derivatives may be prescribed at short intervals.

Specific Treatment.—The specific measures employed in the treatment of climacteric symptoms aim at a direct control of endocrine changes. These changes are of a pluriglandular nature, but any attempt to stabilize the endocrine imbalance must be based on the treatment of the gland primarily responsible for the reactions in the several other glands.

Hypersensitivity of the vegetative nervous system may be attributed to the lack of follicular hormone, oestrin. Administration of this hormone to climacteric women with vasomotor and nervous symptoms brings about relief. Oestrin also has antagonistic action on the raising of blood pressure, at the same time the excess of anterior pituitary hormone disappears from the blood and the urine.

The dosage necessarily varies with each patient. In mild cases, 100 to

200 International Units may be given orally two or three times a day, increasing gradually until relief is obtained. The relief may last only a few weeks and treatment must be repeated at intervals until final readjustment of the patient is reached.

If vasomotor and nervous symptoms are very severe, 50,000 I.U. in oil may be injected into the muscle twice a week, omitting every fourth week in a month. Oestrin therapy must always be interrupted and not continuous. If an oral preparation is employed, it must be taken daily in very much greater doses. As much as 10,000 to 20,000 I. U. may be required to be swallowed daily three times a day.

Attention must be invited to the fact that in premenopausal women, menstruation may be delayed and in the menopausal period, bleeding may ensue following large doses of interrupted oestrogen therapy.

Progynon, Ovocylin, Menformon and Dimenformon are some of the oestrin extracts from animal ovaries whereas Stilboestrol and Clinestrol are synthetic products having similar actions as follicular hormone. The synthetic products however give rise to nausea and vomiting which may be diminished to a certain extent by administration of Calcium, Sodabicarb. and Nicotinic acid.

Oestrin therapy also brings about improvement in the vaginal epithelium as well as in the patches of leukoplakia and kraurosis vulva. "Senile Vaginitis" may preferably be treated by inserting vaginal suppositories containing 2000 I.U. of oestrin. These are used every night by the patient herself after some mild antiseptic douch (1% Lactic acid douch for example), Koplan vaginal suppositories are supplied by Organon Laboratories.

Attempts are being made to embed crystalline sterile oestrin tablets into the subcutaneous tissues of the climacteric women so that the hormone may be continuously absorbed in small doses over a long period.

Very large doses of oestrin have produced cancer and pituitary tumours of chromophobe cells in experimental animals but no such calamity has been noted in human subjects even after large therapeutic doses of oestrin.

Thyroid Therapy.—Small doses of thyroid $\frac{1}{4}$ to 1 gr. two times a day may also be given in association with oestrin therapy, specially to those women who show signs of obesity and "climacteric arthritis". These two hormones given separately have given better results in my hands rather than combined pluriglandular tablets so widely advertised. Most of the other hormones are destroyed in the intestinal tract and the dosage of each individual hormone cannot be controlled when pluriglandular tablets are prescribed.

The movements of the bowels should be regulated by laxatives and clearing up may be done with weekly or fortnightly saline purge. Suitable advice should be given as regards diet and exercise and she should be encouraged to take interest in social activities.

Search should be made for focal sepsis and this should be irradiated whenever possible. Leucorrhoea and arthritis may have their origin in cervical erosion which should be cauterised. Pyometra may occur at this period of life and a careful examination should be made to ascertain it. Dilatation of the cervix and washing the uterine cavity with Hydrogen

peroxide may suffice but should the condition recur too often, vaginal hysterectomy should be advised.

An acid mixture and vitamin A in conjunction with oestrin therapy gives better results in cases of vaginitis, leukoplakia or kraurosis.

Cystitis should be treated with alkaline mixtures and bladder irrigations, but cystocele and other displacements will require radical operations.

Treatment of Uterine Haemorrhage.—It is unfortunate that dysfunctional uterine haemorrhages, sanguineous leucorrhoea due to senile vaginitis, as well as cancer of the uterus should occur at this period. More is the reason why practitioners should not treat such cases by ordering out douches and prescribing uterine tonics, without first ascertaining the local pelvic pathology. The sense of false modesty on the part of the patient or her doctor may leave the cancer undiagnosed till it is too late when it would be impossible to relieve the sufferings of the unfortunate woman. It is essential to carry out a systematic campaign against ignorance and indifference by an educational propaganda among medical and lay circles in order to prevent this fatal delay.

Once it is ascertained that there is no cancer, by diagnostic curettage if slightest doubt existed, then the dysfunctional uterine haemorrhages may be treated with rest, styptic drugs, calcium, vitamins C and K, autohaemotherapy etc. At the same time, anaemia must be treated with iron and liver since anaemia itself may keep up menorrhagia.

As stated above, in some of these cases the cause of uterine haemorrhages is metropathia haemorrhagica with multiple follicular cysts in the ovaries. Such patients may find relief after repeated injections of Progestin or after scraping away the hypertrophied polypoidal endometrium. Resistant cases should be advised vaginal hysterectomy or intrauterine implantation of the radium. This may have to be followed by oestrin therapy for general symptoms.

On rare occasions, the cause of excessive uterine haemorrhage may be located in the ovarian tumour—specially the granulosa cell tumour, which secretes oestrin in large amounts. Such tumours should be removed by operation.

*Benham Hall Lane.
Girgaum.*

Bio-Chemistry of Old Age

BY

A. S. MANNADI NAYAR, M.B.B.S., Ph.D.,
Professor of Bio-Chemistry, Medical College, Madras.

Life Journey.—Our earthly life journey may be compared to that of a traveller climbing up a hill, reaching its summit at the age of 30, then proceeding along level plateau, arriving at the farther end by the age of 45—50, and then climbing down a rapidly falling slope. In this article, our object is to focus our attention on the journey down the slope, to note the usual accidents happening to the traveller under normal conditions and then to examine the possible risks to life under abnormal conditions.

Physiological Involution.—By the age of 45, the wear and tear of the journey begins to be felt. There is a general and progressive decrease in functional activity of the cells of organs and tissues. The reaction to stimuli begin to be sluggish. Atrophic involution of the cells of the organs and tissues starts. But, all cells are not equally affected. The somatic tissue seems to deteriorate long before the brain and central nervous system. There appears to be a sort of adjustment of blood supply in the body. The more important organs like the brain are supplied with blood in full measure, long after the supply to muscles, joints, skin, digestive organs and such like is rationed. Therefore, it is found that our brain power suffers only long after the other less important organs are affected.

Presbyopic Period.—One of the early warnings received at our approaching the journey down the slope is presbyopia. One realizes that he has to hold his book or paper he reads, farther away from the eyes than before in order to read clearly. The presbyopic period, the result of physiological atrophic involution of the lens—sclerosis—may be stated to be between the ages of 45 and 50. It is also at this period that minor degrees of astigmatism begin to be felt. The ciliary muscle which was active and able to obviate the effects of minor degrees of astigmatism, becomes stiffer and unable to adjust the lens. Therefore, headache and other effects of eye-strain begin to be experienced. It is then desirable to get the eyes tested by an ophthalmic specialist and the errors of refraction corrected by suitable glasses.

Defective Hearing.—It is usual at this period to detect defective responses in other sense organs also. One begins to realize that his hearing power is not so sharp as it used to be. The degenerative process seems to proceed side by side in the two organs. Ringing or singing in the ears is a complaint often heard at this period along with deafness. Deafness at this period may be due to atrophy of the auditory nerve, besides wax in the ears or eczema of the external auditory meatus. Tinnitus aurium may also be associated with vertigo or giddiness, although other causes like cerebellar or cerebral derangements can cause giddiness.

Arteriosclerosis.—A temporary giddiness on rising from the recumbent to the upright position is experienced sometimes by elderly men. This may cause much alarm to the sufferer, though a smart purgative may relieve him of the symptoms. Sometimes, this giddiness may be due to arteriosclerosis. This is rather a vague term from a pathologists' point of view.

Atheroma or nodular arteriosclerosis affecting commonly the aorta, and also the coronaries and the cerebrals, is primarily a disease of the intima, where deposits of cholesterol ester are laid in the intima with subsequent calcification. Atheroma of the coronaries and cerebral vessels is naturally more important from a clinical point of view than that of aorta. Atheroma is considered to be the result of wear and tear of life.

The sclerosis of superficial vessels, occurring in prominent and tortuous temporals and radial vessels seen in elderly people, on the other hand, is a medical degeneration with calcification. This is called "MÖNCKEBERG'S Sclerosis" and is essentially a senile change, the natural result of atrophic involution of a blood vessel. The third variety of arteriosclerosis, diffuse hyperplastic sclerosis, affecting the kidneys, and sometimes, the splenic, the pancreatic, the hepatic or the cerebral arteries, is more or less constantly associated with increased blood pressure and cardiac hypertrophy. Thickening of the intima, reduplication of the internal elastic lamina or otherwise called elastic hyperplastic change and later degeneration of the media, appear to be the chief changes in this condition. Though THOMA considers that this condition also is due to atrophic involution, it is more probable that it is a pathological condition.

Changes in the Skin.—Sooner or later, changes in the skin make their appearance. Owing to the atrophic disappearance of elastic tissue and muscle fibres, unwelcome wrinkles begin to appear. The skin becomes dry and thin. The capillaries atrophy and diminish in size and number, and consequently the skin suffers in its nutrition. The pallid colour of the old man's skin, attended sometimes with pigmentation, is the result. Pigmentation is of course for protection from the effects of ultra-violet rays of the sun and in those who cannot produce a sufficiency of the brownish black pigment, melanin, the skin tries to make up this deficiency by growth of hair.

Grey Hair and Baldness are the other signs of physiological involution affecting hair follicles. Hair of the head and beard and sometimes of the body also grows grey and even silvery white. Baldness also appears in some. Though it may appear earlier in the life of some, and in others not at all appearing even in old age, its cause, though not known, appears to be due to endocrine deficiencies,—the thyroid, adrenals, or some other glands.

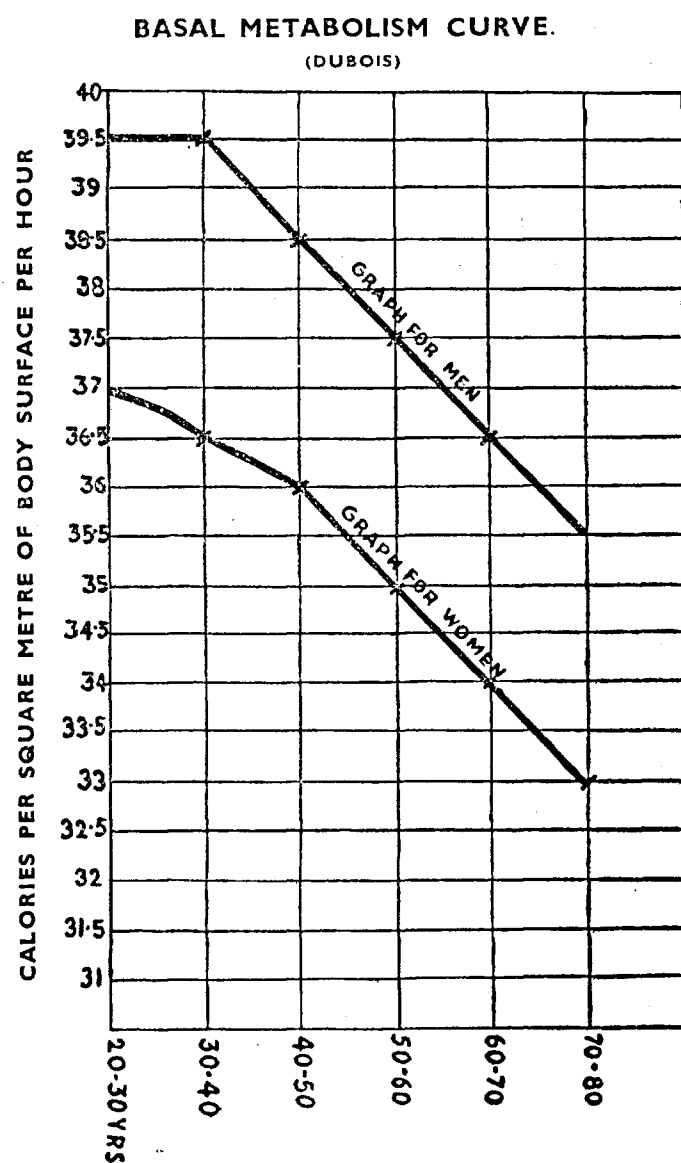
Muscle Weakness.—Muscular power and ability to walk as far and as fast as one used to do, appear to diminish. Not only the skeletal muscles but also the involuntary muscles of the digestive system and the glands lining the walls share their quota of atrophic involution. Their activities diminish, the power of peristaltic movements decreases and the quantity of the intestinal secretions diminishes. Constipation and poor digestion are the results. One often hears the story that one cannot eat as much as one used to do in former years.

The Endocrine Glands also seem to be affected. The obesity of women at menopause or of men at 45—50 years appears to be the result of endocrine deficiency, thyroid, pituitary or sex glands being affected.

Brain and Central Nervous System.—As the journey down the hill proceeds, brain and central nervous system show atrophic involution. Diminished sensibility to pain, both mental and bodily, is noticed. Death

of friends and near relations does not appear to upset the elderly persons as much as the young. Nor are their brain cells able to produce creative or original ideas nor to appreciate them well when presented. Forgetfulness of names and, later on, of recent events is experienced. Complaint of mislaying things is often heard. Reaction to physical pain is also diminished. This is sometimes a relief for elderly persons when they suffer from diseases attended with pain.

Bio-chemical Changes.—What are the bio-chemical changes that are found in elderly people who are healthy? DUBOIS found that the basal



metabolism remains fairly steady between 20—40 years and then gradually falls down from 40 to 80 years. A graph drawn from the figures of DUBOIS is attached. A similar decline was noticed by KISE and YOSHIAKI, who examined 94 Japanese normal persons between the ages of 50 and 93. They observed a decrease of 3—5% in each period of ten years.

Gastric Secretion:—POLLARD and BLOOMFIELD have shown that gastric juice secreted, diminishes with advancing years. Ten-minute volume, after histamine test, varied from about 40 c.c. at 20 years, to 25 c.c. at 70 years; and the volume fell steadily with increasing years. Average total acidity also shows a

definite lowering with advancing years. However, percentage decrease in volume was more prominent than percentage decline in acidity. VANZANT

and his associates of the Mayo Clinic, using modified Ewald Test Meal, observed a similar correlation. Among the males, the free acidity varied from 45—50 units between 20—40 years, to 30—35 units in the aged and the average total acidity varied from 66 units at 20 to 56 at 65. Among the women, the average free acidity, and total acidity remained more or less the same from 20 years to 60 years—average free acidity being 35 units and total acidity 51 units.

Vital Capacity:—Statistical studies of vital capacity of normal individuals at different age periods reveal a similar decline in old age. It remains the same between 20 and 50 years and declines after 50, markedly so after 60, so that by 80, it is often reduced by 50%. DREYER and HANSON consider that vital capacity measurements indicate the state of physical fitness.

Kidney Function:—Kidneys possess enormous reserve power. The reduction in this reserve power is indicated by relative insufficiency tests like dilution test, concentration test, Phenol-sulpho-nephthalein test, and blood urea clearance. In old age, we find the reserve power of the kidney is reduced. The reduction in diluting power and concentrating power of the kidneys is exhibited by the limited fluctuation of the specific gravity of the urine 1010—1018 compared to 1002—1030 in the younger persons. The pale urine is due to deficient excretion of urochrome.

Blood Changes:—Blood urea, non-protein nitrogen, uric acid and Creatinine in healthy elderly individuals are either in the region of upper normal limits or very slightly increased. A slight reduction in blood sugar curve is not unusual in elderly individuals. It has no pathological significance. No change is observed in blood lipids between the ages of 20—90.

Endocrine Secretions:—The excretion of androgen—male sex hormone—is maximum between 20—40 years and then it diminishes. In women at menopause, there is a failure of the ovaries to respond to gonadotropic hormones of the anterior pituitary, and hence to secrete oestrogens. The symptoms of menopause, vasomotor disturbances, irritability, depression and fatigue are due to oestrogen deficiency and, therefore, are successfully treated by the administration of oestrogens. However, not only there is no failure in the production of gonadotropic hormones but on the other hand, they are increased. There appears to be diminished secretion of thyroid and adrenals in elderly persons.

Diseases of Old Age—Pathological Bio-Chemistry.—Diseases that are commonly found in old persons are chiefly, (i) obesity if we may call it pathological, (ii) Hyperpiesis, (iii) Albuminuria, (iv) Gout, (v) Diabetes and (v) Enlarged prostate.

Obesity.—Obesity may be found at all ages; it is specially found in babies, children at puberty and in men and women between 40—50 years. Excessive eating and drinking and under-exercising give rise to obesity, exogenous obesity or obesity of super-alimentation. But obesity is often due to endocrine disturbances. Obesity in elderly persons may be due to deficiency of thyroid, pituitary or gonads.

Subthyroidal Obesity.—In subthyroidal obesity, deposition of mucinoid substance appears to be above the waist-line. The upper arms and shoulder appear to be particularly prone to this kind of deformity. Baggy eyelids from mucinoid deposits in the eyelids, harsh dry skin, especially over

the triceps, malar flush, rarefaction or complete absence of the entire third of the eyebrows, and a high arched palate with history of adenoids or nocturnal enuresis in childhood are other supporting signs of sub-thyroidism. In these cases, basal metabolic determinations will show a diminution of 20—25% *i.e.*, the rate of oxidation in the tissues is diminished. Because, the general metabolic activities are diminished, pulmonary ventilation, oxygen consumption, carbon-di-oxide output and excretion of nitrogen in the urine are all decreased. Consequent on decreased utilization of oxygen by the tissues, output of the heart is reduced, probably from 4 litres to 2.5 litres. Temperature of the body also may be subnormal. But the diagnosis of sub-thyroidism is confirmed when administration of small quantities of thyroid alleviates all these abnormalities.

Obesity of Pituitary Insufficiency:—May be rather of a different type. Here, the deposit of fat is most conspicuous at or below the waist line. The round and chubby face has scanty hair in the beards; such is the case in axillæ also. The men are lumpy and hyposexual. CUSHING has described absence of half moons on the nails, presence of little black moles dotted about the skin and a heaping up of the skin about the roots of the nails, in this type of obesity.

In these cases, basal metabolic rate is diminished by about 20% with a slow pulse and a moderate degree of somnolence. Here also, on account of the diminished metabolic activity of the tissues, all other bio-chemical changes described above in sub-thyroidism will be observed. Probably, they are due to diminished secretion of thyrotropic factor of anterior pituitary.

The Obesity of Gonadal Hypofunction:—Is noticed at about 45—50. Increased deposits of fats in the hips or increased waistline is not an uncommon finding at this period of life in both sexes. Ovarian insufficiency at menopause seems to be associated with thyroid insufficiency and administration of thyroid helps the sufferers to a certain extent.

Hyperpiesis.—Hyperplasia and hypertrophy of muscular arteries is commonly accompanied by high blood pressure and in due course with hypertrophy of the heart especially that of the left ventricle. This cannot be considered purely a senile change. It should be deemed to be the end result of poisons circulating in the system although an inherited tendency is alleged. Amines formed in the large intestine by bacterial decomposition of unabsorbed aminoacids; sepsis in the teeth, tonsils, sinuses or genito-urinary tract; disturbance of endocrine secretions of ovaries, thyroid, adrenals or other ductless glands; exogenous poisons like tobacco, alcohol or lead; nervous and psychological factors, resulting in over secretion of adrenalin; and pressor substances formed by the kidney, have all been considered as probable causes for cardio-vascular hypertrophy.

In the great majority of essential hypertension cases, renal function is normal. Renal function tests, blood urea clearance test and urea concentration test etc. are approximately normal. Only in less than 10% of these cases, kidneys become damaged and malignant hypertension, with reduction of renal function, ultimately ending in uræmia and death occurs. However, hypertension is really a serious matter as it is found by statistical study in America that 25% of all deaths in persons over 50 years is due to hypertension and its consequences. Cardiac failure or cerebral hæmorrhage are responsible for death in a large majority of cases of hypertension.

In malignant hypertension, renal insufficiency dominates the picture

and death from uræmia occurs in a few months. Rapid rise in non-protein nitrogen from 50 mgs. % to 100 mgs. %, in blood urea from 75 mgs. % to 150 mgs. % and in Creatinine from 2—3 mgs. % to 5 mgs. % and a reduction in blood urea clearance from percentage of average normal of 40—45% to 20% in less than a month's time is not at all unusual in malignant hypertension. Perhaps in another few weeks blood urea and non-protein nitrogen may rise above 200 mgs. % and death from uræmia may result.

Albuminuria.—This may sometimes be found in essential hypertension and is due to cardiac weakness and disappears with improvement of the circulation. Slight albuminuria is also found in arteriosclerosis but the kidney function is not at all deranged. On the other hand, in malignant hypertension, albuminuria is much more marked and renal impairment is progressive. Resistance to infection is lowered in elderly people and infection of the teeth, tonsils, sinuses or skin can give rise to albuminuria. Prompt treatment of the infection and kidney impairment soon removes the albumin in the urine.

Gout and Diabetes.—These are two metabolic diseases that are found during this phase of life. Gout is commoner among the English and German races. It is rare among the Indians in tropics. Metabolic disturbance is in purine metabolism or nucleo-protein metabolism and is characterised by attacks of acute arthritis, big toe, ankle, knee, small joints of the hand and wrist, being affected in that order of frequency. Throbbing and burning pain in the ball of the great toe with stiffness and heat of the skin, fever and restlessness are seen in acute attacks of gout. Other joints may be affected also. Deposits of Sodium biurate in and around the joints suggest that it may be the cause of arthritis. Retention of uric acid a few days before and during the attack has been attributed to renal insufficiency in the excretion of uric acid and hepatic insufficiency, interfering with normal destruction of uric acid by the liver. Deposits of biurate in the cartilage of the ear, in the outer margins of the pinna, cause the appearance of tophi, the earliest signs of gout. Besides the drug treatment with Colchicum or Cincophen, dietetic treatment with a purine-free, low-protein and low-calorie diet helps very much in the relief of the malady. Immediately before and during the acute attacks of gout, a rise in uric acid content of the blood 6—10 mgs. % [normal 2—4 mgs. %] is observed, but there is no rise in blood urea or Creatinine. The predisposing causes appear to be over-indulgence in rich food and fermented drinks, with neglect of physical exercise.

Diabetes on the other hand, is a very common disease in South India. However, all cases of glycosuria are not diabetic. Renal glycosuria is far more frequent in our country than realised by the public and the profession. Glycosuria from other causes also can occur. Therefore, diagnosis of diabetes by glucose tolerance curve, respiratory quotient curve and perhaps with inorganic phosphate curve is a necessity. Diabetes is a metabolic disease affecting carbohydrate protein and lipid metabolisms. Researches of HIMS WORTH and associates and SOSKIN and others justify the classification of the disease into two classes (i) Insulin-sensitive type and (ii) Insulin-insensitive type. The former is found in thin young individuals with normal blood pressure and normal arteries and history of sudden and severe onset. These cases appear to be due to Insulin insufficiency and, therefore, respond to Insulin treatment very well. The second type is seen in obese elderly

individuals with hypertension and arterio sclerosis and a history of insidious onset. In these cases the metabolic disturbance appears to be the result of excess of diabetogenic hormone of anterior-pituitary. The *biochemical findings*, however, are more or less the same in both. Fasting, hyperglycemia, diminished glucose tolerance curve (i) initial blood sugar raised above normal values (ii) peak value much above 180% mgs. (iii) delay in the fall, the blood sugar never returning to normal within three hours, diminished respiratory quotient below 0.8; and the respiratory quotient curve only rising very slightly above the post-absorptive level or not at all; are the usual findings in diabetes. There is diminished peripheral utilization of sugar and consequently the arterial-venous difference in arterial and venous blood sugar curves will be much below normal and in severe cases may even be abolished. If the serum inorganic phosphate curve is taken, it will be found either remaining at the post-absorptive level or even slightly raised instead of falling with hyperglycemia as in normal persons.

Disturbance in Lipid Metabolism, observed in diabetes, consists in the incomplete combustion of fats. For complete oxidation of fats, proper utilization of sugar is essential. When utilization of sugar is defective, as in diabetes, combustion of fats is defective and this gives rise to production of aceto-acetic acid, *beta* hydroxy butyric acid and acetone in blood and urine. Introduction of acid bodies in the blood, reduces the alkali reserve (Sodium bicarbonate content) and necessitates compensatory hyperpnœa to get rid of some carbondioxide to keep up the pH of the blood which depends upon the ratio $\frac{H_2CO_3}{BHCO_3}$. Hyperpnœa causes a fall in alveolar carbondioxide tension which, in its turn, causes a fall in the carbondioxide tension in arterial blood thus keeping up the ratio of $\frac{H_2CO_3}{BHCO_3}$. This ketosis is accompanied by a highly acid urine and increased ammonia excretion.

Protein Metabolism, also is disturbed in diabetes as liver in diabetes produces glucose from 58% of proteins ingested and 10% of fats. In normal conditions, production of sugar from non-carbohydrate sources is kept under control but in diabetes it goes on unchecked, under the control of excess of diabetogenic hormone of anterior pituitary or in the absence of Insulin sufficiency. It appears that hyperglycemia and ketosis in diabetes are due to unopposed action of diabetogenic hormone. However, treatment with regulated diet, and in emergencies with Insulin, is effective.

Enlargement of Prostate is a disease of old age. The first sign noticed is that the patient has to get up once or twice and later on several times in the night to pass urine. Then inability to completely empty the bladder arises. Later on, with further enlargement of the gland, difficulty to start the act of micturition is experienced; bladder now does not empty properly and residual urine increases. This leads to muscular hypertrophy of the bladder which later on, leads to dilatation. The mouths of the ureters become distended and the upward pressure continues until the pelvis of the kidneys are also distended. The chief symptoms complained of are polyuria, loss of weight and emaciation. If the urine becomes septic further troubles start.

Blood urea estimation is of great importance in the management of these cases. Medical treatment of the condition is of doubtful value. If there is obstruction to the flow and renal impairment blood urea will rise. It will be first about 50—60 mgs. % and then rises in proportion to the renal

impairment. Operation in two stages is a safe procedure in the hands of experienced surgeons and blood urea estimation after the first operation is a necessary safeguard to determine the period of second operation.

There are other diseases affecting this period of life like hernia, gall-stones, carcinoma etc. but they are not discussed in this article.

Prophylactic Measures:—In conclusion, let us consider what logical steps can be taken to maintain health in old age. Restriction in diet and proper regulation of the same, with strict limitation of protein and liberal allowance of fresh vegetables and fruits and abundant supply of vitamins is the first consideration. Next, avoidance of Intestinal stasis with proper regulation of the bowels and avoidance of exogenous poisons like tobacco and alcohol are to be practised. Regulated and suitable exercise avoiding undue strain to the heart, and enjoyment of plentiful supply of fresh air are equally important to avoid wear and tear, as far as possible, in life journey; periodical rest, at least one month in every year, preferably in a hill station or on sea voyage is essential. Good sleep in fresh air and avoidance of all worries and anxieties as far as possible and, in short, to cultivate a habit and temper of strict moderation in everything are other keys to maintain health and longevity.

19, Victoria Crescent,
Egmore, Madras.

Senile Affections of the Eye

BY

G. S. GUHA, M.D., D.T.M.

Honorary Ophthalmic Surgeon, Govt. Hospital, Shillong.

IN senile affections of the eye, practically all the different parts of the organ may be affected. But the affection which is clinically most important and most frequent in the senile changes is the lens. Taking each part of the eye separately, the senile affections may be dealt with in a systemic manner.

I. Lid.—Ectropion of the lower lid may be produced as a result of relaxation of the tissues and degeneration of the orbicular muscle fibres.

II. Conjunctiva.—1. Senile changes are found in the epithelium, subepithelial layers, elastic fibres and conjunctival blood vessels. There is thickening of the conjunctival epithelium with a tendency to keratinisation; the subepithelial layer of cells get atrophied and lead to hyaline degeneration; the elastic fibres gradually disappear producing a liplike fold on the conjunctiva of the lower lid. The conjunctival vessels become varicose with fusiform dilatations. Senile conjunctiva therefore looks much less transparent and less uniform than the normal conjunctiva.

2. Hæmatogenous pigmentary changes may also be produced in senile traumatic and diseased conjunctivæ. A ring of yellowish brown pigment forms in the epithelium at the limbus.

3. *Pinguecula*:—A yellowish triangular patch occurs on the bulbar conjunctiva on either side of the cornea, but usually on its nasal side and in the direction of the palpebral fissure, the apex of the triangle being situated away from the cornea. Pinguecula is caused by the hyaline degeneration of the conjunctival tissue and a proliferation of the yellow elastic fibres owing to senile changes and exposure.

4. *Conjunctival Concretions*:—These occur as minute, hard, yellow spots in the palpebral conjunctiva of the eye of the old people or of one with chronic inflammation. These hard yellow spots are products of cellular degeneration retained in small depressions and tubular recesses of the conjunctiva and sometimes in glands of new formations. Their calcareous change is very rare.

III. Cornea.—1. Changes in shape, transparency and refractive index. These changes are: (a) It becomes flatter and thinner. The curvature diminishes particularly in the vertical meridian. (b) The lamellæ become more closely packed. (c) It loses its lustre and transparency. (d) Its refractive index increases.

2. *Cornea Farinata* (VOGT, 1930):—Fine, dust-like opacities occur in the deeper layers of the cornea. These can be seen by slit lamp examination.

3. *Crocodile Shagreen and Deep Crocodile Shagreen* (VOGT, 1930):—A fleck form appearance forms either in the BOWMAN'S membrane, sometimes with its angular tears, or in the axial region of DESCMET'S membrane. These are detectable only by slit lamp and corneal microscope.

4. *Hassall—Henle Bodies*:—Up to 20 years of age, the DESCMET'S membrane becomes uniformly thicker. But after this, localised nodular thickenings of the margin of the cornea into the anterior chamber takes

place. These occur owing to over-activity of hyaline formations by the endothelial cells. These are detectable only by slit lamps and corneal microscope.

5. *Arcus Senilis*:—It is a true senile degeneration of the cornea owing to partial and progressive obliteration of the capillaries at the limbal region. As a result, a peripheral annular lipid infiltration of the corneal stroma takes place.

The first change is a peripheral hazy circular area in the DESCMET'S membrane at first seen in the lower and then in the upper part of the cornea. As age advances, a similar hazy area appears afterwards in the BOWMAN'S membrane and in the superficial layers of the stroma. With further advancement of age, the two hazy areas fuse forming a complete circular opacity which is separated by a clear area from the limbus.

6. *Band-shaped Opacity*:—It is a very rare condition. It occurs in old, blind and shrunk eyes as a continuous band across the cornea. It is caused by defective nutrition and exposure, resulting in hyaline degeneration of the superficial part of the substantia propria with deposition of calcareous salts.

7. *Senile Marginal Atrophy*:—In it, there is a formation of a gutter in the periphery of the cornea in the region of the arcus senilis. It is a very rare condition.

8. *Pigmentary Changes*:—(a) Pigments from the iris and ciliary body may get loose and deposit on the back of the cornea and appear as golden brown precipitates. (b) Pigmented line of the cornea (HUDSON'S Brown about the junction line) is a brown pigmented line running approximately horizontally at the middle and lower two thirds of the cornea. It occurs in persons over 50 years of age. The cause is obscure.

9. *Primary Fatty Degeneration*:—It may occur physiologically as an arcus senilis.

10. *Calcareous Hyaline, and Amyloid degenerations*:—These may occur primarily or secondarily in the old scars and opacities of the cornea of the senile eye.

11. *Epithelial and Endothelial Dystrophy of Fuchs*:—In this condition, there is an oedematous change in the epithelium and endothelium of the cornea resulting in its loss of sensibility. There is first an endothelial degeneration through which the intra-ocular fluid enters the cornea causing at first the dystrophic changes in the epithelium and then in the substantia propria.

IV. Sclera.—Senile changes of the sclera are not marked and also not common. There may be fatty and hyaline degenerations and calcification of the sclera.

Hyaline degeneration—almost invariably occurs under the region of the pinguecula. The most interesting but very rare condition is scleromatacia perforans. It is characterised by the appearance of holes in the sclera without any sign of inflammation. The holes may appear in any part of the sclera. They develop slowly and may be multiple, usually a yellow excrescence appears first and this when punctured gives out a yellowish granular substance. The holes may be covered by the conjunctiva

or in some cases may remain bare without covering. If any hole opens in the anterior chamber, a cyst may be formed and a fistula may be developed.

V. **Iris.**—Senile changes of the iris are :—(1) Depigmentation. and (2) Atrophy of the stroma especially near the pupillary margin. This causes an irregularity in the shape of the pupil.

VI. **Lens.**—As has been already mentioned, the senile changes of the lens are most frequent and clinically most important. This is owing to the fact that the lens, as it lies behind and in the line of pupillary area, has the most important bearing on vision. Any change in its consistency leads to its opacity and therefore interference with normal vision.

It is interesting to note that lens is the richest protein containing organ of the body.

The lens proteins are:—Water-insoluble protein (Albuminoid.); water-soluble protein (a) Crystalline, (b) Crystalline Albumin.)

With age, the water-insoluble protein increases while the water-soluble protein decreases. Tyrosin, a protein constituent of lens, increases with age while Glycocoll, also another protein constituent, completely disappears. Lipoids, which in young eyes remain in trace, increase very much with age especially in its cholesteric content. There is also an increase of the calcium and phosphorous contents of the lens with age.

1. **Sclerosis of the Lens** :—Like all other epithelial structures, the lens grows during the whole life. The old cells are cast off from the surface but remain in the centre; new cells continue to develop in the place of the cast off old cells. An excessive development of the epithelial cells, where there is no further space in the eye ball which stops growing in size after the adolescent period, results in shrinking of the nodules of the lens and a condition called sclerosis of the lens takes place. With the sclerosis of the lens, the accommodation of the eye gradually decreases.

2. **Change in Colour of the Lens** :—In addition to sclerosis, there is change in the colour of the lens. The lens of the new-born is practically colourless except that sometimes there is a slight yellowish tint present in the nucleus. But, with the advance of age, there is a change to a brownish tint. So, the sight gets gradually deteriorated and the sense of colour is also affected due to absorption of rays to some extent and a certain degree of blue blindness occurs. Therefore, after the extraction of lens in one eye in case of cataract the patient will notice difference of colour of objects in each eye when looked at objects separately with each eye. Probably, the Tyrosin content of the lens protein has something to do with the change in colour of the lens nucleus.

3. **Cataracta Senilis** :—It usually occurs after the age of 50 years but in some persons like pre-senile greying of hairs, it may occur at a comparatively earlier age. Such early senile cataracts are known as cataracta coronaria. In early stages, this can be diagnosed by slit-lamp only after the maximal dilatation of the pupil.

The typical senile cataract begins either as a marginal cataract with radiating spokes or as diffuse opacities in the nuclear region. These two forms may occur separately or in combination. It usually occurs in both the eyes but sometimes may occur in one eye.

(a) **Cortical or marginal senile cataract** :—This is the commonest form of senile cataract. There are four stages of its development.

(i) **Incipient stage** :—At this stage, there are formations of fissures with accumulation of water in them beneath the anterior and posterior capsules. These water-containing fissures soon become opaque with bases at the equator of the lens and apices at the anterior and posterior poles of the lens. At first, the spoke-like opacities begin in the lower half of the lens.

(ii) In the second or immature stage, different grades of opacities, both thin and thick, begin to form and these go on spreading deeper and deeper resulting in the swelling of the lens.

(iii) The third or the mature stage is usually reached within a course of a few years or sometimes even in a few weeks' time. At this stage, the opacities become thicker and thicker and spread deeper and deeper until the whole lens becomes one white mass with a bluish hue at first which gradually turns into a greyish white opacity as seen through the pupillary region. The shadow of the iris on the anterior chamber is greatly diminished and the cataract is fit for operation by extra capsular method.

(iv) If the cataract is not extracted at this stage, then it will gradually shrink up with complete degeneration of the opaque fibres. The anterior chamber will become deeper; vacuoles will be formed in the opaque areas and lastly the whole lens will be turned into a soft milky mass. This is known as the hypermature stage. At this stage, there may be irregular growth of lens epithelials from behind the capsules resulting in the thickening of the capsule and formation of folds. Calcium and Cholesterin may also be found deposited in it. A different kind of change may also occur in hypermetropic lens with absorption of the cortical fibres when the nucleus of the lens looks like a yellowish particle in the milky cortex inside practically an empty capsule. This is known as the 'Morgagnian cataract'. In such cases, a noticeable transparency of the lens may take place and so there may be a gain of vision. In some cases, there may be luxation of the shrunken lens due to brittleness of the zonular fibres as a senile change. In these ways a spontaneous gain of vision may take place.

(b) **The central senile cataract** :—This is a rarer form of senile cataract. The diagnosis of this kind of cataract is difficult in the early stage because of the difficulty of seeing the opacity of the lens either by oblique illumination or by ophthalmoscope. The nuclear region has a diffuse smoky colour without any distinct marks as spokes, vacuoles etc. Owing to the central situation of the opacity, the loss of vision is marked even in the early stage.

