INDIAN MEDICAL JOURNAL

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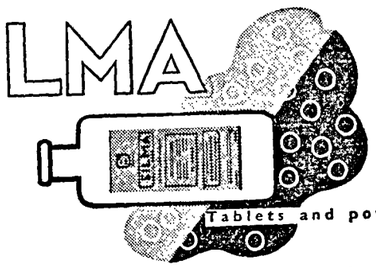
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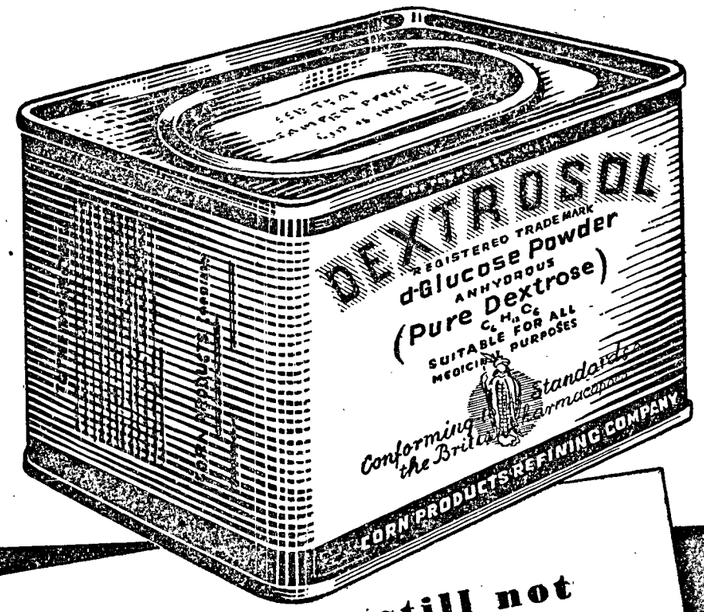
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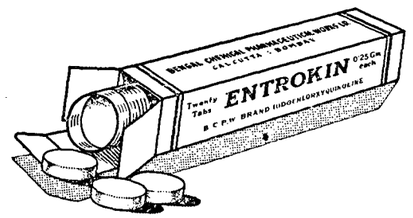
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