(c) **Cataracta Nigra** :—The senile cataract may, in rare cases, have a light brownish or even a dark brownish colour. Such a dark cataract occurs in very old people. It shows an extreme degree of sclerosis of the whole lenticular mass. To extract such a cataract, a bigger limbal incision is necessary.

(d) **Lens with double focal points** :—In rare cases, there is a formation of a circumscribed and fine corn-like opacity simultaneously with the increase of index of refraction in the central region, the so-called embryonic nucleus. There is thus a degree of lenticular myopia which may even reach up to 14 dioptries in rare cases.

Theories about the Formation of Senile Cataract.—There are mainly two different kinds of views, viz.

- (1) That the causal factor lies in the lens itself.
- (2) That the causal factor lies outside the lens.

Irregular and unequal sclerosis of the lens or senile changes in the ciliary body causing thereby interference with the proper nourishment of the lens have been thought to constitute the former. Then, there is a view that with all other epithelial structures as hair, nail and teeth, which change colour with age, the lens also changes its colour with age.

Sclerosis of vessels, intestinal intoxication, disturbances of metabolism especially of calcium and disturbances of the endocrine functions even other than of the parathyroids (which cause tetany cataract) have been thought to constitute the latter. Causes which lead to presenility as sexual and other excesses, are, in the opinion of the author, important factors which play an important role in the hastening of the senile cataract probably by interference with the normal protein constituents of the lens. Recently, vitamins C and B₂, especially the lack of the former, have been thought by various investigators to have a great influence in the formation of senile cataract. It has been found that vitamin C or Cevitamic acid is present in high proportion in the lens and in the aqueous humour. With age, the concentration of this vitamin in the lens and in aqueous humour diminishes and in cataract it may absolutely disappear. It has also been found that when a diet deficient in vitamin B₂ is administered to young rats, cataract develops in their eyes. But, if Yeast or Lactoflavin is added to their diet, cataract does not develop or if cataract has already begun to form, its progress is stopped.

VII. Suspensory Ligament and the Ciliary Body.—The suspensory ligament gets atrophied in old age. There are degenerative changes in the ciliary body as a result of arteriosclerotic changes in the ciliary vessels.

VIII. Vitreous.—*Synchysis Scintillans*.—In this condition, the vitreous becomes fluid and holds in suspension numerous scales of cholesterolin.

IX. Retina and Choroid.—(1) *Macular Degeneration*.—In the macula of the old people, it is often noticed that there is a peculiar change of its appearance. These changes appear either as areas of yellow white spots interspersed with pigment dots or irregular moth-eaten spots, with or without small haemorrhages. Also a disciform area is frequently noticed. Arteriosclerosis is supposed to be the primary cause and the primary arteriosclerotic changes take place in the chorio-capillaries.

(2) *Tay's Choroiditis*.—Also known as senile guttate choroiditis or punctate retinitis. In this condition, there is presence of round and light coloured dots chiefly in the central part of the fundus. The condition is bilateral. The spots are due to peculiar hyaline excrescences on the surface of the choroid and are secreted by the pigment epithelial cells.

(3) *Central Areolar Choroidal Atrophy*.—It has the appearance of a large circular or oval white patch of degeneration in the macular region. Owing to atrophy of the retinal pigment epithelium, the choroidal vessels are visible. Both eyes are affected. By some, the cause is supposed to be due to septic absorption and by others to prolonged action of the Ultra-violet rays.

4. *Retinal Arteriosclerosis with Hypertension*.—It occurs in elderly persons with arteriosclerosis of a slowly progressing type and with hypertension. The characteristic feature is the reduction of the calibre of the retinal artery and its branches. The arteries appear thin and straight and branch at acute angles. In a normal fundus, it is possible to see a vein through an artery at the point of crossing but in arteriosclerosis the artery loses its transparency and the vein at the crossing is not seen but shows distension on the distal side than on the side towards the disc as the result of an abnormal pressure by the thick-walled artery.

(5) *Angioid Streaks of the Retina*.—In this condition, dark brown or pigmented streaks anastomosing with each other and resembling blood vessels can be seen in the retina. The streaks are situated at a deeper level than the retinal vessels. They also differ in distribution from the normal blood vessels and are usually near the disc. Additional fundal changes such as pigmented dots in the deeper layers of the retina, a mottling of the choroid, exudates and deep haemorrhages may also be found to be present.

X. Optic Nerve.—The optic nerve may be affected indirectly owing to arteriosclerotic changes of the internal carotid or ophthalmic artery causing its pressure atrophy. Such arteriosclerotic changes may also take place in the smaller vessels in the nerve itself causing atrophic spots in the nerve.

In some cases, amyloid bodies, developing from the nervous tissue may be present. These may also cause injury and displacement of the nerve fibre bundles.

Bibliography :

1. Duke-Elder—Text Book of Ophthalmology, Vol. II. 1938. Pp. 1744, 1745, 1992, 2022, 2065.
Cataract and Vitamins (Medical Annual, 1941) Pp. 88.
2. Kirby—Diseases of the Crystalline Lens (Practitioners' Library of Medicine and Surgery, Vol. XI. Pp. 182, 192, 210, 211, 237.
3. Jess—Krankheiten der Linse, (Lehrbuch und Atlas der Augen heilkunde, Begrundet von The Axenfeld). 8th Edition, 1934. Pp. 467, 468, 472, 477, 478, 479, 480.
4. Parsons—Diseases of the Eye. 6th Edition, 1931. Pp. 233, 434, 266, 330, 345, 593.

Some Gynæcological Aspects of the Diseases of Old Age

BY
DR. FRANCISCO CORREA,
Nova Goa.

'*Senectus est morbus*'. In these words, the old Masters of the Latin Thought have condensed a very ancient verity which is but an everlasting actual reality.

In fact, old age is the journey of life descending from the climax down to the universal abyss—the death. It is a centre of attraction for all morbigenous causes, internal and external, which, finding our organism with its powers of resistance lowered, easily develop their aggressive and deleterious action.

If our life is a constant struggle for survival, old age is the season where we begin to lose strength and death is nothing but a final tumble.

From the very moment when life begins in a minute human cell, the ovum, till the extinction of the vital flame in the body of an old decrepit, all the mechanisms through which vital actions are realised, are physico-chemical mechanisms and their actions are due to diastatic processes through extra and intracellular ferments. From this, it results that in every living cell, many chemical actions are produced—analyses, synthesis, oxidations and reductions—which seem to occur through ferments. And from the sum of such actions, integrations and desintegrations result which constitute the phenomena of assimilation and disassimilation, the two final acts, leading to the exchange of materials characteristic of the life.¹

When does the old age begin for the man?

It is a difficult question to be properly answered, for, if some have the oldness precocious, others have it very late: it is a common fact that there are many young who look old, and some old men who still retain the vigour and the spirit of the young.

But conjugating and combining the different elements we can say that, from a general point of view, human life has three phases: the first one, ascendent, from infancy till full maturity, characterised by growth, development and acquisition of physical and moral faculties which will guide one's destiny; the second represents the *zenith*, when one's life manifests itself under the most varied aspects of human activity, intelligence, character, firmness, combativity and so on, characterising a talent, a genius or a common man reaching or not reaching the goal of an ideal; the third, the *slope of descent*, bending down for the final term of existence.

It is this last stage that we will name *Old Age* or oldness. It does not mean wrinkles on the face nor grey hair, as such things may appear even before or after old age. When the cells, in their function of integrating and desintegrating, of assimilation and disassimilation, show a deviation, be it even a very slight one, the organism begins to waste itself although the mind may keep its full vigour and activity. Such initial deviations, summed up, produce organic derangements to which the human organism, having its faculties slackened, cannot be indifferent. "From these slackened functions will result a decrepitude and atrophy of the organs and, on the whole, oldness for the man".

CONHEIM has rightly said: "the constancy with which an atrophy, more or less pronounced, is noticed in old man on all the organs of the body, whatever be the pathological processes, more or less numerous which may have occurred during the life of the individual, speaks to me, in an evident way, in favour of this conception that the conditions of senile atrophy are more or less physiological."

In the same lines, MAX VERWORN writes: "from the atrophy of certain organs, as the thymus, which normally appears in the child without the least harmful action coming from the outside, and later on still, from the regression of the female genitals during the menopause, one cannot doubt that the senile atrophy which ends by death in old age is nothing but the term of a long series of phenomena of development which the man, in the same way as the animal, must pass through during his individual existence."

Therefore, from the ovum to the organism dying from old age, there is a series of interrupted mutations whose cause is found "in the particular composition of living matter which the ovum receives as heritage with the life". Hence the ancient notion that death by old age is the consequence of the summing up of the extrinsic causes should be substituted for this other: "the cause of the natural death by old age resides in the living organism itself".

Without wishing to go further on remarks about death by old age which is not within the scope of this paper if we limit ourselves to a more restricted ground, considering only what old age brings as pathological to the woman, we see that opinions of writers are far from being unanimous.

In which period of life could it be said that old age begins for the woman? Will it be with the first appearance of white hair which can happen precociously? No. Will it be when the first wrinkle on the forehead makes its appearance? No, too! Will it be when the mighty and fecund enthusiasm which maternity gives to life starts to decrease? Still, no.

I, myself, take as the starting point of this old age in women, the period in which the first endocrine insufficiencies of the ovary manifest themselves, constituting the beginning of the menopause¹¹. This stage, very often, represents a great suffering for the women in the sphere of either general or gynæcological clinics^{11 & 12}.

The clinical manifestations of the menopause are: arterial oscillant hypertension, constituting the angio-spasmodic syndrome¹³, palpitations, cardiac erethism, pseudo-anginous crises, cephalæas, sometimes of migraine type, heaviness of the head, giddiness, insomnia, neuralgic pains, tremors, hot flushes, which are the circulatory expression of vago-sympathetic instability, all these troubles constituting a state of neurasthenia, the *neura menopausica*, in which the particular mental idiopragia of the patient may impress to the case a feature of psychosis with manias, obsessions, fixed ideas, fears of sudden death by heart failure or cerebral hæmorrhage.

On the gynæcological aspect, menopause, at the beginning, may be often characterised by profuse metrorrhagia, which is the expression of a folliculo-lutinic disequilibrium, bringing to the patient the suspicion of an uterine neoplasia.

Once the phase of neuro-hormonal disequilibrium ended (and it may

vary in duration according to the cases) the woman, in her way to old age, is gradually adapting herself to this new state of life in which the sexuality suffers a progressive regression.

During this period till death, the genital system may show various lesions and formations of medical or surgical character, of which we will give in short lines, a summary, from the external to the internal organs.

1. *Pruritus Vulvaris*.—It is rather a symptom stated in various diseases: *pruriginous vulvitis* of Sanger, *paracheratoris vulvaris* of Veil, *vulvar eczema*, *leucoplasia*, *kraurosis*, *pruritus* in consequence of vaginal irritative discharges, or of continuous dropping of urine through a vesico-vaginal fistula, *senile hormonal deficiency* (hypo-folliculinemia), neurosis and diabetes. As treatment, all that may calm the irritation is indicated: wet hot dressings, analgesic pomades and ointments, local injections of Histamine, local anesthetics, or injections of Folliculin and Insulin, besides percutaneous endocrinotherapy by Oestroglandol.

2. Various *Vulvar Ulcerations*, among which *esthiomene* is an hypertrophied ulcerated lesion of much discussed ætiology, some opinion attributing it to a *syphilitic*, *lupic* or *elephantiasic* origin.

3. *Vulvar Tumours and Neoformations*:—Fibroma, lipoma, papilloma or adenoma, sebaceous cysts, epithelioma, adeno-carcinoma, rodent ulcer, melanoma, sarcoma, Bartholin's gland cysts.

4. *Lesions of the Lympho-sanguineous System*:—Varices, hematoma, cedema etc.

5. *Cisto or Rectocele*, consequence of an ancient perineal rupture which lowered the resistance of the supporting muscular system, and *senile vaginitis*.

6. *Vaginal Cysts and Primary or Secondary Neoplasms* (carcinoma, sarcoma and endothelioma).

7. *Prolapsus Uteri* in various degrees, with the cervix ulcerated or not and accompanied or not by cisto or rectocele.

8. *Senil Endometritis or Endometritis Atrophica*, also named *endometritis post climacterica* where an advanced stage of the atrophy of the mucosa, with granular transformations of the endometrium constitutes the *leucoplasia uterina* and is often the starting point of cancer.

9. *Uterine Neoformations*:—Although such affections may be found before menopausic, their frequency in the critical age is very great and it can rather be said that they belong to old age. Such neoformations may be rapidly summarised:—

(a) *Uterine Polypi*, so many times silent and asymptomatic and other times giving rise to metrorrhagia whose origin can only be affirmed on vaginal touch when the polypus is pedunculated or to speculum. Seldom such neoformations are intrauterine and require a hystero-salpingography.

(b) *Fibroma*, single or multiple, of various sizes and sub-serous, intramural or submucous localisation, growing silently or giving hæmorrhagias, often complicated by red degeneration. They appear mostly in the first phase of old age, i.e. in the beginning of climacteric.

(c) *Adenomyoma*, which is a rarity in old age.

(d) *Sarcoma*, single or multiple, asymptomatic or hæmorrhagiparous.

(e) *Endothelioma or Periendotherioma*.

(f) *Carcinoma or Cancer*, the most terrible of the uterine affections of the old age. Generally diagnosticated very late, it kills the patient in months or at most one or two years. The repeated hæmorrhagias, the fetid leucorrhœa, pains and the secondary vaginal or annexal invasions are the characteristics of this evil.

10. *Chronic Salpingo-oovaritis* (chronic salpingo-oophoritis) manifesting itself by small but persistent symptoms, such as repeated hæmorrhagias pelvic pains and comfortlessness, the general state being but little attained.

11. *Ovarian Cysts*, which may be, even if of very big size, well tolerated, but produce always general alterations which give to the face the characteristic feature named *facies ovarica*. The troubles are rather mechanical and the danger of a torsion of the pedicle is often realised, giving the dramatic syndrome of *acute abdomen*.

12. The other malignant tumours of the ovary are: *papilloma*, *sarcoma*, *carcinoma*, and *chorio-carcinoma*.

13. The large ligaments have also their pathology during senility *oophoronic tumours*, *dermoid*, *teratoma*, *ovarian tumours* invading the ligaments and finally the cysts: *fimbrial*, *epoophoronic*, *cysts of Kohelt* and *hydatids of Morgagni*.

This mere enumeration, without entering into the details of gynaecology, is not certainly complete. Moreover, there are affections which, not being exclusive of the old age, however, appear then with more frequency.

In the present paper, I have confined myself to the very peculiar aspects of the Diseases of Old Age in Women, from the point of view of gynaecology. This list is certainly far from being complete but gives an idea of what she has to bear on account of old age.

Bibliographic References:

- | | |
|--|--|
| 1. E. Gley—"Physiologie" 6th ed. Vol. II. | 7. Feliw Papin "Dix-huit questions de Gynecologie pratique" Delmas, Paris |
| 2. Max Verworn—"Physiologie generale" 3rd ed. | 8. Henry Hartmann—"Gynecologie operative" Masson 1935 |
| 3. Watts Eden and Cathbert Lockyer—"Gynaecology" 3rd ed. | 9. A. Boursier et M. Auvray—"Precis de Gynecologie" 3rd ed. |
| 4. G. Honingmann—"Gynecological" Vol. IV, Tratado de Diagnostico diferencial | 10. Francisco Correa—"O Medico" n° de Spt. 1938 |
| 5. Claude Beclere—"Les hemorragies uterines avant et apres la Menopause" Masson 1936 | 11. Francisco Correa—"O Medico" n° de April, 1941 |
| 6. Henry Vignes—"Menopause" Pratica Medico—Cirurgica Vol. V | 12. Francisco Correa—"O Medico" n° de March, 1941 |
| | 13. Francisco Correa—Bol. Geral de Medicina "n° 1 a 3 Jan. and March 1941. |

Problems of Anæsthesia in Old Age

BY

A. C. DEY, L.M.F.

Formerly Senior Resident Medical Officer, Ashtanga Ayurveda College, Calcutta.

DIFFICULTIES and dangers of the administration of anæsthetics in the aged are so numerous that it will not be possible for me to review all of them here in detail. On the basis of my experiences of about two thousand cases and the references of international workers on the subject, I propose to give a brief account of the merits and demerits of the more common anæsthetic agents with particular reference to their application in the aged.

Anæsthetics are divided into two main groups, general and local. The former again may be sub-divided into :—

- (a) *Volatile Anaesthetics.* Administered by inhalation either by open or closed method. Chloroform, Ether, Nitrous oxide gas, Trimethylene, Vinyl Ether, etc. all belong to this group.
- (b) *Intravenous Anaesthetics.* Solutions of dry powders injected per vein, produce a quick but short-lasting anæsthesia. Evipan Sodium and Pentothal Sodium are members of this class.
- (c) *Rectal Anaesthesia with Drugs like Avertin.*

There are numerous methods of producing local anæsthesia. Out of these, paralysis of the sensory nerve endings or nerve trunks by synthetic drugs, deserve special mention.

The method of anæsthesia through the intrathecal route by synthetic compounds although sometimes classified separately, may also be included in the local anæsthetic group in view of the fact that the principles underlying the administration of local anæsthetics, apply to intraspinal anæsthesia as well Spinocaine, Duracaine, Planocaine, Pantocaine L etc. belong to this group.

Now, let me consider each of these one by one. Before the administration of Chloroform in the aged, greatest care must be exercised. This is owing to the fact that unfavourable and undesirable conditions like chronic interstitial nephritis, arterial hypertension, arterio-sclerosis and hypertrophy with or without dilatation of the left ventricle etc., either singly or in combination with one or more, may be present. In addition, the presence of diabetes mellitus (which occurs in the majority of cases from the third to the sixth decades of life) renders the question of Chloroform inhalation more complicated. In the absence of any marked disease such as those referred to above, an aged patient should not be allowed to remain under prolonged Chloroform anæsthesia which might produce marked toxic action on the liver and the kidneys. Apart from this, Chloroform has a selective action on the heart and depresses it in concentration very slightly above the quantity necessary to produce surgical anæsthesia.

Although CORDUS (1546) discovered Ether, it was not in use until LONG (1842) and MORTON (1846) demonstrated it as an anæsthetic. Since then rapid strides have been made in the use of Ether in surgical practice.

Ether is a weaker anæsthetic than Chloroform and as much as four times the concentration of Ether is necessary to produce the same effect as

Chloroform. CLARK (1940) mentions that in the case of Chloroform, a concentration in the tissues of 0.4 grams per kg. is required to produce anæsthesia whereas in that of Ether 1.4 grams per kg. is necessary. In general practice, Ether is preferable to Chloroform, particularly a combined Chloroform and Ether anæsthesia in which Chloroform is used only for induction.

Ether has no direct action on the heart and increases the heart rate by stimulation of the sympathetic. This is a great advantage offered by Ether over Chloroform. But there are disadvantages of Ether, the main being that it causes a free pulmonary secretion. In cases of major operations in the aged (who are prone to respiratory affections with very slight provocation); prolonged Ether anæsthesia is not desirable owing to the possibility of the development of serious post-operative lung complications. It also causes a rise in the B.P. and a considerable increase in the blood sugar. In a fairly sufficient percentage of cases, Ether shows evidences of damage to the liver and kidneys. According to CLARK, albumen and casts are present in 25 per cent of cases and acetone and diacetic acid appear in the urine after Ether anæsthesia in 50 per cent of cases. Another drawback which needs mention is the so-called "Ether Convulsions". No positive reasons have yet been found out as to its occurrence, although all possible theories have been put forward. No definite line of treatment has also been specified. It has of course been suggested by some that hyperpyrexia is a cause of "Ether Convulsion". Recently, J. B. KINMONTH, in a letter to the *B. M. J.*, records a case of convulsion under anæsthesia. This was a male patient, aged 18 years, undergoing operation for retrocæcal appendicitis under Gas, Oxygen and Ether with BOYLE's apparatus. The writer states that the temperature was 102°F. before the operation and the theatre was very warm and the patient extensively covered. Generalised symmetrical jerkings of the limbs and the trunk started some ten minutes after the peritoneum was opened. At first, the convulsions increased and were very violent for a minute or so and gradually stopped about 20 minutes after the onset and after Ether administration had been stopped and excessive coverings of the patient removed. At the end of the operation, the rectal temperature was 104.5°F.

Convulsions under Ether anæsthesia have not yet been observed by the writer although a large number of cases have been operated under Ether alone or a combined Ether and Chloroform anæsthesia. But, in view of the prominence this unwanted manifestation is receiving, it seems justifiable to consider it an additional disadvantage.

It is, therefore, evident that Ether is also not suitable for routine use in the aged patient, particularly in those complicated with concurrent diseases. In support of Ether, it must again be stated that when the choice lies between Ether and Chloroform, the former should be preferred in view of a greater safety.

In regard to Nitrous Oxide Gas, in 1800 A.D. DAVY discovered its anæsthetic properties. The administration of Nitrous Oxide Gas with Oxygen as a general anæsthetic has perhaps the greatest advantages. It causes less damage to the vital organs, no fall of B.P. and/or depression of respiration have been noticed even after a prolonged administration. The post-operative shock is less evident. But there is one disadvantage which needs mention and this is that a full relaxation and deep anæsthesia are not obtained without reducing the percentage of Oxygen to a great extent.

In patients of advanced age, this question is no doubt a problem to tackle. But taking all in all it may be said that Nitrous Oxide Gas and Oxygen is the safest of all known inhalation anaesthetics in all ages.

I cannot close the lines on Nitrous Oxide Gas without repeating what I have said in my paper on "Anaesthetics and Anaesthesia" (*Antiseptic*, June, 1938) i.e. that the use of Nitrous Oxide Gas is costly and, in a country like India, it cannot yet be used for general use.

Before I proceed to discuss on the next item of anaesthetic, it must be mentioned that some anaesthetists use a combined Nitrous Oxide Gas, Oxygen and Ether. But it is advised by some that Ether should be withdrawn as soon as induction is over.

Referring to Trimethylene (or Cyclopropane), the anaesthetic properties of this gas were described by HENDERSON and LUCAS in 1938. This gas is not widely used in this country. It is nearly equal, in regard to its actions, to Ether with the additional advantage that it is non-irritant but it is very expensive and for this reason, can only be used in a closed-circuit apparatus. In high concentrations, it acts as a respiratory depressant. It seems that it is a fairly safe anaesthetic for the aged.

In 1933, LEAKE demonstrated Vinyl Ether or Divinyl Ether as an anaesthetic. It is less irritant than Ether, but full muscular relaxation is not obtained with it. Therefore it is generally employed for short anaesthesia or as an induction anaesthetic.

In view of its properties closely resembling Ether, its use in the aged should be looked upon with caution. This is not also widely employed in this country.

Coming to the intravenous anaesthetics, Evipan Sodium was the first of this group to be elaborated by KROPP and TAUB in 1932 in "Bayer" Laboratories. It belongs to the Barbiturate series. Its main advantage lies in the fact that no preparation of the patient is necessary. Therefore, it can be used (if the other conditions are fulfilled) in out-patients' departments. In the hands of the writer, Evipan Sodium did not show an increase of blood sugar both in the normal as well as in the diabetics. It does not also tend to produce pulmonary complications. Evipan Sodium is rapidly broken down in the system and is detoxicated by the liver and excreted through the kidneys.

I have had the occasion to use Evipan Sodium in more than two hundred cases and out of these the following illustrative case may be of interest to readers.

The patient was an old man of 74 years. He was suffering from a suppurated scrotum. The patient expressed his desire to the surgeon not to use inhalational anaesthetics like Chloroform or Ether. Evipan Sodium administration was selected in view of the fact that the whole operative procedure would not last more than 15 minutes. He had no apparent organic lesion of the heart, liver and the kidneys and was thought to be a suitable subject.

The induction dose in this case was $2\frac{1}{2}$ c.c. and another 1 c.c. was pushed in interrupted doses to ensure complete anaesthesia. Everything went on well and the operation was finished safely. But the patient did not regain consciousness till before full three hours. Of course nothing

untoward happened during this period but the prolonged unconsciousness alarmed his relatives and being the anaesthetist, I had to stay with the patient for this full three hours.

I have had similar experiences before and in all these cases, a careful scrutiny of which subsequently revealed either mild or moderate damage to the liver. Apart from this, fortunately none of these cases had any other unwanted manifestation.

Quite in fitness of things, it may therefore be said that in aged patients without organic lesion of vital organs, the use of Evipan Sodium is not contra-indicated, provided of course it is given in carefully adjusted doses (which can only be calculated through experience). A rash use might lead to undesirable experiences.

Pentothal Sodium is another compound of Evipan Sodium series. It is said to be stronger than Evipan Sodium. It has not yet been extensively tried in this country. So its merits and demerits remain yet to be explored.

Although originally introduced for use as a full anaesthetic, Avertin, administered through the rectum, is now mainly used as a basal anaesthetic; that is, Avertin anaesthesia may be transformed into inhalational anaesthesia with small doses of Ether or Nitrous Oxide Gas and Oxygen.

The use of Avertin in the aged cannot be very safely recommended. Firstly, its use as a full anaesthetic necessitates doses which may be dangerous, while as a basal anaesthetic the use of additional inhalational anaesthetic may produce the combined unwanted effects or aggravate the effects of either of the two. Further, according to SIR FRANCIS SHIPWAY, Avertin is contra-indicated in subjects suffering from renal disease. Incidentally, it may be mentioned that there are records to show that Avertin has been used in paediatric practice with exceptionally good results.

Although mainly employed as an intravenous anaesthetic, Evipan Sodium has also been used with success, introduced per rectum. HOGAN (1937) has reported excellent results in 200 cases anaesthetised in this way.

It is natural to think of Cocaine at the very outset before a discussion on local anaesthetics is opened. Cocaine is the alkaloid of Erythroxylon Coca, a South American plant. NIEMANN (1858) isolated Cocaine, and KOLLER (1884) introduced it as a local anaesthetic in eye practice. Gradually, its use spread to laryngology and then to general surgery. But, in view of the frequency of toxic effects of Cocaine, numerous Cocaine substitutes have been introduced, e.g., Novocaine, Pantocaine, Percaine, Syncaïne, Planocaine etc.

It is not possible to discuss each of them separately but it may be said that there are some which will produce an effective local anaesthesia without central poisoning. Local anaesthesia with synthetic agents has been and is being employed in a great variety of conditions ranging from minor to major surgical procedures. The reduction of fractures was attempted with Cocaine by CONWAY as long ago as 1885 and was successfully reported by LERDA (1907) and WUEN (1908).

DUFFY (1935) describes how even the pain of a needle prick can be avoided in suturing of cuts in children and nervous patients by a very simple technique. His method is to instil a few drops of a local anaesthetic into a wound and leave it for a few seconds. A hypodermic needle is now introduced through the wound and under the skin margin; a small amount of anaesthetic is slowly injected. From this area, it is now possible to give

an intradermal injection from the inner surface of the skin and extend the anæsthesia from there as far as may be necessary. A satisfactory suture of the wound can now be made.

Of the number of advantages a potent local anæsthetic possesses at least as far as its application in the aged patients is concerned, those with hypertension, a decompensated heart, or pulmonary or renal disease, can stand a local infiltration where general anæsthesia cannot be used. Post-operative lung complications, shock etc., are also avoided.

It must be mentioned that the concentration of the solution must be suitably adjusted according to the nature of the operation and the route of administration. Thus, a Committee of the American Medical Association lays down, among others, limits of concentrations (in order to reduce accidents under local anæsthesia) that, when Cocaine is applied to mucous surfaces, the total quantity should not exceed 0.1 gm.

Another point which I feel should be mentioned is the inadvertent administration of a local anæsthetic into a vein. I know a case, a healthy adult male, in which an accidental administration into a vein of a synthetic local anæsthetic ended fatally. Failure to recognize the gravity of careless procedure leads often to such an unpleasant consequence.

Turning to the question of spinal anæsthesia with synthetic compounds, although BIER (1889) introduced this type of anæsthesia with Cocaine, it was not until FOURNEAU (1904) introduced Stovaine that spinal anæsthesia was recognized as comparatively safer than its predecessor.

The chief dangers accompanying spinal anæsthesia are a sudden dangerous fall of B.P. and paralysis of the respiratory centre. In unpractised hands, the results also vary and the after-effects like severe headache and prolonged paralysis of the nerve roots are very common. In spite of these however, the use of spinal anæsthetics is rapidly gaining ground particularly in hospitals of this country. But, its routine use in the aged is not desirable.

To conclude, I feel I have discussed all possible aspects of the various anæsthetic agents commonly used in practice. Viewed with the eye of a critic, it seems that none is safe in the true sense of the term. How could then operations under anæsthesia be performed in the aged patient? In answer to this, it may be stated, that whenever possible, a general inhalational anæsthetic should be avoided. In case this cannot be spared, Nitrous Oxide and Oxygen should receive the first preference. Local anæsthesia with synthetic compounds in adjusted concentrations is perhaps least dangerous possible.

References :

1. Clark, A. J.—Appl. Pharmacology, 7th Edn. 1940.
2. Gaddum, J. H.—Pharmacology, 1940.
3. Langton and Hewer, C.—Anæsthesia and Analgesia.
4. Dey, A. C.—Antiseptic, June, 1938.
5. Dey, A. C.—I. M. G. July, 1937.
6. Jarman—Lancet, March 10th, 1934.
7. Cole Lestlie—Lancet, August, 3rd 1935.
8. Duffy, H. C.—B. M. J., August 24th, 1935.
9. Kinmonth, J. B.—B. M. J., April 19th, 1941.
10. Hogan—Amer. Jour. Surg. Nov. 1937.

A-B, Binode Saha Lane,
Beadon Street, Calcutta.

ZANT

the powerful **GERMICIDE**
AND GENERAL
ANTISEPTIC

IDEAL FOR SURGICAL AND
OBSTETRICAL PURPOSES

- * Non-irritant
- * Non-poisonous
- * Non-staining
- * Non-caustic

ZANT
RIDEAL-WALKER
VALUE 6

ZANT IN SURGICAL PRACTICE

For the sterilisation of instruments.
As a disinfectant for hands and gloves.
For pre-operative sterilisation of the skin.

ZANT IN MEDICAL PRACTICE

For cleansing patients' skin for clinical examination. For obstetrical and gynaecological use.

ZANT is also a safe and reliable antiseptic for personal hygiene and domestic use.

Issued in bottles of 5 fl. ozs. and 10 fl. ozs.
One gallon tins and 5 gallon drums.

Depot Stocks held by :

M. J. BATIWALA (Box 313), Laxmi Buildings,
Phirozshah Mehta Road, Bombay.

S. KUSHALCHAND & Co. (Box 2364),
55, Canning Street, Calcutta.

VICTOR & Co., (Box 1353), 10, Broadway,
Madras.

NARAINDAS BHAGWANDAS, Lahore & Delhi.

Manufactured in England by :

EVANS SONS LESCHER & WEBB LTD.

An Example of Efficient Synergism

Phensic is a preparation possessing the most efficient and satisfactory analgesic and anti-pyretic properties. It is uniform in composition and of the highest standard of chemical purity. It is safe and easily tolerated. It affords prompt relief. Each tablet has an average weight of seven grains and has the following composition:—

Acetylsalicylic acid	gr. 3.37
Acetphenetidin	gr. 1.92
Caffeine alkaloid	gr. 0.46
Salicin	gr. 0.25
Excipient	gr. 1.00

A distinguished pharmacologist

has recently written:—

"Quite a large number of substances act as antipyretics and analgesics, but it can be readily observed that a mixture of moderate doses of two or more substances is more effective than a larger dose of a single drug."

This principle of therapeutic mutual reinforcement, known as synergism, is well exemplified in the case of Phensic Tablets.

Phensic can be employed with every confidence for routine administration, and can confidently be entrusted to a patient for self-administration in any of the following conditions:—

Migraine, Headaches, Toothache, Neuralgia, Nerve Pains, Neuritis, Rheumatic Pain, Rheumatic Fever, Arthritis, Sciatica, Gout, Dysmenorrhoea, Colds, Chills, Influenza and other Febrile Conditions.

Phensic

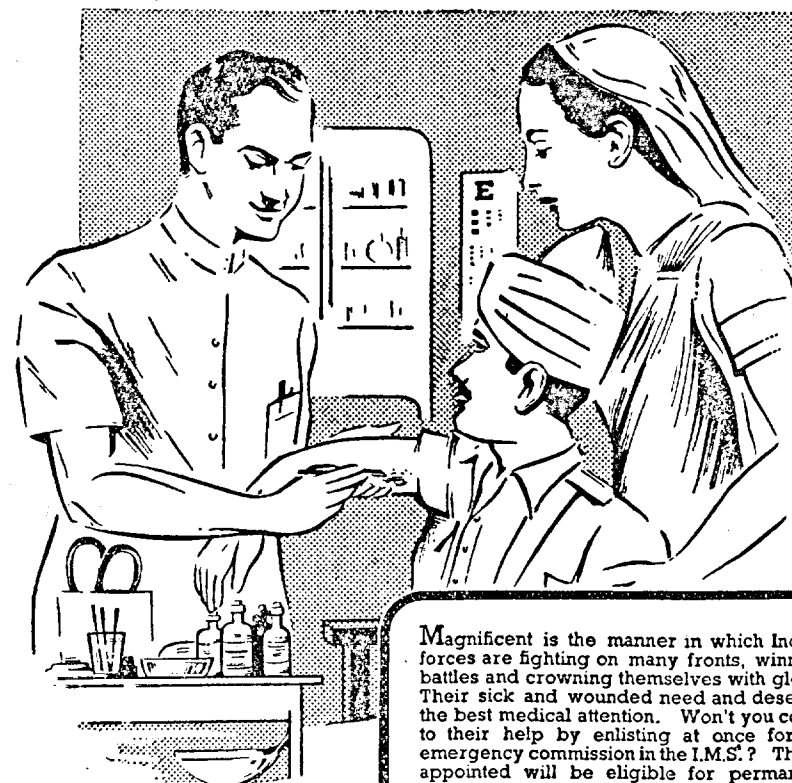
(Pronounced as FEN-ZIK)

A Product of Phensic Ltd., 68, Pall Mall, London, England.

When writing to advertisers, please mention the "Antiseptic"

MEDICAL GRADUATES WANTED!

FOR APPOINTMENT TO EMERGENCY COMMISSIONS IN THE I.M.S.



LICENTIATES ALSO WANTED!

For appointment to the
Emergency (Indian Cadre)
of the I. M. D.
(ASSISTANT SURGEONS)

RATES OF PAY: Rs. 125 rising to Rs. 195 and Rs. 210 to Rs. 225 according to rank. They are also entitled to free accommodation and rations or compensation in lieu, and to all allowances, Batta, Pensions and Gratuities as for regular Assistant Surgeons of the Indian Medical Department.

ADDITIONAL CONCESSIONS: Civil Sub-Assistant Surgeons transferred to military duty will receive the same concessions regarding lien etc., as for Government servants granted emergency commissions in the I. M. S.

Magnificent is the manner in which Indian forces are fighting on many fronts, winning battles and crowning themselves with glory. Their sick and wounded need and deserve the best medical attention. Won't you come to their help by enlisting at once for an emergency commission in the I.M.S.? Those appointed will be eligible for permanent commissions after the war, with further opportunities for advancement.

AGE LIMIT: 32 years' age limit has now been raised to 50 years.

RATES OF PAY: Rs. 450 to Rs. 700 p.m. plus overseas pay from Rs. 150 to Rs. 400 and separation allowance from Rs. 30 to Rs. 60 according to rank, and gratuity.

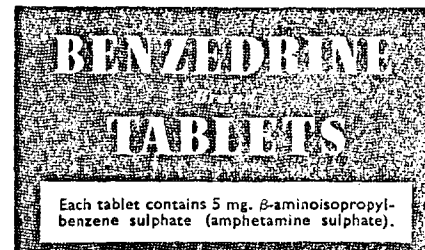
ADDITIONAL CONCESSIONS: (a) Preference in consideration for Permanent Commission. (b) Preferential treatment in Provincial Civil Medical Departments. (c) Antedate considered in special cases. (d) Period on active service counts double for pay and promotion in Civil departments. (e) Several other concessions under consideration.

FOR FORMS OF APPLICATION AND FURTHER PARTICULARS APPLY TO:
The Director General, I.M.S. New Delhi, or The Surgeon General or
Inspector General of Civil Hospitals of your Province.

Increased Capacity for Mental and Physical Effort

Fatigue, nerve strain, and mental inertia are the natural sequelæ of unduly prolonged physical and mental effort. All these symptoms may be ameliorated—or their onset delayed—by the administration of 'Benzedrine' Brand Tablets. Increased initiative, confidence, and a quickening of the mental processes are also consistent effects of the drug.

In suitable cases—with properly adjusted dosage—it has proved of great service as a safe and efficient war-time emergency measure.



MENLEY & JAMES LTD., 123, COLDHARBOUR LANE, LONDON, ENG.

Agent for India: Mr. Ralph Paxton, 10, Lall Bazar, Calcutta

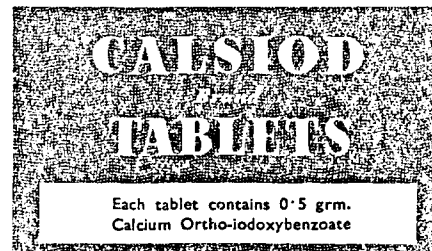
BT505

In Arthritis and Rheumatoid Conditions Generally

Relief of arthritic pain, sometimes dramatic, often follows the use of 'Calsiod' within a relatively short time. The best end-results, however, are obtained by continuing treatment for at least three or four weeks. Such perseverance is amply repaid, for, in addition to its analgesic effect, 'Calsiod' reduces swelling and muscle spasm to a marked degree.

'Calsiod' also has a wide field of usefulness in the many ill-defined conditions grouped under such terms as

'LUMBAGO' 'FIBROSITIS'
'NEURITIS' 'MYALGIA' ETC.



Samples and literature on request

Menley & James Ltd., 123, Coldharbour Lane, London

Agent for India: RALPH PAXTON, 10, LALL BAZAR, CALCUTTA

CT05

When writing to advertisers, please mention the 'Antiseptic'

Physical Therapy in Diseases and Disabilities of Old Age

BY

G. GHOSH, M.B., B.S., D.T.M.,

Rontgen Clinic, Allahabad.

It is a common experience of medical men that there are certain diseases and disabilities which are more prone to occur in old age. For treating these conditions on a rational basis, we must understand the pathology of the aging body.

Old age begins insidiously at the age of forty-five and is commonly well-established between the ages of 60 and 70. The following changes occur during this time: The skin becomes atrophic, dry, wrinkled and parchment-like. The muscles are flabby with lack of subcutaneous fat. There is atrophy of the alveolar process and of the body of the lower jaw. There may be pronounced kyphosis and affections of the joints. The sight and hearing are affected. The growth of the hair is weak. There is considerable decrease of the basal metabolism indicating the weakness of the oxidising processes in the senile period of human life. Structurally, there is a universal tendency to atrophy or degeneration of the parenchyma, and functionally, of active tissues (with fibrosis, desiccation and calcification etc.) in all organs of the body, with gradual loss of general physiological activity as shown by the fall in the basal metabolic rate. Such structural changes are particularly seen in the cardio-vascular system where it is the muscular coat i.e. the functionally active tissue of the arteries that first shows signs of senile degeneration.

During the aging process, the following three groups of important changes occur.

I. Alteration in the Cardio-Vascular System.—The well-known aphorism of CAZALIS that "Man is as old as his arteries" shows the general recognition of the part played by vascular changes and the resulting impairment of blood supply to the various parts of the body. Diabetic gangrene, senile gangrene, intermittent claudication, the destructive effect of arterio-sclerosis in the various organs of the body, hyperpiesis and senile heart are all examples of diseases due to changes in the cardio-vascular system. It is estimated that about half the deaths of old people are due to this cause.

II. Atrophy of the Active Functional Cells of the Body.—The general atrophy and degeneration of old age include the endocrine glands, the thyroid, the gonads, the brain etc. If one organ is more atrophied than the others, the balance of the health is upset. The bones atrophy, become brittle, and so are more prone to fractures after injury in old age (senile osteoporosis). Atrophy of the bone marrow is a cause of anæmia. The atrophied and dry skin in old age is less resistant to infection and parasitic invasion, eczema, senile pruritus and senile verruca may occur.

III. Stasis and Dilatation in Tubes and Ducts.—This is the third group of senile changes that occur in old age. The stasis and dilatation of tubes and ducts are due to atrophy of their muscular tissue. This explains the frequency of constipation, diverticulitis, stasis in the urinary bladder and the biliary system in old age.

The above changes are the normal involutions of the aging body. They are frequently complicated by certain extrinsic factors such as infection, toxæmia, trauma and disorders of metabolism, acquired or inherent. These extrinsic factors are responsible for producing most of the diseases and disabilities of old age. After having described the pathology of old age, I shall now give a brief outline of the application of physical therapy in such conditions. The diseases which have been considered here are those for which physical therapy can be prescribed. Cure or relief can be expected in majority of such cases. It should be remembered that if the best results are to be obtained, the general medicinal treatment (e.g. tonics etc.) should not be stopped when methods of physical therapy are to be employed.

In the following pages, I have enumerated the various diseases of old age under various headings and have mentioned the different methods of physical therapy indicated in each disease. I have tried to explain, as far as possible, the rationale of these methods of treatment. I have purposely omitted the details of the technique here.

I. Skin Conditions.—As has already been mentioned, the skin, in old people, being atrophied and dry, is less resistant to infection. Hence a little abrasion or injury to the skin may cause a serious condition.

1. *Furuncles, Carbuncles, Cellulitis.*—In furuncles, carbuncles, abscesses of sweat glands in the axillæ, whitlows and paronychia, the success of treatment by short-wave is unchallenged. The same applies to even phlegmonous processes, erysipelas and cellulitis.

X-ray therapy is also a very valuable method of treatment in boils, carbuncles and such other inflammatory conditions of skin. Fractional doses will often suffice for a cure. During the last three years, I have treated more than 25 cases of boils and carbuncles by X-rays with very gratifying results. The rapidity of improvement, the relief of pain and the abortion of development of the process are very striking indeed.

2. *Chronic Ulcers, and Chronic Eczemata.*—Many of these cases which have defied ordinary methods of treatment by ointments and lotions can be successfully treated by Ultra-violet rays.

The response of these to X-ray treatment is also very prompt, frequently being manifest after the first or second exposure.

3. *Pruritus.*—The ferocity of senile pruritus is well-known; it may be parasitic or metabolic. X-ray forms one of the most valuable weapons in the treatment of pruritus. The commonest sites of this condition are the perineum and the anal region.

4. *Warts* can be easily and quickly removed by electro-desiccation. Some of these can also be successfully treated by Ultra-violet rays and X-rays.

5. *Malignant Conditions of the Skin* e.g. rodent ulcers and epithelioma. Radium is the treatment of choice if available. When it is not available, they may be treated by X-rays. I have treated a number of early cases of rodent ulcer by electro-desiccation, with very gratifying results.

II. Diseases of the Nervous System.—1. *Paralysis and Hemiplegia.*—Physical therapy has a definite place in these conditions for early

rehabilitation and re-education of the affected extremities, hastening convalescence and restitution and contributing to mental ease. Early treatment gives the patient a better chance of recovery; and the final result naturally depends on the extent of the subsequent restoration of the affected motor areas.

In the first week of hemiplegia, while the patient may be still in bed, the application of radiant heat to the affected arm or leg will comfort and tend to relax the paralysed limbs. Faulty positions of the joints with subsequent contractions are prevented by simple splinting measures and frequent changes in the position. Passive movements should be performed early and be accompanied by gentle stroking massage.

In the subacute stage, physical treatment may be instituted in two directions. One is for accelerating the circulation in the brain. The introduction of Calcium ions by trans-cerebral galvanism has been extolled by BOURGOIGNON and CROSS. Cerebral diathermy has been reported on by MARTUCCI and others. With these treatments, the above authors have produced considerable relief and explained their results by reflex acceleration of the circulation.

The second more important object of physical treatment is for improving the vasomotor and sensory disturbances and the spastic paralysis. Graduated muscular contractions by a slow sinusoidal or surging faradic current combined with gentle massage and suitable exercise serve for this purpose. The application of radiant heat always should precede such treatments.

2. *Neuritis and Neuralgias* are very common in old age. Neuritis is a painful, degenerative and often inflammatory process in any part of the peripheral neuron, causing functional disability. The functional loss may be sensory, motor or mixed according to the nerve involved.

Neuralgia denotes a pain in the distribution of a sensory nerve due to an irritative lesion anywhere in the sensory tract but without pathological changes in the nerve itself. In both these conditions, the line of treatment by physical therapy is practically the same.

Diathermy is the measure of choice in both these cases in obtaining relief from pain. The static brush discharge or the application of the faradic current by means of a wire brush may be used effectively over sensitive areas of the skin. Another method of treatment is the introduction of Salicylic or Quinine ions into the skin by means of the galvanic current. Histamine and Mecholyl-iontophoresis have been employed in recent years with some success and are offering an alternate measure worthy of trial.

Ultra-violet irradiation in mild erythema doses has also proved useful in giving relief from the pain.

Obstinate cases of sciatica and brachial neuritis are frequently markedly relieved by X-ray treatment.

3. *The Neuroses.* The general atrophy and degeneration of old age include the endocrine glands, producing deficiency of the gonads or the thyroid. One organ is often more atrophied than the others, for example the brain than the heart. Thus, the balance of health and mind is upset, giving rise to various forms of neurosis. In the management of these often very trying conditions, physical measures may be prescribed as part of the

general conduct of a case. They serve for the alleviation of symptoms like headache, sleeplessness and nervous exhaustion for general tonic effect and as chief adjunct to psycho-therapy.

General stimulation of the body by means of the sinusoidal current in baths is useful. The static effluve seems to benefit the general condition of the patient. Some patients derive benefit from cerebral galvanisation.

III. Diseases of the Cardio-Vascular System.—1. *Myocardial Weakness*:—SCHLIEPHAKE claims that a few sittings of short-wave treatment improves the general condition of the myocardium as can often be seen on an electro-cardiograph. This is apparently a result of a better blood supply to the myocardium. The chief result is in the feeling of well-being in the patient and also the marked increase in the cardiac reserve power.

2. *Angina Pectoris*:—NAGELSCHMID describes the dramatic effects of diathermy on angina pectoris and states that there is no other medication or method which will so quickly cut short a severe attack as diathermy. CUMBERBATCH has recorded cases in which patients have remained free from further attacks for one, two or more years after a course of diathermy.

I have treated a number of cases of angina pectoris by short wave and have found it a very valuable method for giving relief to the patient.

X-ray therapy has been advocated in this disease, especially by LIAN, who recommends irradiation of the præcordial and vertebral region to diminish the sensitivity of the nervous tracts of the heart. Improvement is reported in two-thirds of the cases thus treated.

3. *Hypertension*:—Patients suffering from abnormally high blood pressure, with or without arterio-sclerosis, often derive relief of symptoms such as dyspnoea, cardiac pain, palpitation, headache, cramps, etc., when treated by general diathermy.

4. *Intermittent Claudication and Thrombo-angiitis Obliterans*:—The study and treatment of peripheral vascular diseases has made considerable advance in recent years and physical therapy plays an important role in their treatment. According to CUMBERBATCH most of the cases of intermittent claudication are markedly improved by diathermy, and all the patients who were treated experienced almost immediately some relief from their symptoms. I have treated a few cases of intermittent claudication by diathermy (long-wave) and short-wave. I am convinced of the prompt relief that it gives.

IV. Respiratory Diseases.—1. *Pneumonia* was rightly arraigned by CHARCOT as "the great enemy", and hailed by OSLER as "the friend" of the aged. In old people, the mortality rate in this disease is as high as 50 to 70 per cent.

Clinical reports from all over the world point to the efficiency of diathermy in pneumonia. DR. H.E. STEWART has obtained remarkably uniform and good results. The usual clinical improvements obtained by this treatment in pneumonia are the relief of pain, relief of dyspnoea and cyanosis, improvement of the heart action, general sedation and often an induction of sleep. All these effects are interpreted as due to an improvement in the pulmonary circulation and in the heart action. It has been reported that, in the majority of cases of lobar pneumonia, resolution occurred by lysis rather than by crisis, and that in those treated early with diathermy, the

mortality rate was very much lower. Other respiratory diseases, e.g. bronchitis, bronchial asthma, bronchiectasis, pleurisy, etc, have been treated by diathermy by various workers in this field of physiotherapy. Their results appear to be encouraging.

V. Diseases of the Genito-Urinary System—Female.—1. *Climacteric*:—CUMBERBATCH has noted considerable improvement in patients suffering from symptoms such as flushing, headache, depression and even mental aberration during treatment by general pelvic diathermy.

2. *Excessive Menopausal Haemorrhage*:—CUMBERBATCH advocates general pelvic diathermy in such cases, and states that in all his cases, the bleeding has been stopped by this treatment. Bleeding can also be stopped easily and menopause induced by X-rays.

3. *Malignant Diseases of the Pelvic Organs in the Female* may be treated by X-rays alone or in conjunction with Radium.

Male.—1. *Enlargement of the Prostate*:—When the enlarged gland is congested, it should be subjected to diathermy for the purpose of accelerating the circulation and removing oedema. Under this treatment, the frequency of micturition can be reduced. It usually brings quick relief of the distressing symptoms and reduces the size of the gland rapidly. The gland will return to normal if the treatment is instituted early.

When the increase in size of the prostate is due to adenoma (benign hypertrophy), X-ray therapy may, by shrinking the prostate, relieve the condition sufficiently and permanently.

2. *Cystitis* occurs with great frequency in old men particularly with enlarged prostate. In acute cases, luminous heat or Infra-Red radiation to the supra-pubic region serves to relieve pain and draw the blood to the surface from the congested parts. Diathermy may be employed in resistant cases to relieve the symptoms.

VI. Gastro-Intestinal Tract—As has already been pointed out while discussing the morbid changes in old age, atrophy and dilatation of tubes and ducts of the gastro-intestinal tract take place in old age on account of atrophy of its muscular tissue. As a result of this, stasis occurs in the biliary system, and constipation, diverticulitis and piles are so very frequent in old age.

Diseases of Liver:—According to WEISS, physical methods play an important role in the treatment of biliary affections. They modify the intra-hepatic circulation by provoking hyperæmia and diminish severe pain by their sedative effect. They modify the electro-tonic equilibrium of the cells of the liver and gall bladder and cause a diminution of blood cholesterol, a particularly important factor in biliary disease.

To diminish the volume of enlarged and painful livers, there is nothing that equals diathermy. Subacute and chronic cholecystitis constitute indications. Here, diathermy is the principal treatment and repeated applications enable the liver and gall bladder to function more satisfactorily.

Constipation:—Physical methods in the treatment of constipation are manifold, such as gentle exercise, massage, colonic irrigation and finally electrical methods. When constipation is due to weakness of the muscular coats of the intestine, electricity is one of the most efficient therapeutic

agents known (CUMBERBATCH). The faradic or sinusoidal current should be used. It must be given daily until a regular habit of normal bowel movement is established.

Haemorrhoids :—The electro-therapeutic treatment of hæmorrhoids is either palliative or radical, depending in great measure on the type of piles, the general condition of the patient, the exciting causes and the coexistence of other pathological changes which are commonly enough overlooked. Carcinoma, higher up in the bowel, should be particularly ruled out.

External thrombotic piles can be removed with the scissors or the cutting current under local anæsthesia.

In selected cases of early internal hæmorrhoids, diathermy is of much value in relieving pain and spasm when present.

Internal hæmorrhoids can be destroyed by diathermic coagulation or by electro-desiccation. W. J. TURRELL speaks highly of the former.

VII. Affections of Bones, Joints, Muscles, Tendons and Fibrous or Connective Tissues.—In old age, the bones atrophy, become brittle and thus fracture is more prone to occur after a slight fall or injury. Intra-capsular fracture of the femur is a frequent accident in old age. The modern treatment of fractures recognises the value of early employment of efficient physical therapy to the damaged parts to produce a much earlier and more complete functional and anatomical recovery. MURRAY states that physical therapy in fractures helps to minimise the chances of delayed union, non-union and the amount of functional limitations.

The physical measures recommended are heat, Ultra-violet rays, massage, and stimulation of muscles by various electrical methods.

Arthritis is a disease of varied etiology and of varied types, and hence there is no single method of treatment which is applicable to all forms of arthritis. Treatment must be planned according to the type and stage of the disease. Here, we are concerned with only those types which occur in advanced life. They are the following.

1. *Arthritis of the Climacteric* :—At or about the time of menopause, women may develop an arthritis of a type wholly different from that seen in other forms. There is good evidence in favour of the conclusion that arthritis of this type is due to disturbance of the endocrine function of the ovaries. The condition is one which is peculiarly amenable to treatment in the early stages. It should be treated by general pelvic diathermy. There is every likelihood of the arthritis coming to an end, provided the treatment is commenced within a few months of the onset of the menopause.

2. *Osteo-arthritis* :—This type of arthritis frequently occurs during the decrecent period of life, both in women and men. Early cases of this type can be given almost complete relief by suitable physical measures in conjunction with suitable dietetic regime and regulation of habits. Diathermy to the joints combined with massage is usually quite effective. By this means, muscular spasm can best be relaxed, pain relieved and the circulation of blood and lymph in the neighbourhood of affected joints improved, with the hope that the degenerative processes may be retarded. This enables movements of the joints to be undertaken more freely, with concomitant improvement of function.

Recently, KALMETER has published a paper embodying the results obtained in a large series of patients treated by deep X-ray therapy, and claims beneficial results in a high proportion of cases. There is no doubt that certain cases of osteo-arthritis respond to X-ray treatment when all other remedies have failed. The action of this treatment is not quite clear; probably, the results are due to the effects of radiation upon the osteophytic out-growths associated with this condition and partially also to the anæsthetic effect of X-rays. There appears to be a certain selectivity in the matter of joints. The knee joints appear to respond better than the hips. Treatment of the spine also gives good results.

Hence, X-ray therapy is worthy of trial in cases which have resisted the simpler and less expensive methods.

It is now proposed to discuss briefly a group of conditions called "Rheumatic Syndrome" which are extremely common in old age. They include a great many acute and chronic inflammations outside of the joints, in the muscles, tendons, bursal and in the nerve sheaths. The common pathological change in all these conditions is an inflammation of the connective or fibrous tissues of the body, and is known under the term of 'fibrositis'.

Local treatment in acute cases of fibrositis consists of physiological rest and application of heat. According to CUMBERBATCH, the most satisfactory treatment in such cases is diathermy.

The treatment of chronic fibrositis must as a rule be planned from the constitutional standpoint as well as from the standpoint of specific local relief. Local treatment is directed to the removal of the inflammatory products through the increase of circulation by luminous heat or diathermy, and by mechanical measures, massage, graduated muscular contractions, etc.

In stubborn cases of chronic fibrositis, large doses of galvanism with the negative pad as the active electrode, have proved useful. In recent years, very good results have been reported by Histamine-iontophoresis.

References :

1. The British Encyclopædia of Medical Practice.
2. Dunlop, Davidson, McNee (1939)—Text Book of Medical Treatment.
3. Richard Kovac, M. D. (1938)—Electro-Therapy and Elements of Light Therapy.
4. Mock, Pemberton and Coulter—Principles and Practice of Physical Therapy (Vols. I, II and III).
5. Cumberbatch, E. P. (1937)—Diathermy.
6. Cumberbatch, E. P. (1933)—Essentials of Medical Electricity.
7. Erwin Schliephake (1935)—Short Wave Therapy.
8. Pohle, Ernst A., (1938)—Clinical Röntgen Therapy.
9. Kaplan I. (1937)—Radiation Therapy.
10. Davies, H. (1934)—Practical X-ray Therapy.
11. Roberts, F. (1936)—The Principles and Practice of X-ray Therapy.
12. Ghosh, G.—"Clinical Application of X-ray and Electrical Treatments in Modern Medicine"—The Antiseptic, July, 1940.

13, Albert Road,
Allahabad.

Cancer in Old Age

BY

T. HOWARD SOMERVELL, M.A., M.B., B.Ch., F.R.C.S.,

Neyyoor, Travancore.

AMONG the commoner diseases in South India, tuberculosis, appendicitis, duodenal ulcer and typhoid fever are pre-eminently diseases of the young, and although they may all occur in old people, they very seldom do so. The reason for this is probably the degree of immunity to infections that is slowly built up during the ordinary life of man or woman. But, of all diseases, that which is in an especial degree a danger to old folk, and the cause of an ever-increasing proportion of the death rate among the general population of most countries, is cancer.

In this journal, we are asked to consider the prevention as well as the treatment of diseases of old age; but there is, alas, little we can do to prevent the onset of cancer. I have before me two pamphlets, one proving that salt in the diet is a cause of cancer, and the other equally certain that *shortage* of salt is responsible for the causation of this dreaded disease. We have all heard of quacks who give medicines to "prevent" cancer, and the fact remains; so little is known about the true nature of the etiology of cancer that we can do little to prevent its onset. There are, however, a few special ways in which certain common kinds of cancer may be prevented; but putting it broadly the most important advice to give to the old is not how to prevent cancer, but how to recognise it (and report it to a properly qualified doctor) in its earliest stages.

Prevention of Cancer.—As regards prevention, cancer of the mouth, so common in Malabar, Ceylon, and other parts of South India, has been found to be a preventable disease. In most cases it is due to the habit of chewing tobacco with lime, betel-leaf and arecanut. In an extensive research, which my late colleague DR. IAN M. ORR and I carried out in Travancore some years ago, we proved conclusively the following facts about cancer of the mouth:—

- (1) The betel leaf and arecanut apparently have nothing to do with the causation of cancer; it is the tobacco and lime only that are concerned.
- (2) It occurs most often in those people who keep the quid of betel etc. tucked inside their cheek *for a long time*. If the quid is spat out frequently and changed for a new supply of betel, nut, lime etc., the cheek is not so irritated and cancer is not so liable to be produced.
- (3) This irritation is apparently due to the action of the *lime* on the tobacco, and is more marked in people who use shell-lime than among those who use the coarser stone-lime; the finely powdered shell-lime acts more intensely on the tobacco producing its irritating alkaloids, but even this action takes an hour or more to be brought about.
- (4) Certain kinds of *tobacco*, especially the strong *Vadakkan* tobacco, are much more liable to produce cancer of the mouth than the milder ones.

We may therefore say that, in order to avoid the terrible disease of cancer of the mouth, those who chew betel should do several things:—

- (1) Use stone-lime rather than shell-lime;
- (2) avoid *Vadakkan* and similarly strong kinds of tobacco;
- (3) change the quid of betel etc. at least once an hour;
- (4) or, better than all, as a counsel of perfection, stop chewing tobacco and lime altogether.

It is probable that by heavily taxing *Vadakkan* tobacco and shell-lime, Governments of Indian States or Provincial Governments could do much to stamp out cancer of the mouth in their respective countries. Steps to this end are, I believe, being taken by Mysore Government at the present time. But individuals can do the same thing without any legislation, by adopting the advices just mentioned above.

Cancer of the Cervix, another frequent cause of death—and a very painful and miserable death—can possibly be prevented. It is believed by many doctors that cancer of the cervix seldom or never occurs in communities such as the Mohammedans or the Jews in which all males are circumcised. I have no personal knowledge as to whether this be true, but I have treated many Mohammedan female patients and do not remember a case of carcinoma of the cervix among them. If this be the case, and it is not irrational to expect that it may be so, then, the only known preventive for cancer of the cervix that women can do is to have all their male children circumcised. Apart from this, here is a very definite advice that should be given to all women, and to doctors who are looking after them. Pre-cancerous conditions must be looked for and treated. The hypertrophic variety of cervicitis, which bleeds easily on examination, very often goes on to cancer in its later stages. Persistent vaginal discharge must always be reported to the doctor, who must in all cases do a vaginal examination. Hypertrophic cervicitis, or any endocervicitis must be treated, and the best treatment is amputation of the cervix. Bad lacerations of the cervix after labour, and any cervical erosion which does not clear up with treatment, must be dealt with by amputation of the cervix. If these things were done in every case, cancer of the cervix, one of the commonest and most fatal varieties, would never be allowed to occur.

Carcinoma of the Skin usually begins in a pre-existing ulcer, and can often be prevented by the prompt and proper treatment of all chronic ulcers of the skin in any situation. If this is done, the ulcers are unlikely to reach the cancerous stage. Any ulcer with a rolled over or hypertrophic edge should be suspected of cancer, and a section taken for pathological examination.

The prompt treatment of all ulcers of the penis in foreskin or glans by circumcision will reduce cancer of the penis to almost nil. Every elderly man or woman who complains of piles should have a rectal examination done with the finger; in many such cases, piles are only the symptom of an underlying cancer, and digital examination will reveal an indurated ulcer with rolled-over or fungating edge a few inches inside the rectum. If discovered in time, it will be treatable by radium or operation; if left until in itself it causes distress or pain to the patient, it will very likely be found to be too late for removal.

Among other pre-cancerous conditions are leukoplakia of the tongue, cheek, lips etc., which can be treated by drugs or removed by diathermy with ease, whereas, if they are allowed to degenerate into carcinoma, they

require radium or major operative procedures for their cure. Every case of leukoplakia therefore *must* be treated until the mucous membrane is healthy. Gastric ulcer, if neglected, often leads to carcinoma of the stomach. It should therefore always be treated, and a big ulcer should always be excised and, for this purpose, referred to a surgeon who is capable of doing gastrectomy. Any case of suspected gastric ulcer, who has recently complained of loss of appetite, is almost certainly already suffering from cancer of the stomach, and the symptom of loss of appetite alone in an elderly patient must always be taken very seriously and lead to an immediate X-ray examination of the stomach. Even a week's delay may mean the difference between operability and certain death.

The same applies to a gradual incidence of distension or of constipation in elderly patients. X-ray examination of the abdomen may reveal strictures of the intestinal tract, caused either by malignant or tuberculous ulceration and, in either case, only treatable by excision and anastomosis.

As regards the *treatment of malignant disease*, a subject on which quite a library of books could be written, there is only space for a few notes in this article. But, there are certain things which every medical man should know, and which no medical man should neglect to apply to his practice.

Firstly, there are *only two ways* of dealing with malignant disease, removal by operation, and destruction by radium or X-rays. There is no other treatment which offers the slightest prospect of cure. From time to time, quack doctors and even properly qualified people have adopted a special treatment, usually one that is known only to themselves, which "cures" cancer. The injection of Colloidal lead is among all these the most nearly successful, and I conducted researches in it for over a year during 1926 and 1927. But although Colloidal lead can be made to stop the growth of cancer, it can only do so if at the same time it stops the vitality of the patient. To put it briefly, you cannot kill a cancer with lead except by killing the patient as well. Other treatments, advertised from time to time, have been found on investigation to be no more than a hollow sham. External applications are all completely useless, and doctors must remember that any treatment except radiation and operation fails to have any effect on the rate of the growth of a cancer. The appearance of the growth may alter, and associated symptoms may change, but the cancer goes on growing, and every day its chance of cure gets less and less. Whatever is being done for cancer patients, therefore, whether by external applications or internal medicine, should be *at once* replaced by operation or radiation, the patient being sent immediately to a hospital where proper treatment is available.

It is usually useless to send a patient to a small village hospital. The essentials that must be available at a hospital where cancer can be treated are :—

- (1) a surgeon capable of operating on cancer cases well and thoroughly.
- (2) either Radium or X-rays, the latter of at least 100 Kilovolts.

It is criminal to take on the treatment of a cancer case without one or the other of these methods. It gives the patient false hopes of a cure where no cure can be obtained; and meanwhile, the cancer is growing continuously, and bringing the patient nearer and nearer to the stage when he is inoperable and hopeless.

Secondly, it must be remembered that cancer *can be cured* if the case is treated early enough. It is not a hopeless or incurable condition; but it can only be cured when it is possible either :—

- (1) to remove the disease, with all associated glands and with a margin of tissue all around the disease which may contain portions of its growing edge; or,
- (2) to radiate the disease with Radium or adequately deep X-rays, including the diseased, associated glands, and a margin of healthy tissue around the growth.

If a cancer is "inoperable", it is usually untreatable by Radium or X-rays. I have often had hopeless cases sent to me by well qualified doctors, who thought that Radium would do some marvel of cure in a case that is quite hopeless as far as operation is concerned. But, cases must never be allowed to get to this hopeless condition. Instances are as follow :—

Cancer of the cervix is curable by operation, *i.e.*, total hysterectomy with extirpation of iliac glands, when it is confined to the cervix and lower portion of uterus, and the uterus is not fixed, and no glands are palpable per rectum. (Rectal examination must always be made in estimating the operability of cancer of the cervix; only thus can possible extensions of the growth in the utero-sacral region be felt). When the growth first becomes fixed, it may for a short time be treatable by the insertion of Radium followed by WERTHEIM's hysterectomy. When iliac glands are felt per rectum, it is probable that the disease has already extended to the pre-aortic glands, and if so, it is incurable either by Radium, operation, or deep X-ray therapy.

It is desirable for a practitioner to know when a cancer is treatable with any possibility of success, and not to raise the hopes of patients and waste valuable Radium-time by treating or recommending for treatment, patients who are hopeless.

In all cases of epitheliomata, there is an important general principle that should always be borne in mind :—

When a cancer grows freely outwards, it is unlikely to grow freely inwards; when its growth is chiefly below the surface of the skin (or other organ), the growth is of a dangerous nature as this type of growth forms secondary deposits in glands at an early date.

For example, I have this month seen two cases of cancer of the cervix with large fungating growths filling and distending the whole vagina, but with no involvement of the body of the uterus, and no palpable secondary glands. Removal of growth plus cervix left an almost normal looking uterus etc., and full Radium treatment by the Stockholm Technique will probably cure both these cases. On the other hand, I recently saw a cervix in which hardly any projection of the growth had occurred, and P.V. it was difficult to be certain whether it was more than a hypertrophic cervicitis. P.R. it was found that the utero-sacral folds were both solid with growth, and there were large glands in both iliac fossae. In general, therefore, "outgrowers are safe, ingrowers are dangerous."

Cancer of the Stomach declares itself first by loss of appetite. *Any man of over 40 years of age who starts complaining of loss of appetite should be suspected of being an early case of cancer of the stomach.* By the time a

palpable mass is felt, the case is probably incurable. Radium and X-rays are useless in this condition; only operation can effect a cure, and that too only if *all* involved glands and other tissues can be removed with *all* the growth and the piece of stomach which surrounds it.

The diagnosis of an early case depends on:—(1) loss of appetite; (2) *absence* of free hydrochloric acid as shown by Test Meal; (3) a “filling defect”, of the size and shape of the part of the growth which projects into the stomach as shown by X-rays with Barium meal.

Vomiting, hæmatemesis, palpable tumour, emaciation, and pain are all late symptoms and of no *use* in the diagnosis, because, by the time they are established, the case is usually inoperable. Do not wait for these to occur; suspect at once a case of loss of appetite, and send him to be examined at a hospital where X-rays and Test Meals can be done.

Cancer of the Breast, is of good prognosis, if there are no palpable glands in axilla, and the growth is not fixed to the pectoral muscle. But enlarged axillary glands render the outlook doubtful, and supra-clavicular glands render it hopeless.

In this form of cancer, early operation affords the best and often the only chance of cure. Any doubtful lump in the breast should be suspected of cancer. If necessary, it can be removed locally with a margin of healthy breast tissue and a section examined by the microscope. If it is found to be malignant, the whole breast and axillary glands with both pectoral muscles must be excised. It is useless, even criminal, to do less than this for a declared case of cancer. I have seen cases of undoubted cancer who have had the breast only removed, and within a few months, the disease has recurred not only in the glands but in the scar of the operation as well. Any surgeon who does this sort of thing is, in my opinion, either so ignorant or so callous as to deserve to lose his practice completely, and if his patients were wise, this is what should happen.

Cancer of the mouth, tongue, cheek, and jaw is very common in certain parts of South India and Ceylon, and is usually best treated by a combination of Radium and operation. I usually treat tongue, cheek, and lips with Radium only, operating on the glands as soon as the Radium is withdrawn. If cancer involves the bones of upper or lower jaw, it is best to treat by operation, the jaw bone being removed with a margin round the growth. Complete excision of the half-jaw with removal of submental sub-maxillary and upper deep cervical glands, though a severe operation, is very successful as a radical cure of cancer, and a very large proportion of the 1400 cases in which I have personally performed this operation have been radically cured. But, for every case I see in an operable state, I have to send two away as hopeless. In many instances, this is due to the keeping of the cases by doctors under some “treatment”, medicinal or otherwise, which, like all medicinal treatments for cancer, is entirely useless.

Epithelioma of the lips, tongue, cheek, and soft parts in general can be cured definitely by Radium insertion. In India, where there is little Radium and many cancer cases, it is sound economy to insert the Radium into the growth in the form of needles. External radiation is better from some points of view, but, uses far more Radium. But, whatever method be used for the application of Radium, the glands submental and submaxillary for lip and cheek, plus the deep cervical glands for the tongue, must

in all cases (whether they are enlarged or not) be removed. In tongue cases, if any deep cervical glands are suspicious, I make an incision from mastoid to clavicle, divide the sternomastoid muscle in its middle, and reflect the two halves of the muscle upwards and downwards. This gives an excellent view of the deep cervical glands, with jugular vein, carotid artery, vagus, hypoglossal, spinal accessory, cervical and other nerves, and a full dissection of glands (with preservation of nerves where possible) is easily done. The sternomastoid muscle is sewn together afterwards. (Incidentally, the same technique is often very useful in removing tubercular or lymphadenomatous glands). In these, as in all cases of cancer, the golden rules to be observed are:—

- (1) Take every suspected case of cancer very seriously. If you cannot clearly diagnose, call in another opinion *without delay*.
- (2) Every undoubted case of cancer must at once be sent to a hospital where adequate treatment can be obtained by operation or radiation.
- (3) All associated glands must be removed or *fully* radiated in every case of cancer, whether glands are involved or not.
- (4) Do not waste Radium, X-rays, or time by attempting the treatment of hopeless cases.
- (5) Observe all operated or treated cases of cancer continually once a month for 6 months, then at 3 monthly intervals for 2 years, and so on. Thus, if recurrence occurs it can be dealt with early.
- (6) At every stage, remember, delay may mean death; prompt and adequate treatment saves life.

South Travancore Medical Mission
L.M.S., Neyyore.

The Relief of Suffering in Malignant Disease

BY

M. M. SHEPHERD, B.Sc., M.B. Ch.B., F.R.C.S.

Combined General Hospital, Bombay.

WITH reasonably early diagnosis and modern methods of treatment the prospect of cure in malignant disease is becoming more and more hopeful. Radical surgery or radiotherapy or both, based on an accurate knowledge of the pathology of each individual case, can now tackle successfully an increasingly high percentage of malignant diseases.

The fact, however, must be faced that a large number of cases are beyond the scope of radical cure, and palliative treatment to relieve suffering is all that can be done. This is the type of cases that the private practitioner is called upon to treat, sometimes for long periods. He should not forget to ask for the help of the consultant surgeon who may be able to relieve his patients' sufferings very considerably, even if he is unable to effect a cure.

As far as carcinoma of the gastro-intestinal tract is concerned, obstruction is a very prominent symptom, which, in the later stages, becomes complete and is accompanied by persistent, distressing vomiting, and dehydration of the patient. A palliative gastrostomy, jejunostomy, or colostomy, depending on the site of the growth, relieves the worst symptoms, and this frequently gives the patient a few months of life free from suffering. Gastro-jejunostomy, as a palliative treatment of carcinoma of the pyloric end of the stomach, is an operation to be avoided. If the primary growth is inoperable, the wall of the stomach will already be infiltrated with malignant disease, and the stoma will be rapidly occluded by carcinoma, and, as RUSSELL HOWARD puts it, "The patient will have all the agonies of dying twice, and an operation in addition."

The palliative supra-pubic cystostomy for a carcinoma in the region of the base of the bladder sometimes affords comfort to the patient. In the same way, a case of carcinoma of the larynx with severe dyspnoea will be very grateful for a tracheotomy, for dyspnoea is a most pitiable condition.

The presence of an ulcerating carcinoma with a profuse foul-smelling discharge such as is found in a late case of carcinoma of the breast, or a fungating sarcoma, is the type of case which a palliative amputation of the affected part will give a large measure of relief, not only to the patient but also to his immediate associates. Under such conditions, amputation of the malignant growth, even though secondary deposits make any hope of a cure impossible, is well worth while.

In a case of ulcerating malignant disease, a large part of the odour can be prevented by keeping the patient as clean as possible. Eusol is a very useful lotion as its oxidising properties inhibit the action of anaerobic saprophytic bacteria which are the cause of much of the odour.

Finally, there is the big question of the relief of pain. All too frequently, ever increasing doses of Morphia are given, and it is forgotten that the surgeon can help to alleviate, if not abolish, this most distressing one of all symptoms.

The methods commonly used by the surgeon are briefly as follow :—

1. *Amputation* :—e.g. in cases of osteogenic sarcoma, even though

there are secondaries elsewhere, from a curative point of view, the case is inoperable.

2. *Diathermy* :—Cauterisation of painful carcinomatous ulcers of the tongue, especially if coupled with ligature of the lingual artery or the external carotid artery, often produces startlingly beneficial results. An extensive rodent ulcer, where excision is impossible, can sometimes be treated in the same way.

3. *Nerve Section* :—This method of treatment is specially useful in the case of growths on the face, mouth and neck. Section of the branches of the trigeminal nerve, or of cervical plexus, distal to the growth, but supplying the area over which pain is radiated, is usually followed by instant relief. The reason for this distal section being so effective is not understood, but the method is one of proved worth. In cases of suffering from extreme pain of wider distribution in the trigeminal area, sensory root section of the gasserian ganglion is probably the only method of relieving the pain, Morphia being useless.

Where carcinoma of the pelvic organs e.g. bladder, uterus, and rectum, are concerned, there are two types of pain; (a) visceral, from the organs themselves, referred by the patient to somewhere vaguely in the hypogastrium, and (b) somatic pain where the ordinary sensory nerves of the lumbo-sacral plexus are involved. This pain is accurately localised by the patient, e.g. to the hip region or the back of the thigh. For visceral pain, pre-sacral neurectomy is indicated and is most satisfactory. For somatic pain, the injection of absolute Alcohol into the spinal theca, with the patient in the correct position on the operating table so as to ensure that the Alcohol reaches the affected nerve roots, is a most valuable remedy. Pre-sacral neurectomy and intrathecal injection of Alcohol will have to be combined in cases where both types of pain are present. Otherwise, results will be disappointing.

Occasionally, in cases of carcinoma, the formidable operation of the section of the pain fibres grouped in the spino-thalamic tract seems to be called for, but this is a severe operation, and not to be lightly undertaken without special indications.

4. *Palliative X-Ray Treatment for an inoperable growth* may be temporarily most satisfactory if the growth is radio-sensitive. It is the only type of treatment that gives relief in cases of secondary carcinoma in bones e.g. deposits in femur or vertebral column from a breast carcinoma. The results are often strikingly good. Recalcification may occur, and even union in a pathological fracture.

From the foregoing, it will be seen that there are many ways of relieving pain other than drugs. The continuous administration of Anodynes is depressing physically to the patient and mentally not only to the patient but also to his relatives and the medical attendant. While there is every reason for the administration of Morphia in a case likely to be of a short duration, yet in a case which may linger on suffering pain and discomfort, both the prospect and the carrying out of active treatment in some form or other, is of great psychological benefit to the patient, his friends, and to the doctor. This and the physical relief of the patient combine to make his last months much more tolerable.

Senile Glycosuria—The Possibility of its Prevention and Treatment

BY

AMULYARATAN CHAKRABORTY, B.SC., M.B. (CAL.), F.R.C.P., F.R.S. (EDIN.),

Hony. Visiting Physician, North Suburban Hospitals,
Consulting Biochemist, B.I. Research Laboratories, Calcutta.

ACCORDING to JOSLIN, pure senile glycosuric cases form only 0.55% of the total recorded cases (between 75 and 85 years of age). In India, the percentage would probably be a little higher. Authentic data are not available here. From my personal records, I find that during the last 25 years, I could definitely find only 37 cases who developed glycosuria in really advanced years. Every one of them had albumin in his urine more or less, and evidences of general fibrotic changes were manifest in practically all cases, both in the cardio-vascular system and in the kidneys. Detection of glycosuria was usually found in some when the ophthalmic surgeons referred to the physician, and in a few others when the symptoms of high blood pressure demanded examination of their urine.

The usual complaint about eyes was gradual loss of vision, and most of them thought their condition to be due probably to the formation of cataract, but the eye specialist would find retinitis in more than 60% of these cases, and on careful examination of their urine, not only albumin and casts were found but also sugar in some of them. A condition of retinitis, albuminuric or diabetic, was only evident or sometimes both the condition of cataract and retinitis were co-existent, and, in the latter cases, removal of cataract could not restore the vision rightly. Again, in the premature senility group, there was quite a large number of cases of advanced middle age (45-55 years), where arteriosclerotic changes were evident throughout in the kidneys, in the heart and in the vessels in particular, the blood pressure was high and some had recurrent retinal haemorrhages and some had retinitis. In these cases, besides a distinct trace of albumin and casts, hyaline or granular, the presence of sugar was also evident in many of them. Both of these groups would be labelled down as cases of senile glycosuria, *normal* or *acquired*. With the advance of age, in *normal* senility, there are bound to be fibrotic changes in the vessels leading to general sclerosis and in the kidneys, the normal process of physiological re-absorption would be defective and there is leakage of sugar in the urine, specially in the samples after the heavier meals. The blood-sugar would be between 0.12%—0.15% in empty stomach. In the *'acquired'* group, glycosuria was found only in 23.5% and the blood sugar is never very high. Out of JOSLIN's record of about 7000 cases, the highest percentage of cases belonged to the 5th and the 6th decades of life and the blood sugar was estimated in only 60% of cases and the sugar level in most of them in empty stomach ranged from 0.13 to 0.19%. In only 7% of cases, the sugar in the blood was above 0.2%, but they were probably all old diabetics without symptoms, and none had any previous record of urine examination.

Senility is an expression indicating certain changes in the appearance and function of the human body, both anatomical and physiological. Such changes will occur with advance of age, but there is a wide range in time-scale in the measure of aging. In fact, age or senility is not to be counted by the number of almanac years of life, but by the amount of work and worry put in, which really counts. A man of 55 may be as aged as a man of 85

The type of life and living, the food, the climate, diseases, work and worries are some of the big factors responsible for the changes brought on the human system. "The man is as old as his arteries" is a very true expression and against it is equally true that "the arteries are as old as his work, worries and wounds". Wounds—physical, pathological or mental—are indeed very much responsible to create havoc in the life of a man. The Count of Monte Cristo was so changed in one night that the one night counted for 20 years of his life-time!

The slow changes in the human body in a normal, eventless life is the inevitable wear and tear, and such a senility would reveal only the gradual atrophy of the physique and of the physiological processes, and they do not warrant any medical interference. An American farmer at the age of 136 told us how he was still daily going round his big farm, now under the actual working of his sons and grandsons, and how he had been a teetotaller all his life, a vegetarian for over 50 years, and for the last 10 years living on pure milk and fruit juices. I know of a widow of about 120 years, although shrivelled up and bent down, yet goes about for her daily calls. She was widowed at the age of 14 years and, as a Brahman widow, she lived practically on one meal of vegetarian diet, no intoxication and not much of worries, and for the last 10-12 years living on milk and fruit juices. In the modern field of life, there is a growing demand of an extra amount of work and strain, worries are endless, diseases are more rampant, especially in the city-life. The diet is insufficient and unbalanced and dietetic adulterations are varied, prolific and positively harmful.

The main factors responsible for the premature aging of the arteries may be enumerated as follow :—(1) certain pressor substances originating in the intestinal tract owing to protein putrefaction and stasis of the nature of diamines, tetramines; (2) absorption of toxins from septic foci, e.g., in the teeth, tonsils, nasal sinuses and genito-urinary tract; (3) tea, tobacco, alcohol in excess, chronic lead poisoning from water or utensils, (4) prolonged mental strain and anxieties and worries physical over strain acting directly and through endocrines indirectly; (5) damaged kidneys, failing to eliminate certain non-protein substances as uric acid and other metabolic poisons which would act as pressor substances.

The fibrotic changes in the arteries gradually bring on changes in the various tissues and organs leading to malnutrition and consequent degeneration or fibrosis. It is quite a normal pathological process, brought on tissues, in the ordinary course of events of a life—a gradual process of decay degeneration and atrophy, a senility owing to general wear and tear. Such a process leading on to fibrosis and dysfunction of the pancreatic hormone would naturally warrant certain amount of glycosuria and such glycosurias of the old people do not need any treatment beyond a little adjustment of the diet. Grey hairs, decayed teeth, and atrophied glands are alike the physical alterations and functional failures of senility. But the process of changes may be accelerated by the vast variety of intoxications brought to bear upon the human body throughout life. Hypertension or high blood pressure is concomitant with arterial sclerosis and very often with kidney sclerosis. Whether the changes in the vessels, heart and kidneys are due to high blood pressure or *vice versa* is a matter to be worked out in individual cases. These four become soon manifest in a morbid chain, and form a vicious cycle. Whatever be the causative factors, the lesion is

more often not uniform but generally selective. The arterioles of the kidneys are practically always involved more severely than those elsewhere; the next affected are those in the heart, in the pancreas, liver, spleen and brain, whereas the skin, skeletal muscles, lungs and gastrointestinal tract are but slightly involved. The pathological changes are patchy ischaemic atrophies and functional deficiencies. ALBUTT's decrescent arteriosclerosis is the expected senile type where the systolic pressure is not very high, the diastolic definitely low and the differential pressure will therefore be high. The heart is not hypertrophied but may show the usual myocardial inefficiency. These people are liable to "episodal crises", clinically manifested by bouts of headache of short duration, cardiac distress and dyspnoea. They end more often in cardiac failures than in cerebral apoplexy.

Premature senility is thus due to work at high pressure, stress and strain of modern life, worries, anxieties, physical and mental traumas, over-eating, over-working, excess of tea, tobacco, alcohol and acquired infections. According to JOSLIN, the most common cause of death in diabetes, since Insulin treatment has become prevalent, is arteriosclerosis rather than coma. In quite a large group of diabetics of middle age, i.e. between 45—60, premature arteriosclerosis plays a very prominent part. Dysfunction in the organs of metabolism owing to sclerosis of the vascular field, malnutrition, sclerosis and hyalinisation, would explain the occasion of hyposecretion of the digestive enzymes and internal secretions. Excessive physical work would demand hyper-secretion and hyper-metabolism, but the limit must soon reach and exhaustion and functional failure of the system become evident in the form of dyspepsia, flatulence, insomnia, giddiness, constipation and polyuria. Blood-pressure goes up and cardiac strain is reflected in frequent fits of palpitation or breathlessness on lesser exertion. Albumin with casts and sometimes sugar would appear in the urine. Syphilis is responsible in a certain percentage of cases of diabetes amongst this group. The usual lesion is not a gummatous growth in the liver or pancreas but a diffuse endarteritis in the tissues and organs. Early detection and antisiphilitic treatment would ensure both the conditions. I have treated 5 such cases, who have been keeping aglycosuric with normal diets and are in fairly good health.

Normal senility is thus a normal feature in the course of events in the anatomy and physiology of life, but this normality is a relative term and, barring infections and accidents, the span of life is capable of expansion by judicious dieting, self-control, regulated habits and, above all, avoidance of any excesses and worries and maintaining a jovial temperament and a smiling outlook. Anxiety and worry are worse than any active disease and, unless one realises for himself the usual A B C of life, taking things easily as they come and putting up a bold and smiling front, no amount of doctoring could be of any avail. The best doctors of life are the humane teachings of early years from the understanding parents, and then comes the teacher who would not only teach the alphabets of books but also the alphabets of the possibilities of the courses of life. Prevention is certainly better than cure. My patient, Dukhram, is in his 113th year of his life, enjoying fairly good health, good appetite and good sleep. He lost his aged wife only 3 months ago and his only son about 5 years ago, but does not mind in the least. He would say that people would come and go when their work was over, and it was not in anybody's power to curtail or to prolong life. He

has been living for the last 40 years mainly on milk and fruits, about 3 seers of good milk and some fruits. He yet walks erect and walks quite 2 or 3 miles daily. He has filariasis and that was his trouble for which I am consulted. There is evidence of senility in his heart and vessels and the B. P. is 170 systolic, but there is no trouble or complaint. He is a big contractor of *toddy* (fermented liquor) shops, but he has never drunk it, nor ever smoked a pipe. His hairs and teeth belie his age, he can yet chew and suck out juice from the sugarcane. He is an illiterate man, but told me often how, in his early years, he had learnt from his parents the usual course of events of a human life, the usual pitfalls and temptations and, above all, he has an absolute faith and dependence on the Will of God and would gracefully submit himself to everything in good spirit, even in apparently worst situations and sufferings.

My experience for over a quarter of a century in this field of medicines has taught me that most of the diseases are preventable; most of the ailments are due to our indiscretions and, in the early stage, a little adjustment often ensures a cure and things malignant come mostly to carry off. Certain infections are self-limited and develop autogenous cure, but some others demand treatment as malaria, kala-azar, syphilis, diphtheria, tetanus etc. Surgery generally keeps things under good repairs. Senile diabetes coming on in normal senility requires only a little readjustment of diet and I have never known such glycosurics dying of coma. In them, glycosuria is not a pathological condition. Premature senility and the consequent glycosuria require primarily the treatment of the cause. So long as the causative factors operate, no amount of dietetic adjustment or Insulin injections could ensure a cure. Where the causative factor or factors are uncertain or irremediable, attempts should be made to repair the damages wrought as far as possible and then to recast the life activity and diet according to individual needs and capacity. If the sugar tolerance is low but demand is higher, the supply is to be supplemented by *Oralin* by mouth or, in the more desperate cases, *Insulin* adequately adjusted. Self-control and a will to keep fit are assets for both the physician and the patient. Impatience, carelessness and ignorance of the real situation have been responsible for failures and catastrophes. A diabetic, even if he keeps himself aglycosuric by careful dieting, always runs the risk of getting hyperglycaemia and glycosuria if any sepsis or infection steps in. Physical or mental trauma may also precipitate the condition. Risks are certainly far more in actual diabetics with high blood sugar where slight trauma or infection might cause havoc and the situation becomes more difficult to control than in diabetics under control. In the arteriosclerotic subjects, the situation is worse. Aseptic trauma leads to thrombosis and then gangrene of the area, but if sepsis supervenes, local septic cellulitis and then generalised septicæmia would set in and coma precipitated to end the scene. In these days of Insulin, much could yet be done, if boldly handled. Infection or sepsis inactivates insulin mechanism and hence very large doses of Insulin must be administered along with glucose solution. Sera, immunogen vaccines should be exhibited to control the infection and the septic focus or foci freely dealt with, and dead tissues removed as quickly and as boldly as warranted by such a desperate condition. I have used Insulin in conditions like these—100 units, morning and evening, along with Glucose solution 25%, 100 c.c. I.V. every time, and I felt happy that I did so. It is a mere child's play to use Insulin in 20 unit doses once or twice daily

in these conditions. One should do all to check the process of infection and at the same time control the basic condition by bold and judicious use of Insulin and Glucose. These patients are already hyperglycæmic and mostly in acidotic condition. The autogenous Insulin is also present (DAKIN) but the 'Insulin-Glucose' metabolism is somehow paralysed. Acidosis could only be combated and prevented by initiating this metabolic process and it is the general experience that repeated introduction of Insulin in good doses combined with Glucose into the system would ensure far quicker response than Insulin alone, and the Insulin must be given, as already stated, in fairly big doses and should vaso-motor paresis manifest, repeated doses of Atropin gr. 1/100 and Pituitrin 1 c.c., alternately with Adrenalin (1/1000) 1 c.c., and Strychnine gr. 1/25, have been valuable adjuncts in restoring the mechanism and withstanding the circulatory impasse.

Diabetic condition in premature senility with stiff arteries is, therefore, to be looked upon as a serious standing menace and one should understand the situation and take all possible care in order to curtail the possible risks and to prevent the endless and varied sufferings.

1, Furriapooker St.
Calcutta.



Lovely Innocence

and typical of a child reared on Cow & Gate Milk Food—virile and intelligent—strongly framed and firmly fleshed. Growth is natural and steady and children's teeth come quickly and easily. That is because the food is made in England's West Country where the pastures are specially rich in bone-building elements and vitamins. No wonder Cow & Gate succeeds when other foods fail.

©2316



COW & GATE MILK FOOD
"THE FOOD OF ROYAL BABIES"



Agents for India: CARR & CO. LTD., Witlet Road, Ballard Estate, Bombay; and at Calcutta, Karachi, Madras and Marmagon.

"Ample stocks are available in India and will be maintained"



Gentle Persuasion Overcomes Intestinal Stasis

When the colon needs "persuasion" without "urging" to evacuate its contents, this gentle coaxing can be well accomplished with AGAROL, the original emulsion of mineral oil and agar-agar with phenolphthalein.

A good intestinal softener and lubricant, Agarol mixes intimately with the intestinal contents and, by stimulating peristalsis, ensures

complete and effortless evacuation of the bowel.

The fine ingredients of Agarol are so thoroughly emulsified that freedom from oily after-taste is achieved without artificial flavouring and disguise. Agarol may be taken undiluted or added to milk or any other liquid or solid food. It contains no sugar, alcohol or alkali.

A trial supply sent to physicians on request.

Martin & Harris Ltd., Mercantile Buildings, Lall Bazar, Calcutta

Also at Bombay, Madras, Karachi and Rangoon.

Prepared by **WILLIAM R. WARNER & CO., LTD., LONDON, ENGLAND.**

Agarol

When writing to advertisers, please mention the "Antiseptic"

B. D. H. VITAMIN PRODUCTS

and their principal uses
in General Practice

AVOLEUM (Vitamin A)

To prevent night-blindness and mucocutaneous degeneration with consequent susceptibility to infection

PHYTOFEROL (Vitamin E)

To restore the functioning and structure of endocrine and myoneural tissues

VITAMIN B₁ B.D.H.

To maintain carbohydrate metabolism and prevent, or relieve, neuritis, anorexia and constipation

PROKAYVIT (Vitamin K)

To prevent neonatal and post-operative hæmorrhage resulting from hypoprothrombinæmia

NICOTINIC ACID B.D.H. (P.P. Factor)

To correct derangements of carbohydrate metabolism manifested by subpellagroid symptoms

RADIOSTOLEUM (Vitamins A and D)

To correct the effects of lack of 'protective' foods and to prevent respiratory and other bacterial infections

ASCORBIC ACID B.D.H. (Vitamin C)

To promote collagen formation and thus to ensure the formation of sound bones, teeth and blood vessels

RADIOMULSIN (Vitamins A B₁ C and D)

A convenient form of supplying the vitamin equivalents of fish-liver oil and orange juice, as well as Vitamin B₁, to infants

RADIOSTOL (Vitamin D)

For the prevention and treatment of hypovitaminosis-D and consequent calcium deficiency

RADIO-MALT (Vitamins A B₁ B₂ and D)

A vitamin tonic for children and adults

MULTIVITE (Vitamins A B₁ C and D)

To correct multiple vitamin deficiencies in children and adults

Stocks of B.D.H. Vitamin Products are held by leading chemists, and full particulars are obtainable from:—

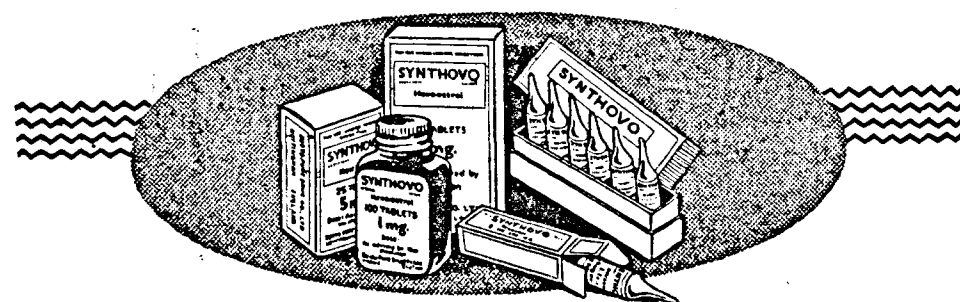
THE BRITISH DRUG HOUSES LTD.

(Incorporated in England)

Imperial Chemical House Ballard Estate
BOMBAY

VitPr/In/4110.

When writing to advertisers, please mention the "Antiseptic"



SYNTHOVO

HEXOESTROL

Synthetic Oestrogenic Substance

Synthovo is a new synthetic oestrogenic substance allied to Stilboestrol and possessing the great advantage of being less toxic than Stilboestrol and its derivatives when administered by mouth.

Supplied in tablets containing 1 mg. and 5 mg. in bottles of 25 and 100, and in 1.1 c.c. ampoules containing 1 mg. and 5 mg. in single ampoules and boxes of six ampoules.

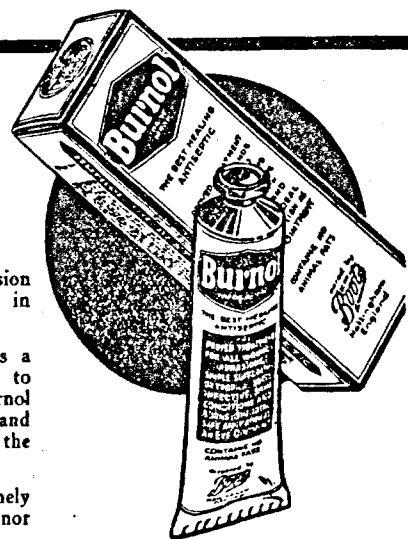


*The best
healing antiseptic.*

Burnol is a specially prepared creamy emulsion containing 0.1% of Neutral Acriflavine presented in handy, collapsible tubes ready for immediate use.

The Neutral Acriflavine present in Burnol acts as a preventive of germ infection and is non-irritant to the tissues and non-toxic to the phagocytes. Burnol is readily applied and the old dressings are easily and painlessly removed with no risk of damage to the healthy granulation tissues.

Clinical evidence proves it to be an extremely satisfactory preparation for the treatment of all minor injuries and septic conditions generally.



FOR PARTICULARS PLEASE APPLY TO: BOOTS PURE DRUG CO. LTD., 10 LALL BAZAR, CALCUTTA.

MANUFACTURED BY:
BOOTS PURE DRUG CO. LTD. NOTTINGHAM, ENGLAND

When writing to advertisers, please mention the "Antiseptic"

Chronic Senile Rheumatism— Its Ætiology and Pathology

BY

S. K. BOSE, M.B. (CAL.),

Pathologist, P. W. Hospital, Bhopal.

THE term 'chronic senile rheumatism' comprises a complex group of conditions and is generally applied to many chronic affections of old age in which pain occurs associated with changes in joints and other fibrous structures of the body. Such cases are of every day occurrence constituting more than 50% of the diseases seen in old age, and sometimes are by no means easy to treat. Volumes of literature have been written about them, but uptill now, there is a great deal of confusion regarding their ætiology and treatment.

Roughly, the diseases may be classified into three main groups according to the structures affected and the nature of affection: *chronic articular rheumatism*, when the joints are affected, *fibrositis*, when the fibrous tissues of the various structures of the body e.g., fasciæ, aponeuroses, subcutaneous tissues, ligaments, tendons, nerve sheaths, muscular sheaths etc. are affected, and *gout*, though strictly speaking not coming under this category. For the convenience of description, the sub-classification of the three groups is also given below:

- A. *Chronic Articular Rheumatism*:—(1) Rheumatoid arthritis or Arthritis chronica adhesiva. (2) Osteoarthritis or Arthritis deformans. (3) Chronic villous arthritis.
- B. *Fibrositis*:—(1) Panniculitis. (2) Bursitis. (3) Tenosynovitis. (4) Peri and interstitial neuritis e.g., sciatica, brachial neuritis, intercostal neuralgia. (5) Myositis or fibromyositis, e.g., lumbago, torticollis pleurodynia.
- C. *Gout*.

Consideration of Some Ætiological Factors.—Much has been written about the causes of chronic rheumatic affections, but no decisive ætiological factor has yet been found. Most of them can only be regarded as pre-disposing and not true causes. It is generally believed that, in the rheumatoid group of arthritis, the most important pathogenic factor is infection, most probably *Streptococcus viridans*; in the osteoarthritic group degenerative and arteriosclerotic changes play an important part; in chronic villous arthritis, endocrine insufficiency in climacteric is the most probable cause; in fibrositis, the consensus of opinion is that degenerative changes go hand in hand with infection in old age; and in gout, there is certainly a hereditary predisposition which governs the metabolic changes.

The predisposing causes described are many. Mental strain, debility, psychogenic factors, trauma, physical strain, exposure to cold, wet and damp, pregnancy and parturition, excess of protein in dietary, drinking of too much alcoholic beverages, vitamin deficiency and allergic factors, are all credited at one time or other as the predisposing causes. The conclusion which forces itself upon one, from a close study of cases of rheumatoid form of arthritis, is that the principal exciting cause is an infection, the continued absorption of the bacterial toxin being responsible for the changes in the joints though, even today, the experimental data are different

in different hands and the results of treatment of these cases of rheumatoid arthritis by eradication of probable septic foci are controversial.

Numerous bacteriologists have worked on the rheumatoid joints and many skilful bacteriological techniques have been used, but no specific organisms have yet been found. POYNTON and PAINE isolated Streptococci from the case of arthritis which produced similar lesions in rabbits. In America, CECIL, NICHOLLS and STAINSBY, by means of some special techniques, showed that Streptococci could be obtained from the joints and blood in over 60% of cases of chronic arthritis and rheumatoid arthritis. Their works have not been confirmed, as the bacteriological procedure employed by them has been subject to criticism. It appears that like pleurisy with effusion, most of these cases are devoid of bacteria, or it is very difficult to find them from the site of lesion, as the actual causative organisms are often far distant from it. This source of infection or the focal sepsis as it is generally called, has probably been more discussed and more radically dealt with as the ætiological factor of chronic rheumatic conditions. A patient suffering from chronic non-specific arthritis undergoes a thorough and meticulous search from a medical practitioner. He is examined for pyorrhœa alveolaris, apical abscess, tonsillitis, septic sinuses, diseases of gall bladder, appendix, colon, etc., and if these are found normal, urine and fœces of these patients are also cultured for the presence of abnormal excess of Streptococci, though the exact standard of normality in fœces has yet to be determined. In extreme cases, I have seen eminent physicians asking for the cultural examination of duodenal and colon washings for Streptococci. But it seems now-a-days that with the increasing available experimental and statistical findings, the importance of removal of septic foci in the treatment of chronic rheumatic affections is gradually decreasing. We find in the transactions of Medical Society of London, in October 1918, that DR. BEDDARD placed 90% of rheumatoid arthritis to be due to infected teeth sockets and Sir W. H. WILLCOX was also of the same opinion. Whereas an examination of 200 cases of rheumatoid arthritis by CECIL and ANGEVINE in 1938 showed that 70% did not reveal any demonstrable signs of focal sepsis, and treatment of the remaining 30% had no improvement in the majority of cases. It is now generally admitted that cure of rheumatic conditions following dental extraction is an exception rather than the rule. In the light of recent findings, the question of focal infection to the rheumatic conditions may be answered in this way. One or more of the predisposing causes being present, the continued absorption of bacterial toxin, most probably Streptococcal, from a septic focus anywhere in the body, is responsible for these conditions, which after a certain period of time could not be expected to be cured even after the removal of that focus, as irreversible changes have already taken place in the tissues and in some cases other septic foci are present keeping up the infection.

The ætiology of the various forms of fibrositis is in all probability the same as that of chronic articular rheumatism with a few more predisposing causes added, *e.g.*, chronic irritation, over-use of tendons, ligaments, etc., and postural strain.

Hereditary predisposition plays an important part in the causation of gout. GEORGE GRAHAM found history of a gouty ancestry in 50 to 80% of cases. A. B. GARROD gives the figures as 75% in well-to-do patients and 50% in hospital patients. Being given this hereditary diathesis, all the

predisposing causes described above may be responsible for causing the attack of gout. As this disease is a disturbance of purin metabolism with the consequent increase of uric acid in blood, the role of food, as its ætiology, has received a great attention, though, excepting the following facts, nothing is definitely known. "It is rather the quantity than the quality of food that matters. Meat and the purin bodies in tea etc., probably have little effect. Sweet breads, fish-roses and tripe may be actively harmful. Spirits have little effect, and gout is almost unknown in Scotland. Beer is more potent. Port and Sherry and the red wines are also probably responsible for much gout among the well-to-do classes, and Champagne has a bad reputation."

Consideration of Some Salient Pathological Changes.—Rheumatoid or chronic adhesive arthritis is usually a chronic polyarthritis. Rarely a single joint is affected. The process initially starts from the soft tissues surrounding the joint, and the involvement of cartilage and bone is secondary to it. The synovial membrane and the tissues around the joint are swollen due to chronic inflammatory changes together with the formation of new blood vessels and proliferation of the connective tissue. The joint cartilages undergo fibrillation and are invaded by ingrowing granulation tissue and later on completely absorbed. This leads to obliteration of joint cavity and its fibrous ankylosis. Ultimately, bony ankylosis might also take place. The underlying bone and the surrounding muscles undergo atrophic changes.

In osteoarthritis or arthritis deformans, the initial pathological process is manifested in the cartilage and bony tissues of the joints, the involvement being usually monoarticular. The cartilage covering the bone undergoes perpendicular fibrillation, irregular erosion, and ultimately complete absorption. Simultaneously with this, the underlying bone becomes smooth, hard and eburnated. There is at places atrophy of bone trabeculae, and between these places there is an excess of mucoid and fibrous tissue. At the same time, there is excessive bone formation, specially near the joint margin leading to lipping. There is sometimes a marked ingrowth of vascular villous projections within the joint cavity which, later on, become covered with fatty tissue from the synovial membrane. (*Lipoma arborescens*). Fibrous and bony ankylosis are never seen in osteoarthritis unless there is a superadded secondary infection. The surrounding ligaments and muscles become soft and in certain cases there may be sub-luxation of joint. Sometimes, the vertebral joints show osteoarthritic changes. The intervertebral discs become fibrous and later on ossified, resulting in immobility of the spine (*Spondylitis deformans*).

In fibrositis, there is at first an inflammatory œdema followed by proliferation of connective tissue cells and formation of collagenous fibres leading to a dense and sclerosed appearance of the affected area. Marked arteriosclerotic changes in old age aggravate this sclerosis. There is no polymorphonuclear cellular infiltration, and only a few lymphocytic emigrations are seen at the site.

In chronic villous arthritis, a disease of women seen in climacteric, the joint changes are more or less similar to osteoarthritis. Here, the villous projections inside the joint are very much exaggerated. In gout, the essential change is the deposition of uric acid in the form of Sodium biurate in various places. In the joints, the bone may be plastered with Sodium

biurate. Ligaments, tendon sheaths and bursae, are also infiltrated. Tophaceous deposits are frequently found on the cartilage of the ear and in the subcutaneous tissue.

Summary.—1. The term *chronic senile rheumatism* is defined and the diseases classified.

2. The role of infection and degeneration in the causation of chronic rheumatism is discussed.

3. Some salient pathological changes of the disease are considered.

References :

1. Boyd. (1937)—Text Book of Pathology.
2. Beddard (1918)—Transactions of Medical Society, London.
3. Burt, Gordon, and Brown (1938)—A Survey of Chronic Rheumatic Diseases.
4. Cecil and Angevine (1938)—Ann. Internal Medicine.
5. Clark—Kennedy and Vaizey (1939—June 24) Dental Sepsis in Relation to
- Anæmia, Dyspepsia and Rheumatism (British Medical Journal).
6. Gordon (1939)—The Psychological Factor in Chronic Rheumatism, (British Medical Journal, June 10, 1939).
7. Muir (1925)—Text Book of Pathology.
8. Price (1933)—Text Book of Medicine.
9. Willcox (1921)—British Medical Journal 1, 804.



Each adult dose (two teaspoonfuls) contains in acid state :
Sodium Glycerophosphate ... 2 grs.
Calcium Glycerophosphate... 2 grs.
Strychnine Glycerophosphate $\frac{1}{2}$ gr.

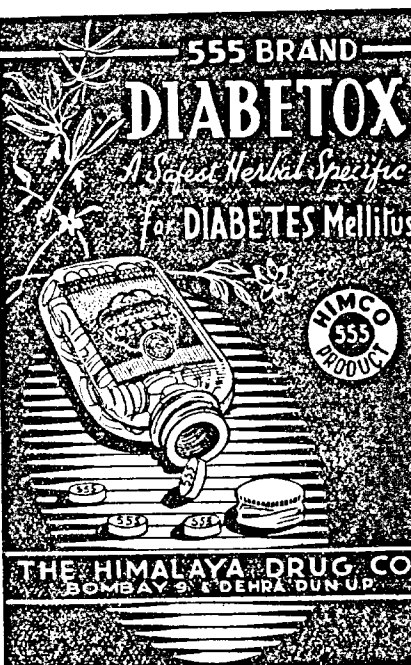
Impaired Vitality and Jaded Nerves

Neuro Phosphates has a world-wide reputation for combating nervous exhaustion and general debility, resulting from prolonged physical or mental strain. It is the ideal reconstructive tonic in convalescence following illness or operation.

Neuro Phosphates
(ESKAY BRAND)

Menley & James Ltd., 123, Coldharbour Lane, London

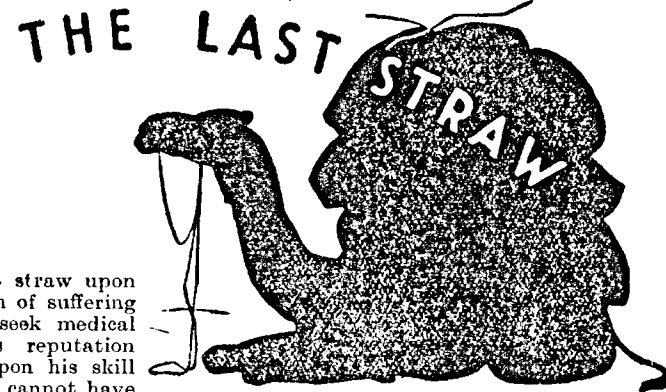
Agent for India: RALPH PAXTON, 10, LALL BAZAR, CALCUTTA



Descriptive literature and clinical sample free on request.



SERPINA Tablets are prepared from cultivated root bark of Rauwolfia Serpentina. 100 Tablets Rs. 2-8. 500 Tablets Rs. 11-4.



Pain

is the last straw upon the burden of suffering which induces the patient to seek medical aid and the practitioner's reputation depends in no small degree upon his skill in relieving pain. For this he cannot have a more reliable ally than Veganin. Veganin presents a synergistic combination of acetylsalicylic acid, phenacetin and codeine and is considered one of the safest analgesics. It is quickly absorbed and its action is prompt and prolonged. Veganin affords effective relief in a vast number of painful conditions and alleviates the nervousness that so frequently accompanies them. There is no aftermath of

languor, no systemic disturbance, no habituation.

Supplied in tubes of 10 and 20. (Veganin is not advertised to the public).

A trial supply to Physicians on request.

MARTIN & HARRIS LTD.,

Mercantile Buildings, Lall Bazar, Calcutta

Also at Bombay, Madras, Karachi and Rangoon.

WILLIAM R. WARNER & CO. LTD.
POWER ROAD, CHISWICK, LONDON, W.4.

We Manufacture—

THE SCIENTIFIC INSTRUMENT CO.
SIC
TRADE MARK

Incubators, Hot Air Electric Sterilizers, Steam Sterilizers, Paraffin Embedding Baths and Ovens, Serological Baths, Serum Inspissators, Automatic Water Distillation Apparatus, Artificial Pneumothorax Apparatus, Dissecting Microscope, Culture Tubes, Burettes, Ampoules, Specimen Tubes, Test Tubes, Pipettes etc. etc.

In well equipped Mechanical and Glass blowing shops with skilled workmen, we have been manufacturing these laboratory apparatus under expert supervision. These are made of the best materials for the purpose and are being satisfactorily used in various Medical Institutions, Universities, Colleges and Govt. Laboratories.

Trial Solicited.

THE SCIENTIFIC INSTRUMENT CO., LTD.,

5A, Albert Road, 240, Hornby Road, 11, Esplanade East, 30, Mount Road,
ALLAHABAD. BOMBAY. CALCUTTA. MADRAS.

When writing to advertisers, please mention the "Antiseptic"

INFRA-RED THERAPY

"AFTER nearly forty years' personal experience" (writes a famous London consultant) "were I limited to one method in physical medicine, that one method would be infra-red irradiation."

Infra-red therapy with the Hanovia Sollux lamp finds a vast scope of application in every-day treatment. You will find a comprehensive summary of the indications, technique and physical data in the Hanovia handbook "Pre-eminent in the Relief of Pain." It gives actual excerpts from over 100 books and papers, covering general and specialised medicine, properly classified and easily readable. The handbook is free to professional enquirers.

Agents:—

BOMBAY

MALGHAM BROS.,
26, Custom House Road,
Fort.

CALCUTTA

ADAIR DUTT & CO., LTD.,
5, Dalhousie Square, East.

Send now for
your free copy



COUPON

To nearest Agent.....

Please send Hanovia Handbook "Pre-eminent in the Relief of Pain" and particulars of the Sollux lamps.

Name.....

Address.....

M110/51

When writing to advertisers, please mention the "Antiseptic"

PHYSICIANS PRESCRIBE NERVINUS

(With Gold)

Contains: Damina Ext., Acid Phos. Dil, Salix Nigra, Preparations of Gold & Glycerophosphates.

Known as an Elixir of Life for the last 25 years.

Rs. 5 per bot. (Month's use).

**BEHAR CHEMICAL WORKS,
BHAGALPUR**

Or from:

SPENCER & Co., DADHA & Co., APPAH & Co. &
A. S. NAYAGAR & CO., Madras. VINAYAGAR MEDICAL
HALL, Trichinopoly. Dr. T. S. RAMAN, Pollachi.

New Treatment of TUBERCULOSIS

AUROGANAL 'B' OLEOSUM—Manufactured by Messrs. Oriental Chemical Works Ltd., 8/2 Bejoy Bose Road, Calcutta, was extensively tried in Jadabpur T. B. Sanatorium and other reputed Hospitals in India as well as by the leading practitioners of the city. This is intended for the treatment of Pulmonary Tuberculosis and works on the system in a manner akin to the well-known Selganol 'B' Oleosum.

THEOCADIUM 'A' OLEOSUM is also a well tried medicine for Pulmonary Tuberculosis (*vide page 203, Indian Medical Gazette, April 1941*).

YOUR EYE

Does it trouble you? If so, try **SELLER'S LOTUS HONEY**, the safest, surest and most highly praised Nature's cure for Eye-diseases. Cures even Cataract etc. Literature free.

SRI KRISHNAN BROS., Post Box 166, Madras.

**EVERY DOCTOR
OWNER OF PHARMACY, MANUFACTURER, IMPORTER
AND DEALER OF MEDICINAL PRODUCTS AND PATENTS
WILL FIND
INDIAN & EASTERN CHEMIST**

Official Monthly Organ of

BENGAL PHARMACEUTICAL ASSOCIATION

Full of vital information and valuable Expert Advice, not only for improving efficiency of the Profession, Trade and Industry but also for safeguarding from penalties provided by the Drugs Act 1940.

ALSO MOST EFFECTIVE ADVERTISING MEDIUM.

Annual Subscription (Including Membership):

**Dealers and Manufacturers: Rs. 12/- Doctors and Scientists: Rs. 6/-
Compounders: Rs. 3/- Advt. rates on application.**

Apply to-day to: MANAGING EDITOR,

INDIAN & EASTERN CHEMIST 6, Bentinck St., CALCUTTA.

When writing to advertisers, please mention the "Antiseptic."

Neurasthenia

BY

JADAVJI HANSRAJ, D.O.M.S., R.C.P.S. (ENG.), L.M. & S. (BOM.),
Chief Medical Officer, Bhuj, (Kutch State).

Definition.—Neurasthenia literarily means functional weakness or asthenic condition of the nervous system. It is one of the subdivisions of the conditions which are described in the medical literature as psychoneurosis. It is a disease which is characterized by conditions exhibiting either mental or bodily signs and symptoms, or both, which are the result of a mental conflict, and susceptible of cure by psychological means. The patient retains the same view of the real world as an ordinary person, or, may manifest symptoms indicating that the world is viewed by him in the light of his delusional experiences, or the disorder of thought and the profound disturbances of feelings. It is manifested by too rapid fatigue, physical and mental or both. The patient feels that he has lost bodily and mental comfort which a normal person possesses. He may evince emotional imbalance and become unduly irritable and over responsive to such stimuli in the nervous system as may have no effect on a normal person. Sometimes, the patient experiences abnormal bodily sensations. In short, there is a serious debility, bodily and mental, rather than a perversion. As a rule, no two patients manifest the same symptoms. Diffidence of mental effort is the most prominent symptom in some patients, and in some others, an actual loss or weakness of sexual power is very often complained. As a rule, no organic lesion is found in any system of the body. The weakness that is complained of is more of an imaginary nature than of a real one.

Ætiology.—There is a strong impression that there is a hereditary predisposition to such a condition. Precise evidence on this point is lacking; but if a thorough and patient investigation is carried out, it is usually found that either the mother or the father of the patient or his brothers or sisters manifested abnormal excitability or irritability of nature or were addicted to certain drugs which have either an immediate or a remote effect on the central nervous system.

The personality of the patient has a certain amount of bearing on the etiology of the disease. The main features of the patients who have a tendency to suffer from neurasthenic symptoms are concentration on work to the almost complete exclusion of definite recreation, often however, with an actual dislike of a particular job, sexual difficulties, emotional instability, with a strong bearing towards the depressive side. The patient has a pessimistic attitude, a general tendency to worry about trivial things and some specific fears. He manifests a capacity for affection of the dependant rather than of the protective type. He has a predominating feeling of inferiority. Some patients show over-sensitiveness and shyness and are reserved with a lack of inclination or ability for social intercourse. Over-consciousness in various ways, over-meticulousness, undue care in being orderly over-neat in dress, over-correctness in small things, too obstinate and rigid in views and such other characteristics are usually observed in a person who is predisposed to neurasthenia. All or some of these characteristics gradually develop, but are compensated for a number of years. The patient gets adapted to these until some causes bring about a "rupture of compensation", and he begins to experience and complain that there is something wrong with his mental powers. Very often, this rupture of

compensation comes about as a reaction to an external situation the patient dislikes or which gives him a certain amount of mental shock; or, when there is an occurrence of psychological trauma, i.e. when he is confronted suddenly with something which he doesn't understand or fears intensely. Unhappy conditions of employment or occupation, difficult marital situations, uneasy relations with family members, grossly unpleasant situation, involving personal prestige, are some of the conditions which serve as etiological factors in this disease.

The type of persons who suffer from this disease:—As a rule, those who are educated and have to do a good deal of mental work, whose work is associated with worry and anxiety, who have to experience mental shocks, who are neurotic in character, and who are addicted to certain vices, are more prone to suffer from this disease.

Symptoms.—The main symptoms the patient complains of are: (1) difficulty in concentration on work. (2) difficulty in grasping. (3) irritability of nature. (4) feeling of general bodily and mental weakness. (5) insomnia. (6) anorexia. (7) perversion of sexual habits or moral weakness. (8) melancholic symptoms. (9) loss of interest in life. (10) certain phobias. (11) abnormal sensations. (12) low blood pressure and (13) distressful dreams and night-mares.

1. *Difficulty in Concentration on Work*:—Very often, this is the first symptom noticed by the patient who could work without any difficulty for hours at a time, and finds that he can work as usual for only about half an hour or so. Then he finds that he cannot devote himself whole heartedly to his work or finds it difficult to understand fully what he reads. If his work is such that he has to dictate to his short-hand clerk, he can do so well for a short time. Then he finds it difficult to find right words or phrases for his ideas. He feels that his brain refuses to work or he feels tired. The word brain fag is used by many patients to describe these symptoms. As day advances he finds greater and greater difficulty in concentrating on his work and at last, out of despair, he leaves the work. As the disease advances, greater and greater difficulties are experienced and the patient reaches a stage when he evades work entirely. After a good night's rest, he may find himself a little better the next morning; but, a short time after beginning his work, he finds himself again in the same difficult position.

2. *Difficulty in Grasping*:—Another complaint that troubles the patient is the difficulty in grasping a subject either in writing or in conversation. When the patient begins to read certain papers either of business or of some other type, he understands the meaning and purport of the writing quite well. After some time, the difficulty in grasping the correct ideas begins and the patient finds it more and more difficult to understand the subject he is handling. As the disease advances, this difficulty becomes more marked and at last the patient reaches such a condition that it is impossible for him to take up any papers for disposal. As the patient feels difficulty in writing, he finds the same difficulty in grasping the conversation that is carried on with him, pertaining to business. For some time he may succeed in understanding the meaning of the conversation but then, the brain fag begins to manifest itself and the patient fails to follow the conversation. The face which looked normal in the beginning shows signs of perplexity and later on looks absolutely vacant.

3. *Irritability of Nature*:—It has been observed by a number of physicians who had to deal with cases of neurasthenia that patients who were absolutely cool-headed, good natured and free from excitement under ordinary circumstances would get irritated and excited even with trivial causes. Sometimes, the patient begins to fret and worry without any rhyme or reason. In some patients, this irritability reaches such a stage that the patient avoids the company of his family members and friends and they avoid his presence. Another characteristic that is noticed in neurasthenic patients is that they believe that everything in connection with the business is going wrong, nothing is being done rightly by any of their subordinates and everything in connection with their business is going to wreck and ruins.

4. *Feeling of General Bodily and Mental Weakness*:—This is the first symptom which is noticed by the patient and about which he complains to his family members and doctors. He feels that he is too weak to do any work, mental or physical, and any slight work brings about a feeling of fatigue. Any mental effort brings about heaviness in the head and disability to do any mental work. As the disease advances, this symptom becomes worse and worse and reaches such a stage that the patient refuses himself to do any walking or to take any other form of exercise or to do any mental work. It may be mentioned here that if the patient is examined at this time, no organic or physical abnormality is detected by the physician. On the other hand, the physician finds that the weakness the patient complains of is more imaginary than real.

5. *Insomnia*:—Disturbance of sleep is one of the preliminary symptoms complained of by patients. In some patients, it is rather slight so that the patient instead of enjoying sound sleep for about 7 hours in the night wakes up every two or three hours and, in spite of every effort on his part, he is not able to induce sound sleep. During these hours of semi-wakefulness, his brain is not at rest. On the contrary, it rambles in various directions and he experiences certain melancholic thoughts to such an extent that he believes he is going to be a lunatic. As the disease advances, the disturbance in sleep gets worse and worse until that stage is reached when the patient is unable to sleep without a strong sedative or hypnotic. A good many patients manifest signs of somnambulism and in some patients suicidal tendency has been observed during this period of semi-wakefulness. In good many patients, improvement in sleeplessness is observed with a tendency to relapse if the patient meets with some worry or has to undertake any mental work which strains his nerves. As a rule, sleeplessness can be brought under control by suitable remedies, but some stray cases are found where even the strongest hypnotics fail to bring about improvement.

6. *Anorexia*:—I have observed a few patients by whom periodical anorexia or want of appetite is complained of to a great extent. It is quite natural that this sign brings about further weakness and exaggeration of almost all the symptoms that the patient complains of. Fortunately, anorexia is found in very few patients of neurasthenia and even in those, it is amenable to treatment.

7. *Perversion of Sexual Habits and Moral Weakness*:—I think it is the experience of a good many physicians, who have devoted their special attention to the study of neurasthenia, that some patients who led

absolutely normal sexual lives in their healthy conditions, manifest various sexual perversions. On proper investigation, a number of such patients reveal some form of sexual weakness when they were absolutely healthy and in normal life. There are various forms of sexual perversion which are found in such patients. I do not think it advisable to give a long list of them, as any medical man who is specially interested in the study of this branch of psychoneurosis, can refer to special books on the subject. Homosexuality and unnatural sexual intercourse are two cheap types of sexual perversions that are found in some of the neurasthenic patients on account of moral weakness that will be described in the next paragraph. The patient tries his utmost to conceal these symptoms, and, if under certain circumstances, any one comes to know of these symptoms, the patient submits to the influence of that man to such an extent that it may be impossible to believe this fact under normal circumstances.

Moral weakness is also one of the symptoms that is manifested by a number of neurasthenic patients. A feeling of diffidence is exhibited very often and a man who was once known as a strong willed person will be found submitting himself to such influences as would be absolutely impossible to believe under normal circumstances. I do not propose to discuss these symptoms from the medico-legal point of view, as it is fully described in the text books of Medical Jurisprudence.

8. *Melancholic Symptom*.—When the disease advances to a certain stage, it is found that the patients who were quite cheerful and jovial in their nature are absolutely changed and they not only assume a melancholic expression on their faces but lose all interest in life, business, relatives, friends and even their family members. Life assumes an absolutely listless, vacant outlook and the patient lives a life of misery and exclusiveness. Long voyages in some patients bring about notable improvement in their condition. On the other hand, such solitary life brings about well marked mental disorder in some others.

9. *Certain Phobias*.—It has been already mentioned that a neurasthenic patient feels depressed and melancholic. In addition to these, he develops imaginary or certain fears. Some patients are afraid of going out of their rooms, while others dread to enter their usual living rooms. Very often, fear of taking certain foods, drinks, and fear of presence of certain persons are observed. An ordinary face that may have been usual to him may be a source of disgust and alarm to him. Some patients are changed in their relations with their own wives or ladies of their choice. It has been observed that return to normal condition makes the patient free from such fears, but at times, one or two fears remain permanent after complete cure of the neurasthenic condition.

10. *Abnormal Sensations*.—A good number of neurasthenic patients experiences various abnormal sensations without the physician detecting any organic cause for such symptoms. Pins and needles, formication, experiencing more heat and cold, complaining of coldness of hands and feet, an oppressive or painful feeling in the cardiac region, various feelings in the act of respiration, abdominal pains without any organic lesion, pain in the orchitic region, discomfort at the time of urination and defæcation, frequency of micturition, numbness in lower extremities and various sensations in the sole of the feet, are some of the symptoms which are complained of by patients.

11. *Low Blood Pressure*.—Those who have examined a great number of neurasthenic patients must have observed that low blood pressure is found in a majority of cases. At the age of 45, blood pressure of 110 systolic and 70 diastolic is usual with these patients. Some authorities go so far as to declare that any one who has normal or high blood pressure can never suffer from neurasthenia. In other words, only those patients who have low blood pressure can suffer from the disease. My experience of a number of cases gives support to this theory. I have never found so far any neurasthenic patient with high blood pressure. Whether this low blood pressure has any relation with hormones of various internal glands is a question which we would leave to the special students of this branch of medicine. It has been further observed by me that administration of such drugs as bring about increased blood pressure in normal individuals fails to show any marked rise in the blood pressure in neurasthenic patients.

12. *Distressful Dreams and Nightmares*.—It has been already mentioned above that sleeplessness is one of the main features of this disease. A majority of such patients complain of very dreadful and shocking dreams in the periods of sleep during nights. I have seen some patients actually shouting, beating those people who are near them, leaving their beds and running about and sometimes even doing criminal offences without any knowledge of such deeds when they are fully awake. It is further observed that these dreadful dreams have very close relations with the incidents of the patients' past life. Most of the patients remember these dreams and nightmares when they wake in the morning and describe their nocturnal experience to the physician, while others forget these entirely when they get up in the morning.

Diagnosis.—To an experienced physician it is very easy to diagnose a typical well marked case of neurasthenia, but it is not so easy in those cases which manifest only a few signs and symptoms of the disease. The main diseases from which diagnosis is to be made are:—Incipient insanity, hysteria and organic cerebral conditions. In the absence of any organic physical changes in the body or in the absence of any abnormal movement of various muscles, organic cerebral diseases can be set aside. Normal reflexes go in favour of neurasthenia. The greatest difficulty is experienced in diagnosing incipient insanity from neurasthenia. Keeping the patient under observation and watching his signs and symptoms, one will decide the case. Diagnosis from hysteria is at times difficult, because hysteria itself is one of the subdivisions of mental conditions which are classed as psychoneurosis. It is a well known fact that hysteria is more common in females and especially young females, while neurasthenia is found in patients above 40. Neurasthenia is a disease of the rich and cultured, mentally over-worked and worried, while hysteria can be seen in any class of patients. A certain functional paralysis, loss of vision, loss of speech, fits of unconsciousness and fits of convulsions are usually present in neurasthenia.

Treatment.—I would not propose to give a detailed line of treatment as is practised in different sanatoria and nursing houses specially established for treating such cases. It must be born in mind that every patient would not respond to the same line of treatment and it is the experience of every physician that he has to devise different lines of treatment in different

classes of patients. The main lines of treatment are:—

- (1) Rest.
- (2) Administration of the so-called brain nutritives.
- (3) Administration of various gland products.
- (4) Special nursing.

Rest.—It has already been stated above that this disease is due to mental worry and over-work. Under the circumstances, the most rational line of treatment would be to give complete mental rest to the patient. He should be removed from the scene of mental worry and excitement. He should be absolutely free from any mental work. His surroundings should be palatable and pleasant and he should be in the company of such people who can keep him pleased. Some physicians advocate the use of Bromides. My experience tallies with that of these physicians entirely. Rest is the best curative for these patients. Some physicians go so far as to advocate the use of Bromide to such an extent that the patient is in sleep for at least 18 hours out of 24. This line of treatment is likely to bring about a welcome change in the symptoms of a number of patients. When a case improves the quantity of Bromide should be lessened as much as possible and when the patient is free from the disease, an occasional dose of Bromide is the only thing that is necessary for the patient.

Administration of the so-called Brain Nutritives.—Amongst the so-called nervine tonics, Glycero-phosphates and Lecithin are the most important drugs. My experience of these drugs is that they certainly do help a majority of neurasthenic patients and are worth a trial in every case. Strychnine may help some patients but not all. It is contra-indicated especially in that class of patients who manifest irritability of temper. Gold chloride has been advocated by some physicians, but I have not found it to be of much use. In recent times, Benzadrine Tablets have been advertised to have a salutary effect in increasing the grasping faculty of the patients. My experience is that it does temporary good in increasing the intellectual powers of the patients. Only further experience will show whether it is advisable to use this drug for any length of time.

Administration of Various Gland Products.—The use of various gland product has been highly recommended by certain authorities. Thyroid extracts is found useful in only such patients who show fattiness in body and deficiency in thyroid function. Testicular extracts have been highly advocated by some authorities. German physicians speak very highly of injections of Androsten A and B and Perendrin given alternately. My experience shows that they are only beneficial in such cases in whom the positive causal factor is over-indulgence in sexual life. Other gland products have not been found to be of much use in neurasthenic patients. I have used B. W. and Co., Cerebrin Tablets with benefit in those patients who show abnormal excitability of the brain. Valerian and Musk, which are found to be useful in hysterical cases, have done no good in neurasthenic patients.

Special Nursing.—Removing the patient to special sanatoria where he would receive individual attention with special care, particular diet, prescribed role of life, happy surroundings, atmosphere free from care and worry and nursing by specially trained nurses which are all the desirable factors, contributes to the welfare of the patient and brings about the cure.

Most of these sanatoria are equipped with various other means, such as:—hydrotherapy, electrotherapy and other modern therapeutic agents which will certainly help the patients a good deal. Keeping the patients in one of the sanatoria which are attached to various Spas on the continent of Europe and America, certainly does help a number of patients. Over and above these things, such sanatoria have specialists in suggestion, hypnotism and other forms of psychotherapy. It is the experience of most of the physicians that such measures do help the patients when other means have failed. A tactful physician who knows the idiosyncrasies of the patient, who has tons of patience to carefully listen to the complaints of the patients, who can keep the patient in optimistic atmosphere and who can win the confidence of the patient, will be a great help in bringing about a cure of this condition.

Before finishing this paper, I may put the fact before the readers that the disease is liable to frequent relapses if due care is not taken to keep the patient away or free from causative factors which either predispose or bring about the actual attack of neurasthenia.

Benign Prostatic Hypertrophy

BY

T. C. BASU CHOWDHURY, L.S.M.F.,

AND

Dr. S. MITTRA,

Eye Surgeons, Agra.

Definition and Nomenclature.—A great number of men of advanced age complains something or other about their urinary function. But it is not always easy to make out the definite cause of the trouble in each and every individual. Though a lot has been worked out on the subject, much of it remains in doubt and darkness. Therefore, an exact definition is not yet forthcoming. Owing to ignorance about its aetio-pathology, several authorities have applied different names to almost the same condition; *viz.*, hypertrophy of the prostate, old-age enlargement, adenoma of prostate etc. In some cases, obstruction to urinary passages occurs without any prostatic enlargement; but unfortunately, these cases also come under "Enlarged Prostate", proving thereby the inadequacy of the nomenclature.

Aetiology.—*Incidence*:—Its incidence is similar to the climacteric changes in females and occurs also in males. Whereas the age in the former is near about 40, in the latter the climacteric occurs in the sixth or the seventh decade in cool climates and in the fifth in warm climates. The climacteric in males indicates their waning power of reproduction and not its abrupt stoppage, a tendency to lose or gain weight, emotional irritabilities and psychological disturbances (*e.g.* excessive sexual passion for young girls in a few cases) &c. But it is a queer fact that though enlargement of prostate may be said to be one of the climacteric changes akin to similar changes in the breasts of females, yet the common age when this morbid process commences is not the climacteric age in man but menopausal age of women *i.e.* 40 years. So, the critical age is 40 instead of 60 years.

YOUNG's experiments have proved that the disease is almost confined to married persons leading active sexual life. The prostate increases in size upto about the age of 30-35 years, after which it presumably shrinks and, at 60 years, attains its minimum size. Thirty per cent of these normal cases turn out pathological. From the age of 40, instead of shrinking, the prostate in the morbid cases enlarges in size (though its secretory function is on the wane as in normal ones). Out of 3,000 cases of prostatectomy done by YOUNG, only 4 were bachelors.

Age:—The commonest age period when cases of enlarged prostate come up seeking medical advice in these countries is 55-60. From this, it is evident that the age, when enlargement actually commences, is much less. In the necropsy of 1218 males who died of various diseases in a modern hospital, the following facts were noted proving that the greatest number

Age in years.	No. of patients on whom necropsy was done.	No. in which enlarged Prostate was found.	Percentage of Prostate enlargement.
40—50	300	60	20%
50—60	500	150	30%
60—70	268	107	40%
70—80	150	75	50%

of cases with enlarged prostate were in their fifties. But this is not a proof positive that all cases with enlarged prostate must show clinical symptoms and signs. The majority of cases clinically diagnosable come in their late fifties.

In India, the flesh-eaters have been found more prone to this pathological condition than those sticking to vegetable food. And amongst those affected, the majority are of sedentary habits: (shop-keepers, teachers, village chowdharies and priests).

No. of enlarged prostate cases in the biggest hospital, U.P. during 1930—1940	Flesh-eaters.	Percentage of Flesh-eaters.	Vegetarians.	Percentage of Vegetarians.
500	385	77%	115	23%

It is common in English men and the North Americans; less common in Indians, still less in Negroes and the Japanese and the least in the Chinese.

Cause.—No single cause has yet been discovered. Amongst those propounded, the following are a few:

Ciechanowsky's View:—He thinks that the prostatic enlargement is a type of emphysema of the gland due to dilatation of the glands (acinous type) with secretion. This dilatation and accumulation of secretion he attributes to mild infections of prostate stroma resulting in occlusion of the mouths of glands and, thereby its swelling up. But his theory is fallacious because, (1) there should exist a direct relation between the size of the gland and the amount of dilatation present. This is not found. (2) Signs of inflammation in an ordinarily enlarged prostate without much superimposed infection are few, and (3) actually, there exists no relation between the enlargement and previous urinary infections.

Neoplastic Theory is more plausible. In the vast majority of cases of enlarged prostates removed, small circumscribed nodular masses resembling adenomata have been found. On a microscopic examination of these, structures of an adenoma could be made out. These masses were also easily shelled out disproving the inflammatory causation of these scattered masses. But, in this age, adenoma is uncommon, and also the structures of these so-called adenomatous nodules resemble the original prostate acinous glands so much that there is some doubt whether these could be really called tumorous.

Degenerative Theory of LAUNOIS, GUYON etc.—According to these authorities, the prostatic enlargement is a degenerative process concomitant with similar changes in blood vessels (*i.e.* arteriosclerosis) and other genito-urinary apparatus. Though this might be true in some respects, it could not be proved.

Endocrinal Theory:—PAUL and WADE have mentioned that the changes in an enlarged prostate are very similar to those found in the female breast at menopause. This gives a hint that the prostatic pathology has also something to do with endocrinal imbalance (as in the climacteric of women).

At the end of active sexual life, certain degenerative changes can be detected in the testes; and it has been proved beyond doubt that, in those cases associated with prostatic hypertrophy, there may be some difference in degree but not in kind between these testes and the testes of those without prostate enlargement. The theory of endocrinal imbalance has been

based on an experiment. Castration does not produce any effect on an already hypertrophied gland. But, if the testes of an animal are removed, there is excessive hypophyseal secretion, and when this was passed from the peritoneum of the castrated animal into another normal one, there was stimulation of testicular activity in the latter and later on prostatic hypertrophy. As a matter of fact, this theory of endocrinal imbalance resulting in prostatic hypertrophy is gaining ground and cases are being treated with hormones.

Pathology.—Because of the adenomatous structure of the enlargement, the neoplastic theory has been defended. ALBARRAN and HALLE examined several cases and, after prostatectomy, it was found that 3 forms of hypertrophy were detectable: (a) Glandular, (b) Fibromuscular, (c) Mixed.

Cases of the glandular type are 83% and of the fibromuscular 12% and inflammatory 5% (YOUNG and GERAGHTY). Prostatic hypertrophy is not a diffuse hyperplasia, but begins in separate foci and results in more or less spheroidal tumour. One thing that has been particularly noted is that those cases who give a history of acute urethritis (e.g. gonorrhœa) are very seldom victims of prostatic hypertrophy.

There are five common sites of the origin of adenomatous hypertrophy: (1) They are the two groups of submucosal glands on either side of urethra (2) Median posterior group (pre-spermatid glands of Albarran), and (3) Sub-cervical glands of Albarran. The commonest is the involvement of groups 1 and 2 glands together forming an enlargement of the 2 lateral lobes and the median lobe i.e. a collar-like projection into the bladder. Sometimes only the median lobe may form a pedunculated growth; at other times the lateral lobes may form intravesical projections with a deep furrow in between.

Symptoms.—It is unnecessary to stress that every man with an enlarged prostate must have urinary symptoms. It is worthwhile mentioning that the amount of difficulty in micturition is directly proportional to the height of the intravesical projection of the prostate; enlarged prostate tends to grow upwards towards the bladder—its downward growth being checked by the strong triangular ligament) and more particularly to the “height of the closed portion of the projection.” For example, if the two lateral lobes are separated by a wide furrow, the difficulty in micturition will be either small or nil. But, on the other hand, if the intravesical portion of the prostatic urethra is very narrow and the said walls are almost apposed together, the micturition troubles will be maximum.

Some authorities prefer dividing the course of symptomatology into 3 groups, but, from the point of diagnosis or treatment, these are useless. They are:—

1. *Premonitory Stage*:—Where the symptoms are more due to congestion, micturition difficulties are minimum and the bladder is capable of carrying on its function of emptying.

2. *Intermediate Stage*:—Imperfect emptying of bladder (with residual urine).

3. *Terminal Stage*:—Incomplete retention with distension with powers of bladder to empty being nil.

Once begun, the disease is progressive. But, one cannot say with certainty when the patient will pass from one stage into another.

Alteration in Micturition:—Insidious in onset. Frequency of urination is increased (the cause probably being congestion). Because the patient has to get up once or twice during the night also (thereby getting disturbed sleep and rest), he complains more of nocturnal frequency than diurnal. It might just be possible that in the night, owing to supine position during rest, there may be more congestion of the prostate resulting in increased frequency. But this is not very plausible, neither is the interval between micturitions shortened during night.

Difficulty and Straining:—The patient has to strain and wait for some time before the flow begins. The duration of the passing of urine increases, the stream is poor and urgency for the act is sometimes marked (the patient sometimes spoiling his clothes). Later on, the patient complains of *dribbling* of urine after the act and sometimes, recommencement of micturition after the act has apparently ceased, so that the patient cannot be sure of finishing the act. This occurs when dilatation of bladder has occurred. *Intermittent urination* occurs in cases with enlarged median lobe with a ball-valve-like projection, just as happens in cases of vesical calculus.

Dyscrasia of Genital Function:—Morning erections may occur. There may be increased sexual desire and sometimes perversion of this desire resulting in liking for very young girls.

Discomfort in Perineum:—There may be heaviness in the perineum, bladder region and sometimes lumbar region too. The discomfort rarely transforms into actual bearing down pain radiating to sacral region and legs.

Polyuria.—There may be slight polyuria from the very beginning, but when dilatation of bladder has occurred with a resultant lack of pressure on the kidneys, the same gets well marked, the patient passing a drachm or so of urine every fifteen minutes. Even 90-100 ounces of urine may be passed within 24 hours. There may be *pain* in the lumbar region due to congestion of the kidneys.

Spontaneous Haematuria:—May occur in the intermediate stage of the disease. The blood may be noted during the early part of micturition. Sometimes, the bleeding may be great and this occurs in cases associated with calculus, new growth or ruptured varicose veins.

Urinary Toxaemia:—As the disease advances, there may be loss of appetite, intense thirst, dyspepsia, constipation or diarrhœa, headache, aching of limbs, vomiting, hiccough, restlessness, hallucination and dreadful dreams. The patient may look cachectic, with a dry, dirty tongue with a clean tip. There may be hernia, piles and prolapsus ani owing to straining.

It is just an ordinary thing to see a patient recovering completely from the symptoms for a short interval, relapsing again after sometime to a rather worse condition. It is, therefore, not possible to foretell the progress of any case.

Examination of Patient.—1. *General Examination*:—Examination of nose, nasopharynx, tongue, teeth, eyes, breath etc., and also the vitality of the patient.

2. *Cardiovascular, Pulmonary and Abdominal Examination*:—Look for high blood pressure, myocarditis, angina pectoris, dilatation of heart, pericardial lesions and aortic lesions etc. Trial should be made to palpate and find out any lesion of the kidneys.

3. *External Genitals*—for any abnormality of penis, filariasis, epididymitis, hernia etc.

4. *Rectal Examination*—With the patient in genu-pectoral position, a gloved finger is introduced. Examination is first made with the bladder full of urine and later, after emptying the bladder. Any pathological condition of the anus (haemorrhoids, fistulae), rectum (its mucous membranes and the narrowing of lumen) and pelvic walls are noted. Later, the prostate is felt and the following are noted—its size, consistency, mobility, the condition of mucous membrane over it, irregularities of its surface, induration, and tenderness if any. The seminal vesicles should also be palpated and their state determined.

5. *Catheterisation*—to find out the amount of residual urine. It should be done very carefully. Sometimes, the passage of a catheter through posterior urethra may lead to anuria. A soft rubber catheter is to be preferred, failing which a coude or bicoude gum elastic catheter is to be chosen. If the latter also fails, a silver catheter has to be used. Surgical cleanliness must be strictly adhered to, and the catheter introduced with extreme gentleness and care. It is fool-hardiness to struggle the way of the catheter, thereby inducing haemorrhage, œdema and strangury in a case with not so many odd symptoms. When catheterisation fails, a dose of $\frac{1}{8}$ gr. Morphine with $\frac{1}{16}$ gr. Atropine subcutaneously + hot Sitz bath or an enema answers the purpose well. If a catheter could then be passed, the bladder should be emptied very slowly lest hæmaturia and anuria should result. If unsuccessful, suprapubic puncture has to be resorted to.

6. *Cystoscopy*—A combination cystoscope with anterior and posterior sheath provided with right angle, retrograde and antegrade telescopes is the best. The amount of residual urine and bladder capacity are noted and a specimen for culture is first taken. The bladder is then washed clean and viewed all round. The retrograde telescope with anterior sheath is used to have a view of the vesical orifice.

7. *Kidney Function Tests*—The amount of urine passed in 24 hours, its specific gravity, its bacteriological examination etc. are noted. The Phenol-sulpho-naphthalein Renal Test is applied and the time elapsing for its appearance in urine after the injection of 1 c.c. of the drug intravenously is noted as also the percentage of excretion in 2 hours. In old men, the time elapsing after injection is 5 minutes and the percentage of excretion in 30 minutes is about 50%. This is one of the best tests and are being actively carried out in all urological clinics. It is futile to say that in cases of urine retention, this test cannot be applied.

8. *Examination of Blood*—for the number and state of blood cells, culture and percentage of urea. Urea percentage findings are not a true guide to the actual state and operability of the patient. Anyway, blood urea above 40 milligrams per 100 c.c. indicates urea retention. This appears far later than the time when renal impairment actually commences.

9. *X-Ray of the pelvis* so contrived that the path of the rays is parallel to plane of pelvic strait (so that the view of the prostate is not hidden by the shadow of symphysis pubis), gives valuable findings of calculi, malignant growth and metastases. Sometimes, ascending urography after filling the bladder with 12% Sodii Iodide helps in diagnosis. Intravenous injection of Neoiopax is used in descending urography.

10. *Analysis of Urine*—For the presence of organisms, casts, and crystals.

Diagnosis.—It will be extravagant to deal at length with the diagnosis of a case of enlarged prostate. The above mentioned examinations are to be made of the patient and the following are noted: the general state of the patient, any signs of uræmic toxæmia (like lassitude, lost appetite, coated dry tongue, etc.) and the abdominal palpation may show an enlarged distended bladder at hypogastrium. There may be difficulty in micturition, complaint of polyuria and sometimes overflow and distension. Rectal examination may show uniformly or otherwise enlarged prostate, succulent inconsistency (except hardness at places due to calculi), and moderate elasticity. The bimanual examination may be carried out to corroborate facts in thin individuals. Catheterisation will show the lengthening urethral canal, difficulty in passage of an ordinary coude-catheter and ease with which a bi-coude or a long curved catheter passes. Urethroscopy and cystoscopy will show the zig-zag urethra, the enlarged intravesical portions of prostate & collar-like projection in the bladder and the retention of urine in retro-prostatic pouch. A rectal examination with the indwelling urethral catheter will help to make out the depth of tissue in between the examining finger and the prostatic urethra. It is needless to say that the examination must be helped with accurate history & progress of the case.

Differential Diagnosis:—1. *Chronic Prostatitis*.—(1) An antecedent history of acute attack (2) Irregular and tender prostate. (3) Involvement in inflammation of one of the seminal vesicles. (4) On prostatic massage and examination of urine, coma-shaped threads are seen floating in urine, these being composed of pus cells and mucus.

2. *Prostatic Calculi*.—(1) Signs of inflammation as in the above. (2) Feeling per rectal examination hard (stony) places in the prostate and sometimes feeling of palpation of a bag of stones. (3) X-ray confirmations.

3. *Prostatic Abscess*.—(1) Acute symptoms (2) Purulent urethral discharge. (3) Hot, tender, swollen, fluctuant mass palpable rectally (4) Leucocytosis. (5) Massage of prostate brings out pus per urethra.

4. *Stricture of Urethra*.—(1) Age incidence is low. (2) Evidence of past infection—threads and pus in urine (3) Past history of urethritis (4) A full dilatation of stricture and cystoscopy may have to be done to reach a correct diagnosis.

5. *Malignant Growth*.—(1) Not a long history of urinary trouble (2) Pain radiating towards the legs (3) Hæmaturia (4) Induration and fixity of the prostate (5) Even in early stages there may be a large amount of residual urine without even much intravesical growth (6) Cachectic state of the patient and metastases.

6. *Vesical Calculi*.—(1) Frequency more marked during day (2) Terminal hæmaturia during micturition (3) Cystoscopy clinches diagnosis.

7. *Tumors Bladder*.—(1) More likely to bleed (2) If malignant, the urine examination may reveal portions of growth (3) Cystoscopy almost brings on the diagnosis provided the growth is not very near the vesical neck or arises from the upper part of the prostate.

8. *Obstruction at Bladder Neck*.—(*Prostatisme sans prostate*) (Fr.) There is no intravesical enlargement but owing to an increase of glandular,

muscular or fibrous tissues at vesical neck, there is obstruction. Cystoscopic examination shows no hypertrophy of the prostate.

9. *Nerve Lesions Involving the Bladder*:—(1) Examination of general function shows decrease (2) Intermittent or nocturnal incontinence in tabs (3) Cystoscopy shows no prostatic hypertrophy (4) Trabeculation of bladder does not involve the trigone.

Treatment.—This depends on (1) Age (2) General condition of the patient (3) Type and degree of obstruction (4) Presence of infection (5) State of cardiovascular system (6) Kidney efficiency (7) Neuro-psychic state of the patient. (8) Amount of residual urine, and the state of bladder.

The principles of treatment in cases of prostatic hypertrophy leading to obstruction are :—

- (1) To provide free exit of urine from bladder.
- (2) To provide a way to remove obstruction at vesical neck.
- (3) To preserve the functional action of internal and external sphincters and ejaculatory ducts if possible.
- (4) To prevent post-operative shocks and hæmorrhage.
- (5) To prevent infection and sloughing.
- (6) To secure rapid healing of wound.
- (7) To re-establish normal function.

Treatment has been divided into 5 groups :—(1) Palliative treatment where surgical operation is contra-indicated (2) Intraurethral manœuvre (3) Suprapubic cystostomy (4) Prostatectomy (5) Endocrinal treatment.

1. *Palliative Treatment*:—As has been said, is carried out in those cases who do not want to submit themselves to operative treatment, who are not in a position to waste their time due to business, and those in whom the end may be seen to be nearing soon.

The patient is nursed on his back. Diet should be mild, consisting of nutritious, easily digestible food, fruit juices etc. He should avoid chill, over-exertion, fatigue, and holding up the urine. But should have bland diet, moderate outdoor exercise and enough of rest.

Intermittent or Continuous Catheterisation:—Possible when a catheter is passable. The greatest possible aseptic measures must be taken. Great care is taken to introduce the catheter (avoiding hæmorrhage). The bladder is washed twice daily with some antiseptic. If the urine is acid Hexamine is given orally. If alkaline—Boric or Benzoic acid with Acid Sodaphosphate. Anyway, the catheter should not be kept in the bladder at a stretch for more than a week, because, incrustations begin forming on the catheter and this may help calculi formation. Ext. Ergot liqd. m. xx—xxx may be given T. D. S. orally.

When there is retention of urine, catheter should be utilized but the decompression should be very slow, taking 24—48 hours during which the patient is given 5% Glucose water and large amount of fluids to flush out the kidneys.

Some people prefer taking out the urine with a catheter and then removing the catheter. Such process is not a good one.

Radium and X-Ray Therapy:—There is difficulty in application. Out of 6 cases to whom this therapy was given, three got cured. One was better for 3 years and two had no effect at all. Deep X-Ray with 2 suprapubic,

2 coccygeal and 1 perineal fields. Not much effect was noted. Diathermy static wave current, galvanism, faradism were all tried in a few patients and are claimed to improve conditions, re-establish active nourishment and cell-growth and to improve lymphoid flow and absorption of products in the prostate. But they don't reduce the hypertrophied mass to an extent of sustained relief.

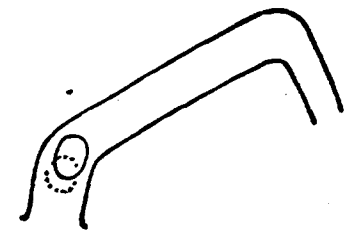
Intraurethral Manœuvre.—It is :— drainage through bulbous urethra. This procedure is claimed to be better than suprapubic drainage. A small incision is made in the perineum and a rubber catheter is introduced into the bladder. Bladder washes are given as usual.

2. *Trans-urethral Removal of Prostatic Overgrowth*:—This is done by Young's Prostatic Bar Excisor or Punch. This is introduced into the bladder and the hypertrophied mass gets inside the notch. The cutting tube with cautery is then pushed in to cut the hypertrophic mass. Sometimes, a small needle is utilised to fix the mass to be cut. After cutting, the mass is removed and the process repeated. In this way, small pieces may be removed thus making the vesical neck again free from obstruction. The removal of tissue should neither be very less nor very great. As a matter of fact, the region from verumontanum to the trigone should become in one plane. The operation is done under regional anaesthesia and should be finished within an hour, failing which the same may be adjourned for a next sitting, a few days after, which causes not much inconvenience (7-10 days) either to the operator or the patient. This operation can be undertaken in weak individuals and in whom a catheter could be passed. The operation needs skill and, in expert hands, a very easy task. During operation, some method (e.g. electrolytic) of coagulation must be instituted to allay excessive bleeding. A catheter is put in after operation and proper drainage of urine maintained. This is removed after 48 hours and the patient instructed to relax his sphincters during voiding urine.

3. *Suprapubic Cystostomy*:—This is undertaken in cases in whom prostatectomy is contra-indicated; and also as a preliminary in two-stage prostatectomy operation. It restores function most satisfactorily and is an easy operation. In certain cases, suprapubic drainage has improved urethra so well that the prostate came to its almost normal size and prostatectomy was not needed. Drainage for a week may restore kidney function to a great extent, bringing down the patient to normal in an amazing way.

Some operators prefer only doing a suprapubic puncture and putting in a rubber drainage at the summit of the bladder (Pezzer, Malecot, Whites catheter etc.) A glass tube bent as shown in the figure, with $\frac{1}{2}$ " diameter and 2 eyes help matters more than rubber tubes, because there is less chance of incrustations and the tube is not constricted by a cicatrizing suprapubic wound. This, however, could be introduced only when a sufficient sized incision has been made in the bladder wall.

When a suprapubic incision is made and bladder is opened, exploration to find out any calculi or diverticulæ must be made, and treatment for the same instituted. After that, the rubber or glass tube is put near the



summit of the bladder and it is closed. The abdominal wound is also closed taking care not to put stitches tightly round the drainage tube lest necrosis should occur. A cigarette drain of the cave of Retzius is also maintained for 24—48 hours. The bladder may be washed daily.

Some surgeons prefer putting in a Freyer's tube and suture it to bladder wall by inverted sutures and the mucous membrane of the bladder is also inverted.

In cases where the suprapubic cystostomy has to be done indefinitely, a modified Hamilton Irving's box may be applied to the hypogastrium through which the urine may drain. The patient may walk about with this apparatus tied to his person.

4. *Prostatectomy* :—This can be undertaken suprapubically or perineally, as a two-stage or one-stage operation. Where done suprapubically, the procedure may be one of these. 1. A blind operation. 2. Enucleation under inspection. 3. Dissection under inspection.

The best of these is intra-urethral enucleation under inspection, because:—(1) Glandular changes of the prostate occur more in urethral and peri-urethral parts. (2) The gland is best reached in this manner. (3) Lines of cleavage best marked. (4) Less damage to prostatic capsule and venous plexus. (5) Less damage to vesical trigone. (6) Prostatic vessels are separated late in the operative procedure and so bleeding can be controlled easily. (7) Verumontanum and ejaculatory ducts may be spared.

The method of intraurethral enucleation by suprapubic route is easy too. The finger is introduced into the prostatic urethra, the mucous membrane is broken though and the lateral lobes are separately removed. The median lobe is cut off from the floor of the prostatic urethra and then the mucous membrane of the prostatic urethra is sutured to the lower margin of trigone. If necessary, the lower hypertrophied portion of trigone may also be clipped off. The prostatic vessels are secured and the anterior portion of the wide raw prostatic fossa now left is closed by cat-gut suture. If necessary, due to bleeding, gauze packing or hæmostatic bag (invented by various surgeons) may be put in temporarily. A self retaining catheter is introduced and the bladder closed with a suprapubic drainage. An ingenious method of closing the prostatic fossa has been devised by a surgeon—which is just similar to the one used in closing the cervical wound in subtotal hysterectomy. This is a nice method and needs experimenting upon.

The above is one-stage operation. Two-stage operation is needed in the following. 1. Those in which catheter could not be passed. 2. Those in whom intravesical hæmorrhage has occurred. 3. Those where trans-urethral resection is not possible. 4. Those who are intolerant to retention of catheter. 5. Those with vesical calculi or other complications. 6. Those with large diverticulæ. 7. Those in whom kidney inefficiency needs long, continued drainage. 8. And in those cases where infection exists.

Before performing the operation, it must be made sure that the patients' cardiovascular system is o.k., kidney efficiency has come down to almost normal (normal phthalein excretion & blood urea) etc. and there is no cystitis left.

The choice of anæsthesia depends on the surgeon, and the type of the patient. Gas and Oxygen, spinal anæsthesia etc.

Post-operative Treatment—Patient to be kept quiet and of his movements restricted till the urine remains blood tinged. The suprapubic wound is allowed to be soaked with urine for 24—48 hours and then a modified Hamilton Irvings apparatus is applied. The hæmostatic bag (if it was put in the prostatic fossa) is removed in 24 hours and replaced by MARION's suprapubic drainage tube. If a catheter has been put in the urethra, drainage is maintained by CALLICAST's method of suction action. The time for this suprapubic wound to heal is about 3 weeks. The urethral catheter must be removed in 1 week's time and bladder drainage maintained by Janet's (syphon action) method.

Shock, secondary hæmorrhage, cellulitis, epididymitis are treated as they arise. Epididymitis is sometimes avoided by a previous vasectomy.

Perineal prostatectomy is undertaken by an inverted 'V' shaped incision in perineum, the bulb of urethra is reached by cutting the central tendon. The prostatic urethra is then opened and the prostate lobules brought out and removed by the help of a Young's tractor. A drainage tube is put in and oiled dressings set by its side after the operator has been sure of the removal of the hypertrophic prostate and position of vesical trigone.

5. *Endocrinal Treatment*—Of late, it has been brought into use. It has been shown experimentally that in the male, there is a balance between the œstrone & male secretion (testœstrone). But in these individuals, due to testicular degeneration and hypophyseal over-activity, there is less amount of testœstrone thereby leaving the œstrone uncompensated which leads to hypertrophy of the prostate. Therefore, injection of "Androgen" is being given as experiment to these patients and it is hoped that in time this particular therapy will do good.

Prostatic Extract (British Organotherapy) has been given to some patients with retardation of more growth and any more vascular changes. But this too is yet in the experimental state.

The subject of prostatic hypertrophy is one, the ætiology of which as yet is obscure and so there is more need of experiment on a subject which is a great disability of the old. Measures are, however, progressively being invented but the best treatment which is a difficult surgical procedure is not worth being carried on, on every patient. For the very old, the catheter is the only consolation and when this fails, he quickly steers off for the worse.

*The Eye Clinic, Prasadpur House,
Rakabganj Road, Agra.*

Enlarged Prostate in The Old and Consequent Retention of Urine

BY

K. S. APPU MUDALIAR, M.B.B.S.,

Chief Medical Officer, Govt. Hospital Kumbakonam.

DURING my stay of the last eight years in the south, I have met this condition very frequently.

The patient, generally of 60 years and above, comes to the hospital with complete retention of urine saying, he has had this retention suddenly and that he has a marked desire to pass urine but he could not. On examination, it is noticed that there is a pyriform tumour in the hypogastric region extending up to the umbilicus. Some other cases present themselves with hæmorrhage through the urethra in whom bladder too is seen distended. Still others come to the hospital with incontinence, or overflow, and on close examination, we find that the bladder is distended and the patient gives history that it is constantly present for sometime ever since he noticed the incontinence.

When these patients are enquired into very carefully about the history, they give out as early symptoms, difficulty and frequency of micturition. Difficulty is most marked at the commencement of the act—straining not helping the micturition. Frequency is often noticed at night. There is also loss of projection of the stream. The difficulty and frequency of micturition may steadily increase until the bladder becomes constantly distended and incontinence with overflow results. Generally, the general health may remain good for years but with increasing frequency and difficulty, there is impairment due to pain and loss of sleep. As the bladder gets distended, there is back pressure on the kidneys and, as a result, the patient suffers from headache, thirst, polyuria and anorexia, and there is loss of flesh and strength. These effects are more marked if infection is superadded.

Examination per rectum reveals a large soft prostate pressing backwards into the rectum or a firm slightly enlarged prostate. In both cases, the enlargement is smooth. Mucous membrane of the rectum easily moves over it. In malignant enlargement, we find one lateral lobe may be chiefly enlarged or so to say there is irregular enlargement of the prostate and mucous membrane of the rectum adherent to it. During the examination of the urethra with a metal catheter, there is an obstruction to the passage of the instrument at the entrance to the bladder, urethra is found lengthened, curve of the catheter has to be altered to allow it to slip past the obstruction. The catheter is not gripped on removal as it is by stricture. Cystoscope will permit an examination of an enlarged middle lobe, condition of the bladder walls, the mouth of the ureters and the presence or absence of pouch and calculi. Presence of residual urine—the patient to micturate until he thinks the bladder is emptied and the passing of a catheter—is also constant sign in enlarged prostate.

Treatment.—Early cases of retention occurring for the first time: after careful cleaning of glans and with all aseptic precautions, a few c. c. of Novocaine 5% is injected into the anterior urethra by a urethral syringe to produce local anaesthesia, a metal sound of a fairly big size is passed, the sound being allowed to slip in by its weight. The sound is withdrawn, prostatic metal catheter is passed, urine drawn, and the bladder washed out with warm Silver Nitrate 1 in 10000 and a small quantity left in the

OCT. '41] ENLARGED PROSTATE & RETENTION OF URINE—APPU MUDALIAR 793

bladder. Generally, one or two manœuvres like this will suffice and the patient will be able to pass urine by himself soon. He should be advised to carefully avoid all causes of prostatic congestion such as alcohol, venereal excess, constipation, cycling, horse-riding, use of highly spiced food and prolonged holding up of urine. By living a regular simple life, a prostatic patient may live for years in comfort avoiding both catheterisation and operation. If the retention takes place frequently, if the urea contents of blood is normal i.e. 40 to 60 mg., if the patient's heart and lungs are normal he is advised operative treatment—primary prostatectomy.

Patient is prepared for operation by a Calomel purge a week before the operation, Cal. Gluconate 10 c.c. ampoules six intravenous injections on every alternate day, Hexamine and Glucose by mouth, light diet containing plenty of milk and milk products. Blood pressure checked. Prepared for spinal Perceaine 1 in 1500, 10 c.c. Suprapubic cystotomy done after washing the bladder and filling it with boric lotion about 8 to 10 ounces. Prostate shelled out through the suprapubic opening. It is very easy to remove the prostate provided it is shelled out by passing the finger tip between the pucca fascia of the prostate and its fibrous capsule formed by the pelvic fascia. There will be little bleeding from the prostatic plexus of veins situated in between these two capsules. I have done half a dozen suprapubic prostatectomies without any difficulty. If there is any difficulty, ask the assistant to raise the prostate through a finger in the rectum, thus helping in the manœuvre of separation. The attachment of the prostate is by its apex to the membranous urethra. This has to be carefully peeled off. Bleeding is arrested by irrigating the cavity formed by the separation of the prostate with hot 1 in 10,000 Silver Nitrate. Removal of the mucous tags, transfixing and tying up, if necessary, any small arterial bleeding from superior Vena Cava branches. Then pass a stiff rubber catheter through the urethra and plug the prostatic cavity by roller gauze all round the catheter and putting a cystotomy tube into the bladder and closing the abdomen. The cystotomy tube should not touch the base of the bladder. The catheter is connected to a bottle containing lotion. The packed gauze is soaked with 1 in 10,000 Silver Nitrate by irrigating through the catheter and removing it on the 3rd day and the cystotomy tube on the fourth to the sixth day. The man is able to pass urine via naturalis on the 21st day. In cases where primary prostatectomy is not possible due to high urea content of blood and when measures to lower it by milk and barley diet, hot bath, urea by mouth, good saline purge etc. fail to produce the desired effect and where even if the urea content is normal and owing to other reasons as heart and lung conditions contra-indicate prostatectomy, supra-pubic cystotomy and Pessers catheter put in for the relief of retention and the patient is given a course of Scherrings Testosterone Viron injections intramuscular, twice a week starting with 5 mg. later on increasing to 10 mg. and still later to 25 mg. washing out the bladder with 1 in 10000 Silver Nitrate once in ten days, to prevent sepsis and formation of crust blocking pessers holes. I had a very good result with this kind of treatment. Patients told me they started passing urine by the natural passage, and the prostate by rectal examination was found practically dissolved and in such cases, I removed the suprapubic pessers and they are alright today, 2 years after original cystotomy.

I have also tried Steinach's No II operation on a few cases when I read about its efficacy in the Antiseptic. I am sorry to express my results were disappointing. By Steinach's No. II operation, it is meant tying after dissect-

ing the six branches of the vas deferens as it comes out of testis at the level of the head of epididymis. I have tried in some cases of enlarged prostate with septic bladder and high urea content of blood, primary cystotomy and later secondary prostatectomy when the sepsis got controlled and the urea content of blood has come to normal. But I always found there was lot of difficulty in removing the prostate due to highly contracted bladder which gives very little space for manoeuvre.

Treatment of Chronic Ulcers of the Leg

BY

T. FRIEDHEIM, M.D.,

Elizabeth Newman Hospital, Srinagar, Kashmir.

EVERY doctor knows what a crux the treatment of a chronic ulcer of a leg is, both for the patient and the doctor. The ulcers are often of long standing; the patient tells us how well it had healed and then, after a few weeks or months, it has broken down again. This time, the patient tries another doctor and the same performance starts all over again. These ulcers are often caused by varicose veins on account of which their healing is obstinate and difficult, as the blood circulation is greatly disturbed. I naturally do not refer to ulcers of syphilitic origin, which generally heal well if treated in the usual anti-syphilitic way.

Diabetic patients very often suffer from open sores on their legs, especially if they are elderly people, who have arteriosclerosis at the same time. This kind of ulcer heals well and within a relatively short time if treated with Insulin, whether they have urine-sugar or not. If the blood sugar is increased, and we know that old people can have a blood sugar of 160-180 mg per cent without showing sugar in their urine, they have to be treated with Insulin in order to cure the ulcer. The good results shown by these ulcers on diabetic basis encouraged us to try Insulin-treatment on ordinary ulcer-cases of long standing which proved resistant to the usual therapy. We carefully tested these patients for diabetes mellitus, but all these cases had a normal blood sugar and showed a non-diabetic blood sugar curve after eating 30, 50 or 100 gm. of Glucose. They therefore had to be considered as normal with no tendency to Diabetes. Some of these patients were given twice daily 5 units of Insulin (ordinary Insulin, not Zinc-Proteid-Insulin) with 20 gms. of Glucose 20 minutes after the injection.

The results were surprising; the ulcers healed beautifully and showed no tendency to relapse. Later on, we treated all cases of ulcer of the leg this way, and were very content with the results. Off and on, we had to give 10 units of Insulin twice daily instead of 5 units, to give more speedy results.

I may just add a few lines about Insulin as a general ulcer-therapy. After these surprising successes, we tried Insulin in cases of colitis ulcerosa with good results, and went another step further in treating gastric ulcers and duodenal ulcers in the above mentioned way. The patients were given their usual ulcer diet, but no other medicines, and the results were seen excellent both clinically and in X-ray control photos.

*C. M. S., Rainawari,
Srinagar.*

On the Relation of Intestinal Fermentation to Arteriosclerosis and Old Age

By Rai Dr. G. C. Chatterjee Bahadur, A. N. Mitra, and Mati Ranjan Das Gupta.

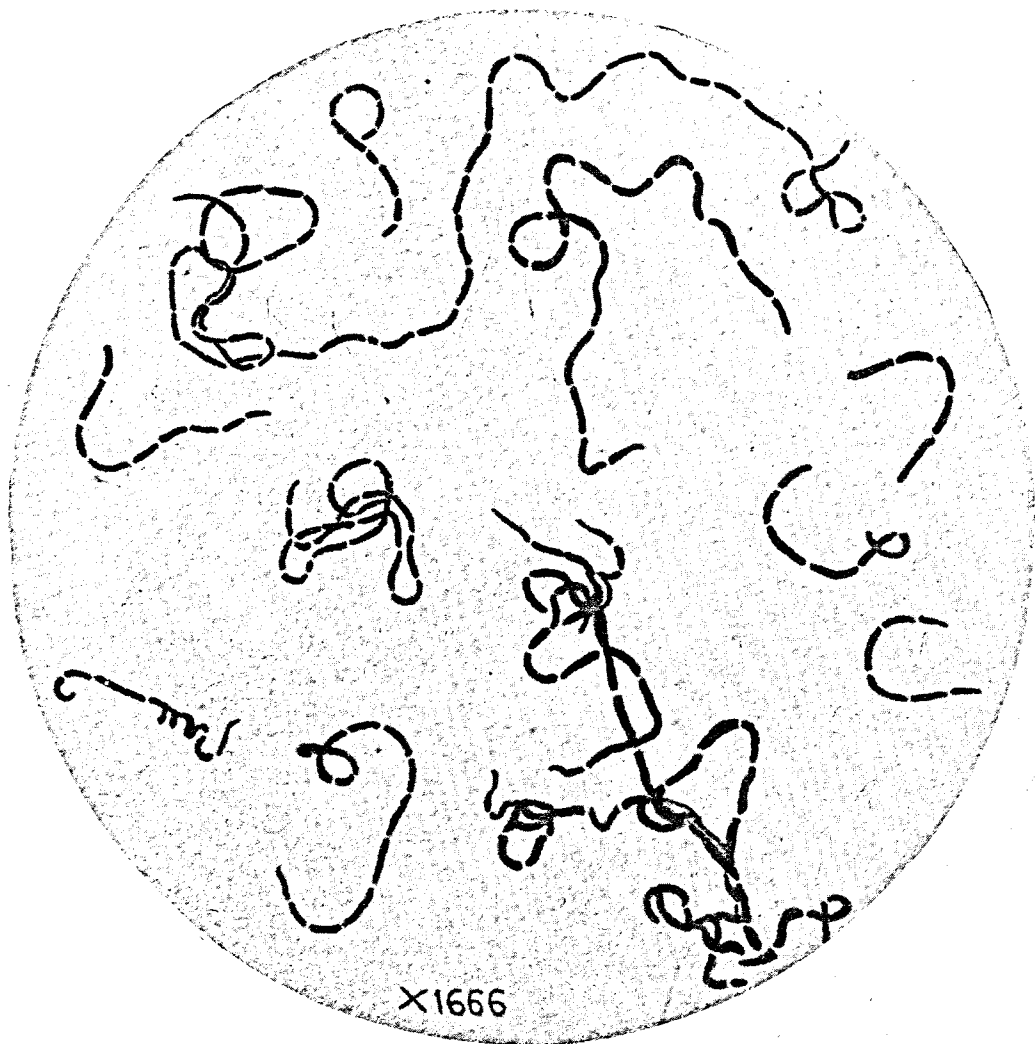


Plate illustrating the appearance of the Bacillus Streptothrix Dadhi.

On the Relation of Intestinal Fermentation to Arteriosclerosis and Old Age

BY

RAI DR. G. C. CHATTERJEE BAHADUR, M.B., HON. F.R.I. (LOND).

AND

A. N. MITRA, M.Sc., M.B. & MATI RANJAN DAS GUPTA, M.Sc.

(Protozoology Laboratory, Department of Zoology, Calcutta University).

VARIOUS factors are known to cause arteriosclerosis which is a sign of old age, viz. toxins, infections, primary syphilis, lead-poisoning, excessive meat, coffee and tobacco consumption, over-work, worry and excesses of every kind, etc. But there are many people who do not get arteriosclerosis in spite of all such excesses for a pretty long time. On the other hand, we meet with a large number of men who strictly follow the laws of Nature as far as possible, and yet suffer from arteriosclerosis quite early in life; their hearts dilate, kidneys contract and they ultimately die of some complications due to arteriosclerosis. One cannot tell the real cause of the disease; it may be a single factor or due to a combination of many. Arteriosclerosis is not a disease by itself but a series of symptoms. It has been definitely said by some to be a hereditary constitutional disease with a high percentage of uric acid in blood due to abnormal high protein metabolism.

METCHINKOFF, a Russian scientist, who worked in the Pasteur Institute in Paris and was a Nobel Laureate for publishing his celebrated book 'Prolongation of Life' in 1908 and the 'Nature of Man' four years earlier, was the first to bring within the scientific orbit, the study of *Old Age in Man*, which was formerly in the realm of conjecture. A living organism, whether it belongs to the animal or vegetable kingdom, gets its birth, then childhood, full growth, followed by decline or old age and lastly death before which it gives rise to young ones to keep up its stock. There is no exception to this rule except in those which multiply continuously by dividing their bodies, such as bacteria and infusoria, so that it is very difficult to decide when their growth ceases and when they pass from adolescence to old age.

METCHINKOFF found that in higher animals, old age goes on concurrently with stiffness of the arterioles or what is termed *arteriosclerosis*. Hence the saying goes "a man is as old as his arteries". Besides this, the outward manifestations such as whitening of the hairs, falling of the teeth, enlargement of the prostate gland and formation of cataract in the eyes, take place. Taking arteriosclerosis as a guide to old age, METCHINKOFF started arguing, thus: If old age is a physiological condition and not a pathological one or a disease, it ought to happen in all men at a definite age as in cattle or other beasts; but on the contrary, as every one knows, many a man becomes prematurely old, and therefore, in a certain number of cases, old age must be a diseased condition and not a physiological one. At about that time, when LORD LISTER's system of *antiseptic surgery* was prevalent and the surgical operation theatres were sprayed very heavily with Carbolic acid, so that the atmospheric air of the rooms was heavily saturated with the vapour of carbolic acid, it was found that the surgeons and other attendants who used to inhale a good amount of carbolic acid, died prematurely in large numbers, as their arteries became sclerosed before they attained old age.

Arguing from this fact, METCHINKOFF contended that Carbolic acid or the compounds of Phenol group are somehow connected with sclerosis of arteries. Now, Phenol is a bye-product of Coli group of bacteria growing in medium containing peptone and sugar, the sugar being split into carbon compounds without producing any harmful bye-product, while the peptone gets converted into a compound of indol group which, he thought, have got to do with old age in man. As all men harbour millions of *Bacillus coli* in their intestines where fermentation is going on continuously and Phenol compounds are produced there, wherefrom it is also being absorbed continuously into the system, the indol acts on the arterioles and produces arteriosclerosis. In some men, arteriosclerosis is not very pronounced, so old age may be delayed in them; on the other hand, where it is pronounced, premature old age sets in. Then he set about finding a remedy for this. All this is being given here by the writers of this paper in order to enable the reader to understand the drift of the research which the writers have undertaken on this line. First of all, METCHINKOFF studied the intestinal flora of man and laboratory animals, confining himself to fermentative bacteria. Numerous species of them were isolated. Each one was studied for its power of producing indol in the presence of peptone or in any other substitute of nitrogenous matter, and then the food which the organism takes, how the fermentative bacteria get inside the human intestine and at what period of life. He then studied the phenomenon of taking sterilised food, that is, all food including fruits were taken not simply cooked but were subjected to sterilisation by autoclave, before being taken. This process did not influence at all the bacterial flora of the intestine nor did the administration of an antiseptic like Betanaphthol had any influence in reducing the bacterial flora. Moreover, he found that laboratory animals such as guinea-pigs, did not thrive very well if kept on sterilized foods, grains or milk. Then in studying the fermentative bacteria, he found that the lactic acid group of bacteria fermented milk like the *Bacillus coli* group, but did not produce any gas out of the sugar nor did it produce indol even out of the peptone present in the culture medium. This class of bacteria was found in the common drinks of eastern countries such as Bulgaria, Turkey, Egypt, Russia etc., where he noticed that the population took it without knowing its intrinsic value, where he also noticed, that although hygienic rules for preventing epidemic diseases were not so much observed in those countries as in other European countries, on account of which epidemic diseases like cholera, dysentery etc., were very common there, yet, a larger percentage of people reached old age. So, he thought of artificially introducing *Bacillus superlacticus* into their intestines in order to change the flora and prevent senile degeneration of the organism as it is wholly due to lesions produced by certain maladies of micro-biological origin. *Bacillus superlacticus* producing no indol during its fermentation, may be a factor for controlling the poisonous action of *B. coli* and so he started the idea of prolongation of life by daily use of culture of the Bulgarian bacillus, which got so much in vogue at that time that several enterprising proprietary drug manufacturers sold extensively a tablet named *Fermenlactyl* or other proprietary products having similar names, and medical men in this country prescribed it extensively. They did not know that the fermented milk of this country which goes by the name of *Dahi* contains in it a type *Bacillus superlacticus* allied to *B. bulgaricus*. The senior writer of this paper started the study this bacteria in the Bacteriological Laboratory of the Calcutta Medical

College in 1906, when he was Asst. Bacteriologist to the Government of Bengal and Asst. Prof. of Pathology and Bacteriology of the Medical College. He isolated it from various samples of *Dadhi* from different localities and found all of them to be identical. This bacillus differs in certain points from *B. bulgaricus*, but having similar properties he styled it *Streptothrix dadhi* and published a paper in 1909 in the *Centralblatt für Bacteriologic*, abth II. In the II part of this article, the whole subject of lactic acid fermentation is dealt with.

Koumiss is the well-known national beverage of the Tartar Kulmucks, nomads of Asiatic Russia, while Kephir is the native drink of the mountaineers of the Caucasus and other tribes. Youghourt is the fermented milk of Bulgaria, and Leben is the fermented milk of Egypt.

Bulgarian bacillus produces lactic acid not only from milk sugar, but also from many other sugars, for instance, cane sugar and glucose. As METCHINKOFF found many harmful bacteria to be present in fermented milk, he recommended the use of pure culture of *B. bulgaricus*. This can be made out from the following quotations from his book.

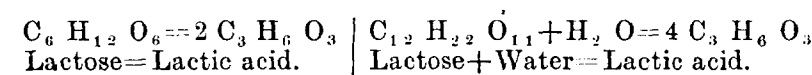
"For more than eight years, I took as a regular part of my diet, soured milk first prepared from boiled milk, inoculated with a lactic leaven; since then, I have changed the method of preparation and have adopted finally the pure culture which I have been describing. I am very well pleased with the result, and I think that my experiment has gone on long enough to justify my view."

"I think, therefore that lactic bacteria can do a service in the fight against intestinal putrefaction."

"If it be true that our precocious and unhappy old age is due to poisoning of the tissues (the greater part of the poison coming from the large intestine inhabited by numberless bacteria) it is clear that agents, which arrest intestinal putrefaction must at the same time postpone and ameliorate old age. This theoretical view is confirmed by the collection of facts regarding races which live chiefly on soured milk, and amongst which great ages are common."

PART II

Lactic Acid fermentation, from the point of view of utility, is no less important than alcoholic fermentation. Two molecules of lactic acid are formed from one molecule of lactose.



Though the phenomenon looks simple, it being more varied, is in reality more complicated than the alcoholic fermentation.

History :—In 1760, SCHEELÉ discovered lactic acid definitely, as distinct from acetic acid, with which it was confounded, even up to so late as 1807 by BERZELIUS. BRACANNOT found it in water of tannery and in water of fermented rice etc.

The explanation of the phenomenon of milk-curdling was not at that time very clear, as coagulation of milk which accompanies lactic acid fermentation in milk was also found to be produced by juice taken from macerated stomach of cow. LEHMANN in 1850 and SOXHLET in 1873

thought that lactic fermentation of milk is of the same nature as that of rennet ferment. HAMMARSTAN in 1872 showed that the two actions are quite different.

In 1852 PASTEUR, in his memoir on *Spontaneous Generation*, had already stated that coagulation of milk produced by rennet, which, though not produced by acid, was yet of the same nature as the ferment and is of acid nature. This confusion of ideas which prevailed amongst the savants began at about 1850 and remained upto the time when the mystery surrounding the alcoholic fermentation became gradually cleared up by M. PASTEUR himself. After his discovery of the nature of alcoholic fermentation, which he found to be of biological origin, he supposed that there was also a lactic acid ferment as there was alcoholic ferment. In examination of the deposit of fluid subjected to lactic acid ferment, a substance was found which, when examined under the microscope, showed disintegrated casein particles which, when added to fresh milk, was found to undergo lactic acid fermentation. The deposits were made out, after examination by PASTEUR, to be of the nature of a yeast. In 1873, LISTER took up the question; he employed the cultural and dilution methods as employed in investigation of germs. In 1877, he discovered several lactic ferments which were, according to him, quite different from yeast.

To HUEPPE fell the honour of actually discovering the bacillus more or less precisely under the name of *Bacillus acid lactic*. He studied several of the species of this bacillus, their power under both aerobic and anaerobic condition as well as the products which are formed. From this moment, the careful and assiduous study of lactic acid ferment in milk, in cream, in cheese etc. began.

As a result of this study, it was found out that there were numerous bacilli which produce lactic acid. These can be classified into those which produce feeble lactic acid and those which produce strong acid. Besides, some varieties produce dextrorotatory, some laevorotatory, while others produce neutral lactic acid.

About one hundred so-called species of bacteria have been described possessing power of producing lactic acid. There is little doubt, however, that many of these are closely related but slightly modified varieties of the same organism, and so do not deserve to be classified under different species. In the present stage of our knowledge, it is best to place those having some common characters into groups:—

A. Organisms producing lactic acid in sufficient amount to produce coagulation of milk, but the product or the amount of acid produced cannot be compared to that of the next group, the acid produced by them being below 0.2. percent. These are found as a rule under ordinary conditions in milk.

B. Organisms of special sour milk,—the acidity being more than 0.2. percent and reaches up to 0.8. percent. Their origin is from milk soured in a special way.

The first group can be divided again into two sub-groups.

A—I. Those producing no gas. **A—II.** Those producing gas.

To the first sub-group belongs:—

A—I. (a) *Streptococcus lactici* Kruse. This is the commonest.

organism in milk and originates very often from the udder. It has no action on casein.

A—II. (a) *Bacillus acid lactic* Hueppe. (b) *Bacterium casei* Freudenreich. (c) *Bacillus lactici aerogenes* Esch.

B. To the second group belong:—(i) *Bacterium mazun*; (ii) *Bacillus caucasicus*, Beijk; (iii) *Bacillus bulgaricus*, Hueppe; (iv) *Streptothrix dadhi*, Chatterjee.

Organisms of the 1st group and the 1st sub-group:—

Streptococcus lactici Kruse is the commonest of all forms occurring in milk. To it most of the souring in the dairy-products is due. The cells are usually slightly oval and before division they lengthen out a little, so that it is difficult to make out whether they should be described as short bacteria or cocci. It appears to be the same organism as:—*Bacterium lactis* Lister; *Bacterium guntheri* L & N; *Bacterium lactis acid* Leichmann; *Bacterium lactis acid* 1 & 2 of Coxn; *Bacterium lactococcus lactis* Beijk.

In milk, it grows rapidly at 30° to 35°C. and curdles it in 6 to 8 hours, the curd being dense and uniform without gas formation. It has no action on casein. Some varieties are slow in action at first, but their power increases very considerably when they are cultivated in milk for some time. The soured milk has a pure, clean taste, occasionally with a fine distinct aroma, the acid being dextrorotatory, with little or no acetic acid or volatile bye-products. The majority of the "Starters" utilized in manufacture of butter and cheese are, more or less, pure cultures of this type.

Micrococcus lactis acid Marpmann, occurs in heaps, not in chains, grows slowly, coagulates milk at 30°C. with no gas formation.

A—II. (a) *Bacterium acid lactic* Hueppe, ferments milk and forms a considerable amount of gas.

A—II. (b) *Bacterium casei* Freudenreich:—More or less anaerobic, produces inactive lactic acid in milk.

B. Bacilli of the 2nd group:—*Mazun* is a fermented product of milk used in Armenia.

Bacterium mazun is a non-motile organism producing much acid and a dense curd.

Bacillus mazun.—a sporing bacillus. *Mazun* is, according to WEIGHMANN GRIBER and HESS, brought about by the combined action of a yeast and the above two varieties of bacilli.

Bacillus caucasicus Beijk—*Dispora caucasicus* Kern—is found in the interior of kefir-grains. It shows spore-like granules at each end. It coagulates milk forming much lactic acid but no gas. NICOLAIE states that she was able to produce good kefir with the combined action of pure culture of this bacillus and *Torula kefir*, others being impurities.

Kefir is an alcoholic beverage prepared from milk of cattle by the inhabitants of the Caucasus. Milk is poured into skin bags and fermented by kefir grains. After two or three days, during which it is shaken occasionally, it is ready for consumption. It is a foaming alcoholic drink. The chief chemical change is with the milk sugar. The constituents yield lactic acid, alcohol and carbon dioxide. The casein is precipitated and, on shaking, breaks up into fine fragments which are readily digested.

The *torula* (yeast) gives rise to rose-coloured growth in potato. It is incapable of converting sugar but manufactures alcohol from the products of sugar.

Koumiss is an alcoholic beverage prepared from milk by the tribes in the Steppes of Russia. The organism is not known.

Youghourt is a form of acid-coagulated milk used extensively in Turkey, Bulgaria and the Northern Balkans. The milk of the buffalo, cow, sheep or goat is thoroughly boiled for a time, then cooled to 45°C. and then is inoculated with an old sample of ferment (old Joghurt is called *Maya*) and is kept at a temperature of 40°C. for 9 to 10 hours.

In the fermentation, lactic acid is formed in abundance with little or no alcohol.

The characteristic organism is *Bacillus bulgaricus* Hueppe.

Bacillus bulgaricus is a long, slender, rod-shaped bacillus. It is aerobic or anaerobic. It grows best at 45° to 50°C. In whey-agar, colonies are roundish or irregular, with filamentous curly margin.

Milk is coagulated in 8 to 18 hours at 44°C. There is no gas formation, and the casein is not peptonised.

The granular bacillus of *YOUGHOURT* is a longer organism.

Streptothrix dadhi is the causative organism of *Dadhi* the sour milk of India. This organism was the subject of a paper published in 1909. A paper dealing with the same subject was published by JOSHI in the *Journal of Agriculture, India*, who found the same bacillus in sour milk or *dadhi* which he procured from distant places like Nagpur, Simla, etc.

As the importance of bacilli-producing lactic acid fermentation of milk, from the economic point of view as well as from the point of view of preservation of health of the people from deleterious action of coli-like bacilli, often present in milk and its various preparations, as also from the point of view of saving people from the invasion of deadly bacteria such as cholera and typhoid which are likely to be carried through milk, is slowly dawning on the scientific world, and has not yet been given the attention it deserves, we thought it desirable to take up the study of the subject. We carried on the investigation for two years, and, as a result of it, we have been able to fill up many a lacuna in the biology of the bacillus of lactic acid fermentation.

As the various products of milk, used in dietary—some being common, all over the world and some being peculiar to some particular country—depend for their formation in majority of cases on the action of lactic acid fermentation, helped in some cases by mechanical means, it will not be out of place here to state clearly how they are brought about.

Milk consists of water, protein, fat, milk-sugar and salts. The fat is in the shape of fine globules. They do not easily coalesce with each other to form big fat globules. Proteins consist of a small proportion of soluble albumen called lactalbumen. This coagulates on heating. The skin formed on milk after boiling is this protein. There is another protein present in milk, which does not coagulate on heating. It is called caseinogen. This caseinogen combines with soluble calcium salts and remains in milk in a state which can be termed solution, but which is not exactly what we understand by *solution*. For, after filtering through porcelain cylinder, it does not pass through the filter. After addition of any acid

like lactic acid, the calcium salt combines with the lactic acid, the caseinogen is then precipitated as casein. On the other hand, when rennet is added to milk, the precipitation of casein takes place which is due to quite a different cause. The caseinogen becomes separated from the calcium caseinogenate and through the action of rennet, it becomes soluble for a time and is then precipitated. The precipitation occurs only in the presence of calcium salt and if the calcium salt be removed by oxalic acid, no precipitation of casein occurs.

The next constituent of milk is milk sugar or lactose. On the decomposition of this constituent of milk and the action of the compounds made from it, depends, to a great extent, the formation of different kinds of dietary products made from milk by different nations of the world.

Products of Milk.—(1) Cream-ripened. (2) Butter. (3) Cheese-varieties. (4) Kephyr. (5) Koumiss. (6) Mazun. (7) Youghourt. (8) Dadhi. (9) Chhana.

Cream:—When milk is placed in a vessel and kept standing for a time in a cool place, the globules of fat which have a lower specific gravity than the milk in which they are distributed, rise to the surface, and form a layer. This layer is known as cream. It can be poured out, leaving the skimmed milk. This separation, can be facilitated by use of a centrifugal machine which separates it in a few minutes. This cream is in the beginning sweet, containing very little bacteria. Very soon the bacteria increase in number. By the time it is a day old, the number of bacteria increases to as much as 6 millions per cubic centimetre. Although butter is made by churning this sweet cream, the greatest amount of butter is made from cream which has been kept from 36 to 48 hours, after being allowed to become sour either spontaneously or by addition of a special culture of bacteria. This souring of cream is called ripening. The cream properly ripened and ready for churning, possesses a clean acid taste due to lactic acid fermentation. In addition to acid taste, ripening results in the production of a characteristic taste and flavour. The origin of this aroma is not clearly understood. As it is not of lactic acid origin, it is thought to be connected with some bacteria allied to the putrefactive organisms acting on the proteins of the cream. Very little change takes place in the fat during the ripening process, but its physical characters are so altered during ripening, that the ripened cream can easily be churned. It is suggested that fat globules in milk are surrounded by a thin layer of protein which becomes disintegrated during the ripening process.

Use of starters in cream:—With a view to reduce failures to a minimum, many attempts have been made to prepare pure cultures of bacteria which, when introduced in sufficient numbers, will lead to good and uniform ripening.

JENSEN suggests that for reliable and satisfactory results, a culture should possess the following properties:—

- It should render cream sour in a short time.
- The organism in it should be able to grow at a temperature of 60°F.
- It should coagulate or thicken the cream uniformly, and give it a clean acid taste.
- The butter prepared from the ripened cream, should possess an agreeable flavour and odour.

Butter :—When the cream is violently agitated in a churn, the globules coalesce into larger lumps which are separated from the separated serum called butter-milk and headed subsequently into an apparently compact mass of butter. In the manufacture of butter, great attention is given to the development of an agreeable flavour and pleasant aroma, so much so, a research has been carried out to determine the kind of organisms which produce perfect flavour and aroma, but not a single species of bacterium, however, has been found to be able to give the desired results when used as a pure culture and inoculated into sterilized, pasteurized or ordinary cream.

Cheese :—Milk is coagulated by rennet. The solid residue is separated from the serum by pressure, in the case of hard cheese and allowed to ferment. In case of soft cheese, this pressure is not applied. Cheese contains protein, casein, sugar and rennet.

The following is the line of research work which is being carried out by us on lactic acid bacilli.

Ever since the publication on *Streptothrix Dadhi* in 1909, the writers kept up examining *dadhi* or fermented milk, obtained from thousands of sources from different parts of the country. Excepting a few cases, most of them contained this organism more or less in pure culture. The method of separation in pure culture is very easy, and as it is facultative and anaerobic, growing unlike other bacteria in temperature of over 40°C. and shows red grains when stained by Methyl Blue, we are sure of our assertion that a particular sample of *dadhi* contains *Streptothrix*. The only difficulty which we have been experiencing is that this *Streptothrix*, as soon as it is separated in pure culture, in milk or in lactose agar, it loses its power of growth and also partially its power of clotting milk. So, it is difficult to keep up its stock indefinitely in pure culture, unlike any other known bacteria. Besides, the clotted milk has not the same good taste and aroma as it is made from impure culture. So, we are in search of a symbiotic bacteria which can be cultivated in pure state, and then mixed with the *Streptothrix*, which will remove this difficulty. METCHINKOFF stated in his publication that by mixing up Bulgarian bacilli with a bacillus which he styled *B. para-lacticus*, this difficulty could be obviated. JOSHI in his publication, states that he has separated a yeast, which, when mixed with *Streptothrix*, produced this favourable result. We have not succeeded in doing it as yet, though we are intensively doing the research work with this end in view.

1-2 A Premchand Boral St.,
Calcutta.

Hyperpiesis and Old Age

BY

S. R. RAJARAM, M.B.B.S.,

Salem.

"Our age is reckoned by the state of our arteries." *Samuel Ghee.*

THAT a man is as old as his arteries is an adage which seems to be as true as it is ancient. While it could be generally said that high blood pressure is the hand-maid of old age, yet youth and middle ages are not exempt from this malady; for, one of our recent cases was that of a young man of 22 years, reading a B.P. of 210/160. Hyperpiesis has been defined in various ways, and a clinical definition is that it is an "over-pressure" within the arteries from any cause whatever, whether of renal or non-renal origin, temporary or permanent, physiological or pathological.

This general term hyperpiesis comprises within it the term hyperpiesia, or essential hypertension *i.e.* a term introduced by SIR CLIFFORD ALBERT, to denote a definite clinical condition where there is persistent raised blood pressure independent of renal disease, or "Bright's disease" as he puts it. Hyperpiesia, its nature, pathology, clinical manifestations and differential diagnosis, specially from chronic interstitial nephritis, could be considered as the subject matter of a separate paper. Yet, another term used in considering arterial pressure is angiospasm or hypertonia, which represents an active state of the smooth muscles in the walls of arteries and veins in contradistinction to the lateral pressure exerted by the blood in high B.P. This hypertonia we shall soon see incorporated in the pathology of high B.P.

Factors on which B.P. depends are :—1. Heart. 2. Arteries. 3. Peripheral resistance. 4. Blood.

1. **Cardiac Factor** :—High B.P. may be associated with cardiac hypertrophy as in aortic disease, mitral regurgitation, adherent pericardium and Graves disease—diseases which mostly set in after the second decade.

2. **Arterial Factors** :—A non-pathological condition like angiospasm, and pathological changes like atheroma and arteriosclerosis are conducive to high B.P. It is this arterial factor which is the chief cause of hyperpiesis in old age, specially when the glomeruli, which are the filter beds for the circulating blood, are sclerosed, further details of which we shall consider while discussing the pathology.

3. **Peripheral Factors** :—The tone of the arteries and the capillary peripheral resistance, which is increased by the irritability of the vasomotor centre also control the B.P. reading.

4. **Haemic Factor** :—An increased blood volume, possibly on the theory of salt retention in renal disease as also indiscriminate drinking and over-eating cause a rise in B.P. A raised viscosity as in polycythemia is also an etiological factor in increasing the blood pressure.

Pathology of Hyperpiesis :—Following the physiological law that increased function results in increased growth with growing years, there is hypertrophy of the muscular tissues of the whole of the vascular system *viz.* Hypertrophy of the heart and the musculature of the vessels.

Second Stage : This continued increase in pressure sets up in old age a degeneration of the muscular tissues; thus in the heart—myocardial degeneration. In the vessels: *Large vessels*—atheroma; *smaller vessels*—

sclerosis, due to intimal thickening, and a proliferation of the endothelial and sub-endothelial cells of the intima. In the vessels of the brain, there is atherosclerosis leading to angio-necrosis which is the cause of cerebral hæmorrhage which occurs in old age. Similar degenerative changes occur in the kidney, liver, spleen and the pancreas, giving rise to granular kidney in the renal area, cirrhosis in hepatic area, and senile manifestation and hæmorrhages in the brain.

To compensate for the increased peripheral resistance, there is marked hypertrophy of the heart. Now it is like adding 'insult to injury' a hypertrophied heart at the head of a sclerosed bed is like a match stick in a magazine, which must *ipso facto* result in the pathological manifestation of bleeding from anywhere *viz.* internal capsule, retinal vessels, hæmatemesis, hæmoptysis, epistaxis and so on, which are a few of the clinical manifestations of high blood pressure in old age.

Ætiology.—While the ætiology of high blood pressure may not seem to be within the scope of this paper, yet viewing it in the light of this subject is indeed illuminating.

1. *Heredity*:—It occurs in families and a family history could be traced in about a third of the cases. HALLS DALLY tries to explain this phenomenon as being due to:—

(a) Congenital narrowing of the blood vessels leading to increased peripheral resistance.

(b) Tendency to early degeneration of vessels, specially due to a poor quality of the elastic tissues.

In such of those with this heredity and predilection, high blood pressure and old age go hand in hand. Hyperpiesis is said to be absent in pure-bred Chinese—a matter for verification.

2. (a) *Auto-Intoxication*:—As from the teeth, tonsils, nasal sinuses, gall bladder, appendix, colon and genito-urinary tract.

(b) *Chemical intoxication*:—Due to faulty protein metabolism, the amines liberated as for example skatol and indol are said to increase the B.P. by stimulation of the endocrines, resulting in the irritation of the vasomotor centre, causing an initial rise in blood pressure which is transitory and later permanent. But it is of interest to note that an injection of these amines into the system is not found to increase the blood pressure, as for example injection of urea does not produce uræmia, though one of the ætiological factors for uræmia is increased blood urea.

Theories apart, we have to concede that these intoxications have a cumulative effect and their culmination tends towards the rise of blood pressure in old age.

3. *Endocrines*: Hypo-thyroidism tends to raise the blood pressure, hyper-thyroidism—in the latter stages, *viz.* when the heart hypertrophies with the secondary renal changes increases the blood pressure. In this connection, we wish to stress how, many an early case of thyro-toxicosis is missed because the physician expects a high blood pressure as in the hyper-functioning of the adrenals and pituitary.

4. *Heavy metals* like Mercury, Lead, etc.

5. *Alcohol*.

6. *Psychical Influences*:—Prolonged mental strain. It is well known

to the students of psychology how mind has a potent influence over matter. Long continued mental strain and the shocks one meets with in the hustle and buzle of modern life induces an angiospasm, which causes a transitory rise in the arterial pressure and this, when continued for some years, *viz.* towards the evening of one's life, brings on the required pathological changes in the arterial walls causing hyperpiesis. DR. HALLS points out that this is not without its significance when we find that in U. S. A., 10 per cent of total annual mortality is due to the consequences of high blood pressure,—greater than in any other nation and we have known what busy life it is in America.

7. *Allergy*:—A recent view of hyperpiesis is its conception of an allergic phenomenon as advanced by Dr. BISHOP, where there is a general cellular disorder from which few cells of the body are exempt, causing "cardio-arterio-sclerosis" in the vascular system resulting in hyperpiesis; causing neuro-retinitis in the eye, nephro-sclerosis in the kidney and so on which we shall not discuss further, lest it should seem too much of a digression.

From the foregoing, we thus see that all the ætiological factors discussed are tending to make their effects felt only with the advancement of age, showing thereby that a high blood pressure is the comrade of *old age*.

Estimation of B. P.—"If I were allowed to have only two instruments of precision for my aid in physical diagnosis, they would be the stethoscope and the blood pressure machine" (CABOT). Among the various methods used, the auditory *viz.* the Mercury Bau-manometer is mostly in vogue. The sounds could be analysed into five phases ordinarily, with yet notable individual variations. (1) After air has been pumped into, obliterate all sounds and when pressure is released, *the first sharp click* marks the beginning of the first phase and is the auditory index of systolic pressure. (2) is a zone of murmurs due to eddies in the blood stream. (3) is like a throbbing of a drum or the beating of a gong (HALLS DALLY—*High Blood Pressure* p. 13.) (4) *The change from loud thuds to dull sounds* which is the beginning of the fourth phase and is the auditory index of the minimal or diastolic pressure. It is very important to emphasize at this juncture that *it is the appearance of the dull sounds and not the disappearance of all sound*, that indicates the diastolic pressure. If this fact is not borne in mind and the diastolic pressure is read as the disappearance of all sound, we have the fallacious reading of even zero diastolic in some cases—which could never exist in life, since the diastolic pressure is a constant load on the heart. (5) Silence ensuing when the artery is relieved from the compression of the armlet.

We are indebted to HALLS DALLY for his empirical formulæ in calculating the standard systolic and diastolic pressure for a given age.

Rule for Calculating Standard Systolic Pressure.—Systolic pressure at 20 years is 120 m.m. of Hg. Upto 60, standard systolic pressure equals 120 plus 1/5th of the age. (*viz.* at the 40th year, 120 plus 8=128) At age 60, standard systolic pressure is 135 and for each year above this upto 80, add one m/m of Hg. After 80th year, both the diastolic and the systolic pressures tend to come down.

Rule of Calculating Standard Diastolic Pressure.—Standard diastolic pressure at 20 years is 80 m.m. Hg. For each 5 years above 20 up to 60 years, add one m/m Hg. (*viz.* at 35th year, diastolic pressure equals to

83 m/m Hg.) and for each 5 years, above 60 upto 80 years of age, add 2 m/m Hg.

Symptoms.—Very often, people with hypertension go through normal life the condition being recognized casually on routine examination. In some, all that we note as the age advances is a *change in temperament, irritability* on slight or no provocation, *emotional outburst* and impaired memory. In others, fullness and throbbing in the head, headache, both frontal and occipital, giddiness, insomnia, and palpitation. Less commonly, flushing, flashes of light before the eye, transient blindness, tinnitus antrum, and paresis of limbs as LORD DAWSON puts it: "Super tension has no rigid limits or defined boundaries, and passes gradually perhaps silently into states of disease as manifested, for example, by damaged arteries and defeated hearts."

Signs.—The usual signs would be a paraphrase of the pathological changes in the body like whip-cord arteries, hypertrophy of left ventricle reduplication of second sound over septum ventriculosum; accentuation of aortic second sound; retinal changes viz. tortuous and constricted arteries with papilloedema are common and hæmoptysis is rare and we have had the fortune to see only one case (Hæmoptysis—*Antiseptic*, October, 1940). Cerebral manifestation of hyperpiesis is more important when we are considering high blood pressure in old age. At this juncture, it is important to refresh ourselves with the fact that there is nerve supply to the pial-arteries; and that the blood supplied to the brain varies not only with the systolic pressure but also as a result of nervous impulses to these intracerebral arteries. A third point to note is that a diseased vessel is more influenced by nervous impulses than a healthy one. This conception helps us to understand the transient paralysis in a hypertensive attack. We shall discuss three of the important cerebral maladies in old age:—viz., (1) Hypertensive Cerebral Attack. (2) Cerebral Hæmorrhage. (3) Cerebral Thrombosis.

1. *Hypertensive Cerebral Attack* sets in with convulsions, coma and paralysis—usually hemiplegic. There are two forms recognized, (a) with cerebral oedema and (b) without cerebral oedema.

(a) *With Cerebral Oedema*:—An ophthalmoscopic examination of the fundus helps in the diagnosis as there are retinal changes due to an increased pressure of the cerebro-spinal fluid, and it is in this condition that a lumbar puncture is called in very promptly. The two cases that came under our observation in the clinic had to be discharged with very little improvement. Both the cases had oedema of the optic discs and L.P. showed that the fluid was under pressure. These cases, besides their hemiplegic condition, showed disorientation for time and days of the week, very poor memory and lack of intelligence, with intervals of lucidity.

(b) *Without Cerebral Oedema*:—An hypertensive attack without cerebral oedema is explained by the fact that arterial spasm or angio-spasm occurs in cases of hyperpiesis. And when the spasm passes off, the patient is relieved of the transient paralysis. Our latest case was that of a cultivator, aged 64 years, who had hemiplegia on the right side with a B.P. reading of 216/168. The patient who came in on a stretcher went out walking from the clinic with just a hand stick after less than 4 weeks.

2. *Cerebral Hæmorrhage*:—Observation shows that majority of cases of cerebral hæmorrhage occurs in subjects with systolic pressure less than 200 (between 145 and 190 m/m Hg.). HALLS concludes that extremely high

pressures are met with only in arteries that can stand such pressures. Though the superficial vessels, viz. the temporal and the radial, may be only calcareous and tortuous, the deep intra-cerebral arteries are degenerated due to atheroma, nodular and localised athero-sclerosis leading to angio-necrosis, which give way resulting in cerebral hæmorrhage; whenever the intra-cranial pressure is greater than the systemic pressure, the patient becomes unconscious, passes into deep coma, leading to a fatal termination. The pupillary changes and the blood-stained C.S.F. serve to diagnose the condition.

3: *Thrombosis*:—Hyperpiesis is no protection against the formation of thrombi. Almost every case that recovers from an apoplectic seizure in hyperpiesis is a case of cerebral thrombosis.

Climacteric Hyperpiesis.—While the ground traversed so far is common to both sexes, yet there is a special variation in the arterial pressure at or about the menopause in some women. A benign form of high B.P. occurs in multiparæ inclined to obesity and constipation, aggravated by worry and anxiety. In these cases, the systolic pressure abides at a moderate and harmless level of 150 to 160 m/m Hg. with only a slight elevation in the diastolic pressure and the arteries are fairly soft tending to a favourable prognosis. Endocrine disturbance viz. a deficiency of the ovarian and pituitary hormones and hyperfunction of the adrenals is said to be the cause. A substance has been isolated from the ovary which lowers arterial pressure. (M. ZONDEC). It is probable that during the term of ovarian activity, this substance acts as a depressor and at menopause a deficiency of this results and the pressure rises till the body is able to re-adjust its metabolism to the altered condition, viz. in about 2 years when this climacteric hyperpiesia generally passes off.

Hyperpiesis and Fibroids.—Observations show that cases of uterine fibroids show no rise in B.P. in young women, whereas, such myomatous subjects who have high B.P. are usually of over 40 years, a fact which again shows the relationship of old age and hypertension with associated diseases.

Course.—Cases of hyperpiesis often show irregular variation from time to time and specially so in those advanced in years, when crisis may occur in which the B.P. suddenly falls and the patient is collapsed and unconscious after a convulsive attack, a condition opposite to the hypertensive cerebral attack where the B.P. suddenly rises.

Case.—Patient, aged 46, was under treatment on 4-4-39 for headache, and painful joints. A systematic examination revealed nothing particular except bad teeth and a B.P. of 162/98. On 15-5-39, the patient was seen with cold sweats and almost collapsing, with a B.P. of 126/90, and stimulants were given to keep her up. In the course of the following week, the B.P. again showed a tendency to go up—the patient feeling better, thus showing what irregular variations occur in high B.P. of old age.

Treatment.—The golden maxim of SIR CLIFFORD ALBERT must be remembered in this connection viz. that high blood pressure is an attempt of the organism to maintain the equilibrium of its circulation and hence one should not lower it too far. As OLIVER puts it: "We are apt to forget that high arterial pressure is not infrequently a necessary evil and should sometimes be regarded as compensatory effort or as one of the natural defences of the body". Hence the treatment is mainly prophylactic, hygienic, and dietetic and very little specific. It is more the treatment of

the man than the malady and as such one has but to review the etiology of the condition, and the treatment follows *ipso facto*.

1. *Rest*:—Physical and Mental.
2. *Exercise and Environment*:—Moderate and with discrimination without raising the pulse and respiration rate, or causing cardiac distress. Sudden exertions, hurry, straining at stools etc, to be avoided.
3. *Diet*:—As HUTCHINSON put it, "a vegetative life and a vegetable diet". Fasting once a week in bed. Alcohol, tea, coffee and tobacco to be given up.
4. *Physical Measures*:—Massage, diaphoresis as in hot air baths or steam baths or prolonged warm baths, diathermy, ultraviolet rays, X-rays, lumbar puncture and venesection—all lower the blood pressure.
5. *Drugs*:—(1) Calomel or Blue Pill with a sharp Saline purge—for combating the intestinal toxæmia.
 - (2) Halogens. Potassium Chloride drachms 2. t.d.s. in a cup of water. Potassium-ions reduce the œdema, Chlorine-ion lowers the B.P. Calcium Chloride is good but not as good as Potassium Chloride. Bromides help to remove the arterial spasm.
 - (3) (a) Guipsin, (b) Hypotensyl etc.
 - (4) Amyl Nitrate iii to v m. or Nitroglycerine 1/50 gr. or Acetylcholine a physiological vaso-dilator—for transitory effect.
 - (5) Erythrol Nitrate grs. $\frac{1}{4}$ or Sodium Nitrite grs. $\frac{1}{2}$ to 3 t.d.s. for sustained action.
 - (6) Auto-Hæmo Therapy, specially when associated with severe headache, is said to be good.
 - (7) Colonic wash with 8 ozs. of 25% Mag. Sulph. once a week in the morning after an enema.

Treatment of Cerebral Manifestations.—1. *Headache and Insomnia*:—Small doses of Luminol.

2. *Hypertensive Attack with Cerebral Œdema*:—(1) L.P. to relieve the C.S.F. under pressure. (2) 100 c.c. of 25 % Sodium Chloride or 5% Glucose solution I.V. (specially if headache is present to act as "cerebral decompressor"). But the opposite school holds that the cerebral decompression is only transitory and later, the intracranial pressure by osmosis soon increases. (3) Liberal venesection 20 to 25 ounces of blood—temporary relief.

3. *Hypertensive Attack without Cerebral Œdema*:—(1) Vaso-dilators. (2) Salyrgan 2 c.c. I.V. Dramatic fall in B.P.

4. *Cerebral Thrombosis*:—(1) Venesection. (2) Salyrgan. If B. P. is low, treatment by stimulants.

5. *Cerebral Haemorrhage*:—Invariably fatal.—L. P. and vene-section.

Considering its etiology, pathology and course, we see that just as grey hairs are the legacy of old age, hyperpiesis in some follows closely with age—like muffled hearts beating their funeral marches to the grave. So, it is up to the civilised man to go through everyday life in such a manner that while he is in the heart of the struggle and strain of modern competitive life, he yet maintains a mental poise and equilibrium that he is above it, like the lotus in the pond—and that he vigilently avoids all factors conducive to hyperpiesis.

Salem Clinic, Salem.

Nephritis in Old Age

BY

K. A. DHAIRYAWAN, M.B.B.S.,

Bombay.

ACUTE nephritis in old age is not so common as chronic nephritis. Chronic nephritis may be the result of acute attack during early age or it may be due to slow affection of the kidney by various toxic substances eliminating through the kidneys, affecting its tubules and causing its inflammation and degeneration. In slow poisoning by Mercury, Arsenic and other nephrotoxic substances, high protein diet, repeated attacks of infectious fevers such as enteric, diphtheria, scarlatina, etc., there is a great strain upon the kidney tubules in eliminating the infectious and toxic materials which is likely to affect tubular epithelium and glomeruli. This insidious onset is not generally recognised till old age, when destruction of the kidney brings forth certain clinical manifestations which oblige the patient to consult a physician. These manifestations are œdema, hypertension, cardiac hypertrophy and uræmia.

Œdema:—In nephritis, œdema is not due to any single causative factor. In chronic interstitial nephritis, it is of cardiac origin while in chronic parenchymatous nephritis, it is actual renal œdema.

Increased Blood Pressure is always common in chronic nephritis; in fact, nephritis is said to be one of the definite causes of hypertension.

Cardiac Hypertrophy is common in chronic nephritis when associated with hypertension, and is generally due to high blood pressure causing strain upon myocardium.

Uræmia:—Retention in blood of products of normal metabolism, normally eliminated by the kidneys, especially urea or some product of nitrogenous metabolism, is responsible for this symptom.

Albuminuria is generally always found in chronic nephritis but the amount may be very slight.

Prophylaxis.—In certain acute infections which are liable to cause nephritis, care should be taken to avoid exposure to cold. Infected tonsils should be removed, and syphilis, if present, treated. Endogenous toxin, arising in the intestinal canal—the result of food or bacterial product—is also an important factor and as such, regular attendance to bowels is necessary. Prolonged exposure to cold should be avoided. Warm, dry climate with plenty of sun-shine and fresh air and a regulated daily exercise also help in preventing chronic nephritis or acute exacerbation of a chronic one. Dietetic excesses, especially of high protein content, should be avoided.

Treatment.—Absolute rest in bed insures uniform warmth to the surface body, limits nitrogen waste and as such in chronic nephritis, when œdema is present, one must take absolute rest. If there is no œdema, sitting out-doors for fresh air or a moderate walk or exercise in suitable weather is permissible. On account of hypertension, overwork should be avoided. If failure of compensation is noticed, absolute rest in bed is necessary. Exercise should be regulated according to the dyspnoea. Proper function of the skin gland is necessary and as such daily hot bath will help in eliminating the toxins and also relieving pressure on kidney. Bowels should be regularly moved either by laxatives or free cathartics according

to the condition. In using cathartics, care should be taken in selecting the drug which does not irritate the kidney. Saline purgatives are generally preferred. Restriction of fluid intakes should be determined according to the condition of œdema present and the ability of the kidney to eliminate fluid. Salt-free diet is necessary where œdema is marked, but should not be maintained for a prolonged period. Chloride restriction is not necessary in chronic interstitial nephritis. Sodium chloride does not increase albumen. In all forms of nephritis, associated with renal œdema, restriction of Sodium chloride to 3 gm. daily is desirable.

Diet.—Is the most important problem in the treatment of nephritis. Though only milk diet is recommended in acute nephritis, still, as the functioning power is not so bad in chronic nephritis, a liberal diet is given. Patient must receive sufficient quantity of food rich in food principles. Drinks and foods containing substances which irritate kidney, such as alcohol and condiments, should be avoided. Carbohydrates and fats can be given. Protein should be restricted to a point kidney is able to eliminate nitrogen, which can be determined by examining blood-urea-nitrogen. Sodium chloride should also be restricted. Patient with no evidence of troubles except urinary findings should be advised to avoid excessive muscular exercises and exposure to cold. Elimination of fluid through skin and bowel is necessary. Alkaline diuretics are more helpful in chronic nephritis than in acute ones. When œdema is marked, Caffeine and Digitalis may be used. Regular catharsis is required and the interval depends on the intensity of the process. Treatment of other complications such as hypertension with its concomitant symptoms and sequelæ e.g. heart and brain affections, are treated symptomatically.

References :

1. Hewlett's Pathology.
2. Savill's Medicine.

Opp. to C. I. Ry. Station,
Dadar, Bombay.

Treatment of Senility

(Ayurvedic)

BY

L. A. RAVI VARMA, M.B. & C.M.,

Travandrum.

SENILITY, even when it is the result of natural old age, was recognised as a disease by Ayurveda. “कालस्य परिणामेन जरा मृत्युनिमित्तजाः रोगाः स्वाभाविका दृष्टाः” (Char : Sar : i, 115). CHARAKA continues and says that these natural conditions are untreatable (समावो निम्प्रतिक्रियः). Yet, when viewed in the light of his own words, “अस्य प्रयोगाच्च्यवनः सुवृद्धो भूत् पुनर्युवा” (CHIK :) even natural senility is to be considered as more or less amenable to treatment. SUS-RUTA clearly states that senility, when premature, is treatable. It may here be remembered that according to Ayurveda, old age begins only by 70 and the full age for humans is 100 years. (“सप्ततस्तुर्ध्वं ... वृद्धमाचक्षते”). Hence the treatments advocated in Ayurveda for senility are serviceable upto the middle period of old age, viz. up to 85. Even beyond this limit, the treatment may be recognised as a help to secure a comparatively easier life.

Measures for the treatment of senility falls under the *Rasayana-vidhi* in Ayurvedic works. These measures are calculated to produce rejuvenation in its broadest sense. They are classified into two groups; ‘*Kuti-pravesaka*’ methods and ‘*Vatatapika*’ methods. For the best results, the former method is recommended; the latter was intended for those who cannot stand or afford the former. In passing, it may however be remarked, that even *Kuti-pravesaka* method is not more costly than a modern Spa treatment.

In *Kuti-pravesaka* form, the first essential is to provide a nursing home for the patient where he can live in absolute quietness, physically and mentally. The patient is to live free from all excitements, anxieties and exertions. The place must be clean, free from draughts and very hygienic.

“निर्वाते निर्भये हर्म्ये प्रायोपकरणे पुरे
दिश्युदोच्यां शुभे देशे त्रिगर्भो सूक्ष्मलोचनाम्
धूमातपरजोऽग्न्यालस्त्रीमूर्खाद्यविलंघिताम्
सज्जवैद्योपकरणां सुमृष्टां कारयेत् कुटोम्”

Life in such a perfect quietness will in itself serve as a good restorer. Before the actual *Rasayana* treatment is started, a thorough and systematic internal cleansing of the patient is undertaken. To this end, he is given oil baths with hot water on several days. This is followed by the exhibition of laxatives coupled with hepatic stimulants, carminatives etc.

“हरोतकोमामलकं सैधवं नागरं वचाम्
हरिद्रां पिप्पलीं वेल्लं गुडं चोष्णांबुना पिबेत्
स्निग्धः स्निग्धो नरः पूर्वं तेन साधु विरिच्यते”

The above methods ensure good action of bowels, liver, skin and kidneys; in other words, a thorough internal cleansing. When this is accomplished, the patient is put on a special diet of barley porridge mixed

with ghee, for three, five, seven or more days, till digestive and intestinal functions return to normal.

“ ततः शुद्धशरीराय कृतसंसर्जनाय च
त्रिरात्रं पंचरात्रं वा सप्ताहं वा धृतान्वितम्
दद्याद्यावकमाशुद्धेः पुराणशक्तोऽथवा ”

After such preparations, actual rejuvenation treatment is to be started. The treatment consists of exhibition of *Rasayana* medicines, with a dietary consisting of non-stimulating but sustaining and easily digestible foods.

The mention of a large number of *Rasayana* prescriptions is met with in the classical works on Ayurveda. Without a thorough, detailed and critical examination chemically, pharmacologically and therapeutically, it is not possible to envisage the method of action of these drugs. I shall contend myself by citing the composition and preparation of a few *Rasayanas* to enable others better situated to proceed with their critical studies.

Prescription (1) A good healthy Palasa tree, *Butea frondosa*, is selected, and branches removed leaving the trunk alone intact. An excavation is now made in the trunk from above to a depth of two hands (2½ ft.) This hollow is filled in with Amalaka, *Emblica officinalis*, trunk of the tree—the whole length from the roots up to the top—wound round with Darbha, *Poa cynosurioides*, the whole plastered with mud mixed with a paste of lotus stalk, again covered over completely with dried cow-dung cakes and fired. When the fire has died down and the coverings cooled, the hollow is opened and the prepared Amalaka is collected. This is the *Rasayana* material. This is to be taken with ghee and honey to the limit of one's digestive capacity daily. Food consists of boiled milk ad libitum. This treatment is to be continued for a month. Cold in every form is strictly prohibited, the patient being enjoined not even to touch cold water. It is said that by the end of 11 days, he will shed his hairs, nails and even teeth, all to be regained by the time the treatment is finished.

निरुज्ज्वलाशस्य छिन्ने शिरसि तत्क्षतम् ।

अंतर्द्विहस्तं गंभीरं पृथमामलकैर्नवैः ॥

आमूलं वेष्टितं दर्भैः पद्मिनीपंकलेपितम् ।

आदीप्य गोमयैर्वन्धैर्निर्वृते स्वेदयेत्ततः ॥

स्विन्नानि तान्यामलकानि तृप्त्या खादेन्नरः क्षौद्रधृतान्वितानि ।

क्षीरं शृतं चाऽनुपिबेत्प्रकामं तेनैव वर्तेत च मासमेकम् ॥

वर्ज्यानि वर्ज्यानि च तत्र यत्नात्स्पृश्यं च शीतांबु न पाणिनाऽपि ।

एकादशाहेऽस्य ततो व्यतीते पतंति केशा दशना नखाश्च ॥

अथाल्पकैरेव दिनैः सुरुपः स्त्रीष्वक्षयः कुंजरतुल्यवीर्यः ।

विशिष्टमेधाबलबुद्धिसत्त्वो भवत्यसौ वर्षसहस्रजीवी ॥

Being a fairly easy method and one, from *prima facie* considerations, free from any danger, this is worth a fair trial under perfect control

conditions. Even if found only partly successful, it will be of immense value indeed. VAGBHATA gives some 24 *Rasayana* prescriptions for use in the *Kutipravesaka* manner. A fair number among them is easy to be made up and is apparently free from danger. The famous *Chyavanaprasa* is one such prescription. It is certainly worth while to give a fair and fully controlled trial to some of the easier and danger-free ones.

Vatatapika or *Sukhopachara* method:— Here there are no difficult regimen to be carried out; naturally, the period of treatment may be longer and the result comparatively poorer. One prescription is to take cold water, milk, honey or ghee singly or in twos, threes or all before food every day. Another prescription advises to take *Haritakies Terminalia chebula* daily with molasses, honey, ginger or black salt (a mixture of crude Potassium and Sodium carbonate containing also chlorides?). Another is to take half a pala of succuss of Punarnava, *Boerhavia diffusa*, in milk for a period of two months to one year as necessary.

Today, unfortunately, these *Rasayana* prayogas are not in vogue and hence their value cannot be readily determined. The one fully advertised trial on MALAVIYAJI proved of doubtful value for various reasons. To stop at a single failure is not the correct method in evaluating the merit of any measure; a good number of fully controlled trials should be done before a definite opinion is expressed on it.

Though these *Rasayana* methods are not in vogue, in Kerala, there is current a measure which this writer has had many opportunities to carefully observe and evaluate; I mean the form known as '*Pizhichil*', '*Navarakkali*' etc. Here, the regimes to be observed are not so strict or difficult as in *Kutipravesaka* form, yet they are sufficient enough to ensure very fair physical and mental rest. Here also there is at the outset a preliminary laxative treatment. This is followed by application of medicated oils and massage with a *payasam* prepared with milk and Navara rice. If the subject is free from other diseases and wants only a rejuvenation, highly medicated oils are not used; simple preparations as *Pinda-taila* containing three oils, gingley, castor and ghee, alone are used. The total period of treatment including days of rest will be only within 30 days. The effect is very gratifying. I have seen subjects with very high blood pressure responding well to the treatment and coming out with a B. P. normal for their choronological age. I know many, leading very very careless lives, and yet maintaining very good health for their age as the result of this treatment once a year. In my own practice, I have ordered many such patients this treatment once a year coupled with the daily use of *Sukumara-ghrita* and I have almost always found good effects far beyond one's expectations. This form of rejuvenation treatment still current in Kerala deserves a wider recognition. It is absolutely devoid of all dangers, fairly cheap and easy. Ayurveda should be given a fair trial before any attempt to condemn it as unscientific, is ever made.

Respiratory Diseases of The Old People

BY

S. S. MISRA, M.D. (HONS.) ; M.R.C.P. (LOND.),

Physician, Medical College Hospital, Lucknow.

IN 1940, nearly 4000 new cases, about a third of the total number attending the Medical Out Patients' department of this hospital, were diagnosed as suffering from diseases of the lower respiratory tract.

About 15 % of this number was formed by persons over 50 years of age. An analysis showed that this figure was made up of the following diseases in the order of frequency.

- | | |
|-----------------------------|----------------------------|
| I. Bronchitis, | V. Pleurisy with Effusion, |
| II. Influenza, | VI. Pneumonia, |
| III. Secondary Asthma, | VII. Bronchiectasis, |
| IV. Pulmonary Tuberculosis, | VIII. Fibrosis of Lung. |

There were no cases of abscess lung, tumour lung, or pneumokoniosis.

I. Bronchitis.—This group consisted of the majority of cases. This included acute bronchitis, chronic bronchitis, and chronic bronchitis with emphysema with or without heart failure.

Acute bronchitis was and is, in the majority of cases in the elderly, superadded to chronic bronchitis with a variable amount of pyrexia. Slight chill, fever, malaise, and increased cough with breathlessness herald its on set. In the early stages, a sedative expectorant and, latter on, a stimulant expectorant with Iodide and Ammonia Carb is given. Often, a Saline expectorant, with Sodabcarb, Sodium Chloride and Aqua, is found to be soothing.

Local applications to the chest and steam inhalations are often very welcome. The underlying chronic bronchitis is very difficult to treat efficiently. Local nasal sepsis - specially the sinuses - has to be carefully explored and removed if present. Change of surroundings and, specially, avoidance of dusty places are essential. Smoking should be reduced, if not stopped altogether. Avoidance of chill is necessary, as also of re-infection, of which the cinema halls are so often guilty. The condition becomes grave when emphysema with heart failure supervenes.

II. Influenza.—This term is very frequently but incorrectly applied to cases with fever and other general symptoms with cough and upper respiratory catarrh. Most cases will get well in a few days with any treatment, but cases with serious toxæmia are a source of worry in the elderly, because their hearts are particularly susceptible to influenzal toxins.

Vigorous stimulant treatment and a prolonged convalescence with a good tonic and good food are necessary before the patient is allowed to go back to work.

CASE.—S. N. C. aged 62—Had severe attack of influenza in 1939. Faintness and tachycardia persisted for nearly a month, in spite of good food, rest and tonics.

III. Secondary Asthma.—A first attack of primary asthma after 40 years of age is very rare. Most cases are secondary to chronic bronchitis and chronic sinusitis. Anti-spasmodics like Tr. Belladonna, Tr. Lobelia ætheris or Elixir Ephedrine Co., given with sedative expectorants help to relieve spasms. Empirically, quite a few cases respond well to intravenous injections of arsenicals like Soamin or N.A.B.

CASE.—R. L. aged 54, had chronic bronchitis for several years. Last exacerbation produced asthmatic breathing. Relieved for 2 years after injections of N. A. B.

IV. Pulmonary Tuberculosis.—Contrary to the usual view, pulmonary tuberculosis is not uncommon in old age. We had as many as 30 cases in persons of over 50 in 1940. Every person with chronic cough and slight temperature, should have repeated sputum examinations to exclude tuberculosis. The majority of these cases are of the chronic fibro-caseous type, with little temperature and surprisingly little toxæmia, even when doing their usual work. The signs are not uncommonly basal. These patients do well with the routine anti-tuberculosis treatment consisting of rest, fresh air and good food. They respond particularly well to gold therapy if there are no contra-indications.

CASE.—M. A. H. aged 58 years. Came last year with cough of many years and slight fever for 2 or 3 months. 6 months back, a daughter on whom he attended, died of pulmonary tuberculosis. Signs suggested simple chronic bronchitis. Sputum examination was positive. Skiagraphy showed a basal lesion of the fibro-caseous variety. Artificial pneumothorax did not succeed because of adhesions and the patient refused to get his phrenic nerve evulsed. Gold therapy was resorted to and he was given a total of 2.5 gms of gold in the form of graduated doses of Oleo-sancocrisin. After 3 months, his temperature disappeared, his weight increased and the sputum became negative for Tubercle bacilli. He was discharged and returned to work. He attended for a further 2 or 3 months and then was, unfortunately, lost sight of.

V. Pleurisy with Effusion.—This is not uncommon. Most cases are tubercular in origin. They do well with the usual conservative methods mentioned above. The effusion is removed only if it becomes massive and causes cardiac distress. Replacement with air or bland oil is of value; if the effusion recurs, repeated tapings. Pulmonary neoplasms should always be kept in mind, particularly if the fluid is blood-stained.

CASE.—Mrs. A. K. aged 52 years. Developed massive effusion 2 years back and was tapped and usual routine treatment given. She still attends the out-patients department, once a month or so, is afebrile, has put on weight, walks 2 or 3 miles daily and does her usual house-hold work.

VI. Pneumonia.—In the elderly, this is still a serious disease, in spite of M. & B. 693, due to the deleterious action of its toxins on the aged heart. Full doses of M. & B. 693 must be given - 3 tablets at once and thereafter 2 tablets every 4 hours, six times a day. It is perfectly useless to play with small doses like 1 tablet thrice a day. The tablets should be given crushed and mixed with 1 tablet of Nicotinic acid and Calcium Lactate gr. X in Glucose water, a few minutes after a milk feed. Cardiac stimulants should be freely administered. General nursing remains as important as before.

VII. Bronchiectasis.—Our views on the incidence of Bronchiectasis have considerably altered in the last few years—(MISRA 1941). Chest physicians have begun to realise that it is a far commoner condition and have put forward diagnostic criteria, quite different from those described in the majority of text books. Unless the general practitioner realises this, he will not diagnose a case as suffering from bronchiectasis unless he presents the classical symptoms of advanced disease—viz., massive amount of foul smelling sputum, clubbed fingers, high temperature etc.

All cases of persistent cough with coarse crackling crepitations, and deficient or harsh breath sounds, and impaired percussion note, or hæmoptysis in the absence of local causes, pulmonary tuberculosis, lung tumour, or mitral disease should be carefully investigated for bronchiectasis by means of Lipiodol Skiagraphy. Repeated sputum examination to exclude pulmonary tuberculosis is essential. Treatment is not very satisfactory in the elderly persons. General improvement of health by good food and fresh air and Cod-liver Oil should be tried. A stimulant expectorant is helpful with Creosote, if the expectoration is foul, and careful and persevering postural drainage treatment will help the patient a good deal by removing toxæmia and making him more comfortable. Lobectomy has been done in some chest surgeons. Prophylaxis is of greater value, particularly in cases beginning to develop after a poorly resolved attack of pneumonia.

CASE.—A.K. aged 52 years, came to hospital in August 1941, with cough of several years' duration. Had an attack of pneumonia 4 or 5 years ago and since then his cough was persistent with an attack of hæmoptysis 2 years ago. On examination, he was found to be a well built man with impaired percussion note and coarse crackling persistent crepitations on left base. Sputum was not foul smelling and there was little clubbing. The clinical diagnosis of bronchiectasis of left base was made and confirmed, a week later, by Lipiodol Skiagraphy. Postural drainage has been initiated and the patient says that he becomes more comfortable and remains free from cough for 4 or 5 hrs. after postural drainage. The signs are persisting.

VIII. Primary Tumour Lung.—Should always be kept in mind in the case of elderly persons with unexplained persistent cough, low temperature, and loss of weight. A blood-stained pleural effusion is very suggestive. Skiagraphy is essential for diagnosis. Most cases are malignant in nature. Prognosis is hopeless. Specific treatment nil. Two recent private cases must be mentioned, however, as a caution against accepting too readily a radiological diagnosis of lung neoplasm. Both cases were suffering from fever and cough. Sputum was persistently negative for Tubercle bacilli and the radiologists' report was *lung neoplasm* based on the presence of a rounded shadow in the lung fields. Both cases cleared up after the exhibition of Iodides, and their correct diagnosis has remained a mystery, though abscess, fungus infection and syphilitic gumma were also considered as alternative diagnosis.

Lung Abscess.—In the absence of an obvious septic focus elsewhere, or oral operative interference, lung abscess is very uncommon. An old lady was seen last year who had been suffering from high fever of sudden onset of 2 weeks' duration with much cough. Three days back, she had suddenly coughed out pus with temporary reduction of temperature; this had again shot up after a couple of days. Signs of cavitation were present in the right mid zone, the sputum was pussy and negative for Tubercle bacilli, and contained large number of Streptococci. Skiagraphy showed a typical lung abscess. Intensive Sulphanilamide therapy produced a cure.

Pneumokoniosis.—In an industrially backward country like ours, this is a rare disease except in mining areas. Anthracosis is usually symptomless apart from a black sputum, but Silicosis is a dangerous condition because of its frequent association with pulmonary tuberculosis.

Some Observations of Tuberculosis in 168 Cases In the Age Group of 45 Years and Above

BY

DR. I. E. J. DAVID,

M. O., In-Charge, Govt. Tuberculosis Clinic, Nagpur, C.P.

It would be presumptuous on my part to publish any article on a study of just 168 cases and try to draw conclusions or enunciate rules. But this is written with a view to request fellow workers to pool their knowledge on this subject. We have at present ample data and knowledge of tuberculosis especially in the "young adults", i.e. of 15 to 35 years, but I am of opinion that tuberculosis in the infants, in the childhood and "the old" is yet to be properly studied in this country. At present, all our reliable findings and opinions are gathered from the sanatoria in India where most of the patients are of between 15 and 35 years. But, in the clinics, we are surprised to meet a comparatively good number of infants, children and old people with tuberculosis. The problems connected with these age groups are numerous and have their own peculiar physical, social and economic features and problems, a careful study of which I am pleading for in our campaign against the prevention of the spread of the disease. This is my excuse in presenting to you these more or less random notes.

Out of 2573 cases diagnosed as suffering from tuberculosis in the Government Tuberculosis Clinic, Nagpur, recently, 168 were found to be in the age group of 45 years and above. Of these, 135 cases were pulmonary and 28 abdominal, and every other form of tuberculosis was represented. 53 of the cases had more than one form of tuberculosis. Out of 135 pulmonary cases, 108 were *exudative* in type, 49 *mixed* and only 11 *fibrotic*. 5 in stage I, 23 in stage II, and 140 in stage III. 130 were males and 38 females. 32 of the 168 were 'contacts'*. 107 had a history of duration within 6 months, 48 six months to two years, and 13 over two years. As far as I could trace up-to-date, 33 are dead and all within one year after diagnosis. The 168 were predominantly clerks, mill hands, *servants*, farmers, labourers, teachers and weavers, and most of them were married and had children. 15 of them received artificial pneumothorax and only three of them are well and doing full work. The main difficulty in most of these 15 cases was severe dyspnoea even with small refills; and all the cases developed effusion, and some, other complications. None of those who died, died as a result of the A. P. But, A. P. had to be abandoned in all except the 3.

Some Case Reports—"J" H.F. 50 years. Child's Nurse. Complaint: Occasional attacks of cough. General condition good, feeling very fit. Skiagram and screening showed no signs of any healed or active lesion—blood sedimentation 80 mm. first hour. Tuberculin test showed moderate reaction. Sputum examination successively showed T.B.

Mr. "A"; H.M. 45 years: *History*:—First wife died of tuberculosis, second wife died of tuberculosis. The present wife—third wife—the patient alleged was suffering from cough and fever, off and on, but refused to bring her for examination.

Patient's X-ray examination showed a dense, *quiescent* patch in mid-zone of left lung. Sputum showed Tubercle bacilli. General condition of the patient was excellent except that he had an attack of "influenza" recently and "just came to the clinic to find out whether he had been infected by

* As a matter of fact, they were the source of producing 32 known positive contacts. How many more we do not know.

any of his wives!" When he was advised by me, he refused to believe he had tuberculosis! A *reliable* Hakim pooh poohed the whole idea and the patient was very happy to be convinced that he had no tuberculosis, and placed himself under the treatment of the Hakim! Needs no comments! (which is the family ghost which killed every one of his poor wives!)

Mr. "A. S.", 70 years:—Daughter was a patient in the sanatorium. The patient suffered from tuberculosis since nearly thirty years according to the history. Extensive fibrosis—both lungs—with positive sputum. Sputum very copious; cough and breathlessness very distressing; had seldom any fever; was doing active business to the very last day of his life.

Diagnosis:—Pulmonary tuberculosis with bronchiectasis and chronic enteritis (tubercular).

Patient's Diagnosis:—"Suffered from bronchitis for many years and finally contracted tuberculosis from his daughter!"

Comments:—Superfluous!

Mr. "N.C.S." H.M., 70 years:—Exactly same story as that of the above case (Mr. A. S.) in every detail. But did not put the blame on his daughter!

Mrs. "S. V." H. F., 57 years:—Same story as in the above two cases. But the contact is a son through whom she was traced. He was diagnosed in time and is all right now, and has joined a medical school.

Mr. M. A., 50 years:—Pleurisy 7 years ago. Diabetes since 5 years; Tuberculosis started 4 years ago. A more or less irregular patch in left "apex", and a few scattered striations in left infra clavicular region sputum positive for T. B. frequently. But would continue to be in harness. Refused all advice to the contrary. Well placed and well educated. Has seven children. The wife I suspect is suffering from tubercular enteritis. The patient does eight hours work a day, and takes part in all social activities and now and then gets an attack of "influenza" and then takes a few days' leave, but soon goes back to work. This is not an uncommon case. No need for any further comments.

The above case reports, I am afraid, are rather sketchy, and incomplete and written in a lighter vein, but for one purpose, that they raise most important problems and "moral lessons".

Remarks.—(1) My impression is that the percentage in this age group of 45 and above is larger than what one suspects, and a thorough and more extensive study will reveal that the disease is very much more common in this group than is thought of. (2) The duration of the disease, the type seen, and the complications with more than one form of tuberculosis in many of the cases show that, the form of tuberculosis in those of "above 45" is not different from that found in "the young"; (3) Collapse therapy in any form, even artificial pneumothorax, is not a suitable (though may be inevitable!) treatment for those who are of about 45 years or more. (4) Many elderly people going about with "bronchitis" and "asthma" should be carefully examined to exclude tuberculosis. (5) The so-called "fibroid phthisis" is not a common finding in our experience, but yet is a potent evil in the spread of the disease. There are many more questions and reflections which I purposely leave out at this stage of the study of the subject.

In conclusion, I wish to offer my thanks to MAJOR KELLY, I.M.S. Civil Surgeon, Nagpur, and the Provincial Government for kindly permitting me to publish this article.

Adequate Iron for Hypochromic Anaemia

Three 'Plastules' Plain provide a daily dose of 15 grains of ferrous iron. This is ample for rapid hæmoglobin regeneration in most cases of hypochromic anæmia. The soluble ferrous iron in combination with the Vitamin B complex of yeast yields excellent results even in cases of achlorhydria. The risk of gastric upset is obviated because the iron in 'Plastules' brand Hæmatinic compound is in the preformed state, dosage is small and the medication readily diffused in the stomach.

Literature on request.

Distributors in India:

KEMP & CO. LTD., CHARNI ROAD, BOMBAY.

Sole Proprietors:

JOHN WYETH & BROTHER LTD., LONDON.



FOR OVER 36 YEARS

Accepted Specific for

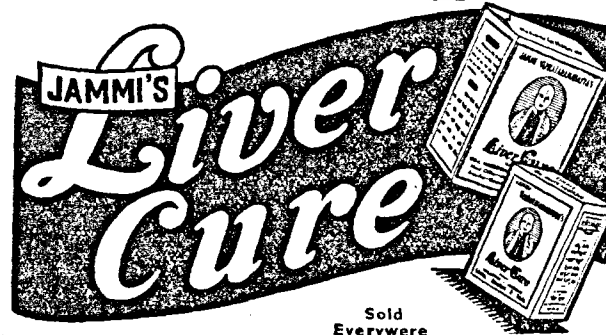
INFANTILE CIRRHOSIS OF THE LIVER

THAT Jammi's "Liver Cure" offers a rational and definitely successful method of treatment for Infantile Cirrhosis and Biliary Cirrhosis of the Liver, Gastro-Intestinal disturbances and all enlargements of the Liver and Spleen of unknown origin, is demonstrated in hundreds of cases. Glorious tributes have been paid by leading doctors.

Write for brochure and clinical samples to:—

JAMMI VENKATARAMANAYYA & SONS,
1/1, Brodies Road, Mylapore,
Madras.

Also at Bombay, Calcutta,
Lucknow, Bangalore and
Trichinopoly.



Clinical Results:—

ANTI-CORNEAL ULCER OINTMENT.

Pain and Circum-corneal infection disappear within 3 days.

Ulcer heals within 7 days.

ANTI-KERATITIS AND PANNUS OINTMENT.

Pannus or keratitis disappears within 7 days.

ANTI-CONJUNCTIVITIS OINTMENT.

1st day—Discharge ceases.

2nd & 3rd day—Conjunctival infections disappear.

5th day—The eye goes to normal.

Available in Collapsible tubes 1 oz. phials,
1 oz. Collapsible tubes.

The South Indian Eye Laboratory,
Chodavaram (S. India)

LABORATORY GLASSWARE

MEDICAL SUNDRIES

HOSPITAL REQUISITES

RUBBER GOODS

SURGICAL INSTRUMENTS

V 2 A NEEDLES

RECORD & GLASS SYRINGES & EVERYTHING FOR A DOCTOR,

HOSPITAL, LABORATORY & CHEMISTS.

Ask for Quotations with specific
enquiry:

V. A. PATEL & CO.

Bharucha Bldg., Princess St., Bombay

PHONE: 22202.

YOUR 'HEALTH' IN YOUR 'OLD AGE'

- * **NEUROLECITHIN**—For nervous breakdown and loss of memory in old age.
- * **NEOPACO**—For spasmodic conditions anywhere in the body, specially the Renal, Biliary and Intestinal Coli of old people.
- * **SYROCOL**—For chronic hacking cough in the aged with or without chronic bronchitis.
- * **SUPUSTI**—The most complete natural food with ideal restorative and constructive action suitable for the decrepit with or without Diabetes.

INDIAN HEALTH INSTITUTE & LAB., LTD.

BELIAGHATA MAIN ROAD, CALCUTTA.

UREA SULPHAZIDE-T

(Acetamido-Amino-Benzene-Sulphonate-Urea)

Highly efficacious in Gonorrhoea and its complications

Effective also in respiratory affection
e.g. Lobar or Broncho-Pneumonia

Tablet for Oral Use.

For detailed literature, please write to:

UNION DRUG CO. LTD. CALCUTTA

285, Bowbazar Street.

T'Phone:
Cal. 1159.
Cal. 4975.

Sole Agents for Madras Presidency:
MESSRS. APPAH & CO., MADRAS.

T'Gram:
"BENZOIC"
Cal.

When writing to advertisers, please mention the "Antiseptic"

Short Commercial Advertisements

Short advertisements pertaining to any business are published at Rs. 5/- per insertion upto 1 inch single column; Over 1 inch and upto 2 inches—Rs. 8/-; Over 2 inches and upto 3 inches—Rs. 12/-; Over 3 inches and upto 4 inches—Rs. 15/-. Rates for larger space on application. Instructions and copies of advertisements for insertion in the next issue should reach before the 5th proximo. Copies of advertisements should be legibly written or typed to avoid error in printing. Payment should be made in advance. No free voucher copies are supplied. No page or position guaranteed. Results are better when advertisement is repeated. Special discounts will be allowed for 6 & 12 consecutive insertions. The Management reserves the right to refuse, modify or, in the case of orders for a series of publications, suspend the publication of any advertisement or terminate any contract at any stage and under any conditions without assigning any reason.

Manager: ANTISEPTIC.

1 inch
TO LET
Rs. 5-0-0 per insertion

2 inches
TO LET
Rs. 8-0-0 per insertion.

3 inches
TO LET
Rs. 12-0-0 per insertion

"CATRACTOL" (Regd.)
The only Specific cure for Juvenile, Senile, Diabetic and Black Cataracts without any operation. Claims miraculous results. Given most satisfactory results to thousands of sufferers. Prescribed by Eye Specialists.

Prices:— Complete Course: Rs. 10.
Medium Phial: Rs. 5. Small Phial: Rs. 2-8.
(Packing & Postage extra).

"OPACITINE" (Regd.)
Guaranteed sovereign remedy for Corneal Opacity (Nabula, Macula and even Leucoma) and Chronic Trachoma. It has succeeded where Yellow Ointment and Dionine have given way. Largely recommended and prescribed by Ophthalmologists and is being called as **"MIRACLE"**. A trial will convince.

Prices: Large Phial (Complete Course) Rs. 10.
(£1), Medium Phial: Rs. 5. Sample: Rs. 3.
Sole Manufacturers:
S. KRISHNA PHARMACEUTICAL SPECIALITIES,
101, Railway Road, : : PASRUR (N. W. R.)
Madras Stockists:
SRI KRISHNAN BROS., P.B. No. 166, Madras.

FILARIA

CAPT. P. GANGULI, I.M.S. (Retd.), Editor,
Calcutta Medical Review, comments:—

"We have been shown some cases of filariasis and the results of the treatment and also some original letters of appreciation of qualified doctors. There is no doubt that Rosbay treatment is worthy of trial especially as we are still hunting for a good and reliable remedy for filariasis."

Dr. Paul's Rosbay (Oral or Injection), the best tried remedy hitherto proved effective in ELEPHANTIASIS, LYMPH SCROTUM, CHYLURIA, CHYLOCELE, ORCHITIS, VARICOSE GROIN GLANDS, ENDEMIC LYMPHANGITIS, FILARIAL FEVER, etc., after failure of other drugs.

Literature on request to:—

ROSBAY & CO.,

P. O. Box 11418 : : CALCUTTA

When writing to advertisers, please mention the "Antiseptic"

HEALTH

[ESTD. Jan. 1923]

An Illustrated Monthly devoted to Healthful Living
Published in English.

Editors and Proprietors:

Dr. U. RAMA RAU and U. KRISHNA RAU, M.B., B.S.

Perhaps you are already aware of our monthly publication "Health," which is being published from 1923 and is devoted to healthful living.

"Health" aims at bringing into every home, in a simple and informal way, the truths about health and disease as discovered by eminent Medical and Public Health authorities. It advocates vegetarianism, temperance, purity, simplicity and moderation in all phases of life—in short, nature's way to better health and longer life. The social and health worker find it as the best means to keep him informed of the progress made in kindred subjects throughout the world.

We invite from the Medical Profession and Public Health Authorities in India and abroad, contributions on Vital Health Topics, such as Diet, Nutrition, Prevention of Disease, Care and feeding of infants, Child training, Management of the sick, Guidance for the prospective mother, Healthful beauty, Exercise, Occupation, Recreation, Contagious diseases, School hygiene, Sanitation, First-Aid in accidents, Health News, Views and Inventions, Vital statistics &c. Each article should not exceed about 2000 words in length.

The contributions may be in the usual form or in the form of Dialogues, Dramas, Poetry, Court Proceedings, or Personal stories of health building or even pen pictures (line drawings), condensed extracts of useful contributions appearing in other journals with or without comment, practical hints, recipes, healthy menus, experiences, statistics, communications &c. The choice of the subject is left to the contributors so that they may select the best subject in their own special line. Contributions should be in an entertaining, non-technical style, and must pass the acid test of scientific approval before being published. No questionable or unproved theories can find a place in the Journal. Contributions are accepted on the distinct understanding that they are sent solely to "Health."

Further details may be had from:—

THE EDITORIAL AND PUBLISHING OFFICES,

THE "ANTISEPTIC" Post Box No. 166, Madras.

P.S.—Annual Subscription for Health (inland) is Rs. 2/- post-paid. A specimen copy will be sent on request.

Letter Heads **VISITING CARDS**

PATIENTS RECORD SHEETS

FOR GOOD & NEAT PRINTING

PRESCRIPTION PADS

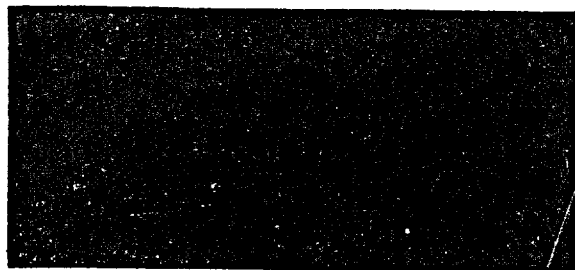
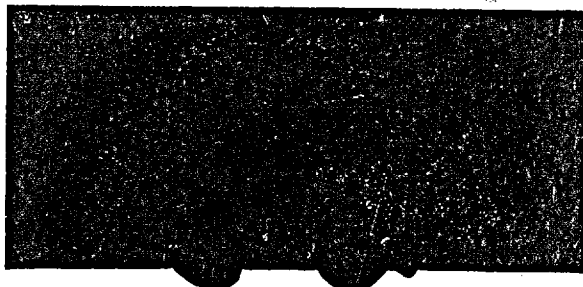
POWDER COVERS **MIXTURE LABELS**

Bill Forms

Consult THE ANTISEPTIC PRESS
10, THAMBUCHETTY ST., MADRAS

Trusses for Hernia

We have a large assortment of various sizes for infants and adults.



PRICE

Leather, Single	Ra. 6
Do Double	Ra. 12
Vulcanite, Single	Ra. 12-8
Do Double	Ra. 25

Booklet how to measure for and fit up a truss for hernia will be sent free.

From SRI KRISHNAN BROS., Post Box 166, MADRAS.

INDEX TO ADVERTISERS, OCT. '41.

	PAGE.		PAGE.
Albert David & Co., Ltd.	... 1	Indian & Eastern Chemist	... 40
Alembic Chemical Works Co. Ltd.	7, 20, 52	Indian Health Inst. & Lab. Ltd.	... 43
Allen and Hanburys Ltd.	... 5	Jammi Venkatramanayya & Sons	... 42
All India Medical Directoroy	... 49	John Wyeth & Brother Ltd.	... 41
Antiseptic	44, 45, 48, 50, 51	Journal of Indian Medical Assn.	... 22
Antiseptic Press	... 48	Lister Antiseptics & Dressings Co.	... 9
Atlantis (East) Ltd.	... 18	Martin & Harris Ltd.	... 6
Banerji P.	... 12	Martin H. Smith Co. N. Y.	9, 22
Beechams Export Corporation Ltd.	... 30	May & Baker Ltd.	... 24
Behar Chemical Works	... 40	Menley & James Ltd.	32, 37
Bengal Chemical and Pharmaceutical Works.	Inside of back cover	Narotam Girdhar & Co.	... 18
Boots Pure Drug Co., Ltd.	... 36	Oriental Chemical Works Ltd.	... 40
Brand & Co. Ltd.	... 2	Patel & Co. V. A.	... 42
British Drug Houses Ltd.	... 35	Parke Davis & Co.	Last cover page.
Burroughs Wellcome & Co.	... 23	Petrolagar Laboratories Ltd.	... 3
Calcutta Clinical Research Association Ltd.	22	Research Laboratory	... 1
Ciba (India) Ltd.	... 17	Rosbay & Co.	... 46
Coleman & Co., Ltd.	... 19	Scientific Instrument Co.	... 38
Corn Products Ltd.	... 15	Seller L. H.	... 40
Cow & Gate	... 33	S. Krishna Laboratories	... 46
Crookes Laboratories Ltd.	... 11	Smith T. J. & Nephew Ltd.	... 28
Denver Chemical & Mfg. Co.	... 16	South Indian Eye Laboratory	... 42
Director General I.M.S.	... 31	Sri Krishnan Bros.	... 48
Doz & Co.	... 49	Stephen Smith & Co. Ltd.	... 8
Evans Sons Lescher & Webb Ltd.	... 29	Thacker Spink & Co. Ltd.	... 22
Eli Lilly & Co.	Inside Front Cover	Thakore T. M. & Co.	... 14
Galleno Pharmaceutical Works	... 12	Union Drug Co. Ltd.	... 43
Glaxo Laboratories Ltd.	... 26	Victor X-Ray Corporation Ltd.	... 43
Health	... 47	Vax-Institute	... 18
Hanovia Ltd.	... 39	Wander A. Ltd.	... 25
Hewlett C. J. & Son Ltd.	... 10	Waterbury Chemical Co.	... 27
Himalaya Drug Co.	... 37	William R. Warner & Co., Ltd.	4, 34, 38
Horlick's Malted Milk Co.	... 21	Zandu Pharmaceutical Works Ltd.	... 13

For prompt curative action and excellent tolerance Specify:—

Alebrin & Dozo-Quin IN MALARIA

Both ALEBRIN and DOZO-QUIN have got powerful effects in Plasmodium. But in recent clinical research the combined method of treatment with ALEBRIN and DOZO-QUIN has brought a revolution in medical profession in the following advantages:—

1. Highest percentage of cure
2. Low relapse ratio
3. Less toxicity
4. Short course of treatment with minimum expense.

Enquiry to:

DOZ & CO.,

P. 43, New Shambazar Street,
CALCUTTA.

Free! Free!! Free!!!

The publishers invite the names and addresses of Doctors, Chemists and Druggists, Opticians Nurses etc., to publish free of cost in their next publication "The All India Medical Directory."

Advertising Rates:—

Full Page	... Rs. 100
Half-Page	... " 55
Quarter Page	... " 30
1" Slogan	... " 10
Bold Type Address	... " 6
Price per copy	... " 6

Write Publishers:

THE ALL INDIA MEDICAL DIRECTORY.

57, Bombay Mutual Building,
HORNBY ROAD, BOMBAY.

ANNOUNCEMENT

While presenting the readers with this special issue on "DISEASES OF OLD AGE" the Manager has the pleasure to announce that the next special number will be on "MINOR MALADIES." It will be the first of the three for 1942 and will be published in February next. Every effort will be made to render it as useful as the past ones.

Subjects for the other 2 special issues in June and October, '42 will be announced later on.

The regular and special issues of the "Antiseptic" have been highly spoken of by eminent medical men and journals in India and abroad.

Editors earnestly invite contributions from members of the profession for publication in the special and ordinary issues. Contributions intended for publication in the next special issue should reach them by the end of December '41. Intending contributors to it are requested to intimate the probable title of their article before the end of November '41.

These special issues are priced Rs. 2/- each to non-subscribers. Since only a limited number of extra copies will be printed, non-subscribers may ensure their copies by an advance remittance of Rs. 2/-.

Regular subscribers of the Journal on roll in the months of the publication will, however, get them without any extra charge. But those who are not already subscribers but wish to have the copies without extra charge, can get them on payment of the annual subscription of Rs. 5/- (Burma Rs. 6/- Foreign Sh. 10 post paid). Subscription may commence from any period for one year. Half-yearly subscriptions are not accepted.

Current subscribers are requested to renew their subscription in due time.

The 39th annual Volume of the "Antiseptic" will commence with the January '42 issue. The "Antiseptic" publishes every year about 1000 pages of useful reading matter contributed to by nearly 150 eminent Medical men.

P. O. BOX 166,
Madras,
Oct. 1941.

MANAGER,
"ANTISEPTIC"

Vide next page for Select Opinions and a list of Past Special issues.

SELECT OPINIONS.

The Medical Officer, London, July '41, commenting editorially on the special issue on Infectious Diseases—February '41, writes:—"It will do good to all of us, wherever we may be, to read these recent issues of the "Antiseptic" to get a clear view of what is essential and what is not in the theory of epidemic."

Medical Times, London, on Tropical Diseases—"An excellent production. All those interested in Tropical Diseases should secure a copy of this capital number."

University College Hospital Magazine, London, on Genito Urinary Diseases—"Contains articles ranging over the whole field. Many of them should be of interest to English readers."

Prescriber, Edinburgh—"This number on Genito-Urinary Diseases is a veritable mine of information and is worth more than the 2 rupees charged for it."

Journal of Iowa State Medical Society, Iowa, U. S. A., on Genito Urinary Diseases—"The articles are well written and should be of benefit to the general practitioner who wishes to refresh his memory on any of the subjects treated."

The Prescriber, Edinburgh, on Diabetes—"It is one of the best numbers of this progressive Indian Journal so far issued."

The Medical World, Philadelphia, U.S.A. on Diabetes—"Our esteemed contemporary has devoted its entire issue for June 1940, in an attempt to satisfy the thirst for knowledge on Diabetes. There are many articles on the subject that demonstrate that our medical brethren in far-away India are alert to an important problem of modern civilization."

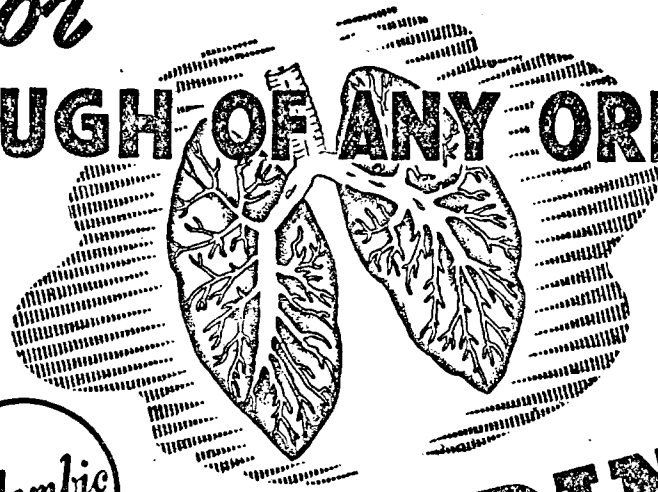
The following Journals have also reviewed very favourably:—

Journal of Christian Medical Association, Miraj; Indian Medical Review, Calcutta; Journal of the Indian Medical Association, Calcutta; South Indian Medicine, Madras; King George Medical College Clinical Society Journal, Lucknow; Burma Medical Times, Rangoon; Indian Journal of Ophthalmology, Poona; Journal of British Medical Association, Colombo; Calcutta Medical Journal, Calcutta; Calcutta Medical Review, Calcutta; Indian Medical Journal, Madras; Journal of the Andhra Medical Association, Bezwada; Medical Digest, Bombay; Medical Practitioner, Madras; National Medical College Magazine, Bombay; Patna Journal of Medicine, Bankipore; Practical Medicine, Delhi; Sind Medical Journal, Karachi; Stanley Medical College Magazine, Madras. etc.

Year.	List of Past Special Issues.	No. of Pages.	No. of Contributions.
April 1929.	Silver Jubilee	210	32
October 1930.	Eye, Ear, Nose & Throat	106	15
June 1931.	Radium and Radiology	134	13
July 1932.	Obstetrics and Gynecology	136	23
March & April 1933.	* University Extension Board Lectures.	208	10
July 1933.	Venereal Diseases	192	31
Feb. & March 1934.	* University Extension Board Lectures.	194	14
May & June 1934.	* Special Annual	236	25
October 1934.	* Pediatrics	138	18
Feb. Mar. & Apr. 1935.	* University Extension Board Lectures.	260	22
July 1935.	** Special Annual	110	12
March 1936.	* University Extension Board Lectures...	78	10
February 1937.	Tropical Diseases Part I	200	19
March 1937.	do do Part II	168	23
July 1937.	* Tuberculosis	194	27
October 1937.	Skin Diseases	148	31
February 1938.	* Diseases of the Heart	154	26
June 1938.	* Surgical Emergencies	144	19
October 1938.	Modern Treatment of Diseases	194	36
February 1939.	* Diseases of Women	158	27
June 1939.	Ophthalmology in General Practice	176	29
October 1939.	* Diseases of Gastro-intestinal Tract	182	27
February 1940.	* Genito Urinary Diseases	180	31
June 1940.	* Diabetes	184	34
October 1940.	* Respiratory Diseases—Part I	160	26
November 1940.	do do Part II	78	10
February 1941.	* Infectious Diseases—Part I	86	12
March 1941.	* do do Part II	152	24
June 1941.	* Summer Complaints	92	14

P. S.—Of the above special issues, only a few copies of those marked with an asterisk are available at Rs. 2. each post paid. Contents of the available special issues will be sent on application.

For COUGH OF ANY ORIGIN



Alembic

GLYCODIN TERP-VASAKA

a safe and proven remedy

Of the many cough remedies that contain Vasaka, the popular Indian drug, Alembic's GLYCODIN TERP-VASAKA has attained the greatest measure of success. The formula is unique because Adhatoda Vasaka working in conjunction with other expectorants and sedatives acts with double vigour. It attacks the source of infection wherever it may be — in the throat, larynx, bronchi or lungs — and banishes cough permanently. It does not check secretions or cause constipation and is palatable.

INDICATIONS:-

All irritating coughs due to acute or chronic bronchitis, asthma, throat and pulmonary tuberculosis, whooping cough and many other lung diseases accompanied by paroxysms of cough or dyspnoea.

COMPOSITION

Each fluid drachm represents:-			
Antimony Tartrate	1/60 Gr.	Menthol	1/24 Gr.
Terpine Hydrate	1/8 "	Syrup Tolu	15 Min
Codien Phosphate	1/8 "	Syrup Vasaka	Sufficient.
(Also available with Guaiacol)			



ALEMBIC CHEMICAL WORKS CO. LTD. BARODA

When writing to advertisers, please mention the "Antiseptic"

OPOTONE

A HORMONE TONIC

for

Lost Vitality and Shattered Nerves
A well-Balanced Combination of
Orchic, Thyroid, Pituitary, Suprarenal,
Damiana, Yohimbin and Strychnine

Supplied in Phials of 50 & 100.

BENGAL CHEMICAL AND PHARMACEUTICAL WORKS, LD.

CALCUTTA

::

BOMBAY

Madras Agents:—N. DASAI GOWNDER & CO., 41, Bunder Street.



CONVALESCENCE ACCELERATED!

If your patient has recovered from an acute illness or been through a strenuous time put him on Lecivin.

LECIVIN is a recuperative tonic of high merit containing Malt, Lecithin, vitamins and Cinchona extractives.

LECIVIN tones up the system generally, soothes the irritated nerves, improves digestion, increases appetite and gives an altered out-look of life.

To get sure results

Be sure to prescribe

LECIVIN

BENGAL CHEMICAL AND PHARMACEUTICAL WORKS, LD.

CALCUTTA

::

BOMBAY.

Madras Agents:—N. DASAI GOWNDER & CO., 41, Bunder Street.





**Liquid
Citralpha**

- **LIQUID CITRALKA IS A SYSTEMIC ALKALIZER CONTAINING 25% DISODIUM HYDROGEN CITRATE.**
- **In recommended doses it does not induce excessive shift to alkaline reaction.**
- **Its action is prompt; if dosage is adequate, shift of urine reaction to alkaline usually begins within two to four hours.**
- **Liquid Citralka does not reduce gastric acidity or impair protein digestion.**
- **Treatment is not followed by eructation or flatulence.**
- **It has a pleasing flavor, in contrast to the flat taste of sodium citrate.**
- **Liquid Citralka may be compounded with many cough or fever prescriptions and other liquid preparations.**
- **Liquid Citralka decreases curd tension when added to whole milk formulae.**

INDICATIONS

Liquid Citralka is indicated for prevention and treatment of acidosis and for alkalizing urine. Common clinical conditions in which **Liquid Citralka** is of value as supplementary treatment include:



PARKE,
DAVIS
& CO.
Bombay

Disturbances of urinary tract:	Febrile conditions:
Pyelitis	Infections
Cystitis	Contagious diseases
Urethritis	Toxemias
Pyuria in pregnancy	Dehydration
Gastrointestinal disturbances:	Inaction in the newborn
Diarrhea	Surgery (especially adenoid-
Vomiting (with dehydration)	ectomy and tonsillectomy
Diabetes	in children)

Liquid Citralka may be used to combat acidosis incident to large doses of sulfanilamide.

Liquid Citralka is not indicated for gastric hyperacidity.

■ Liquid Citralka is supplied in 8-oz. bottles.

[illegible]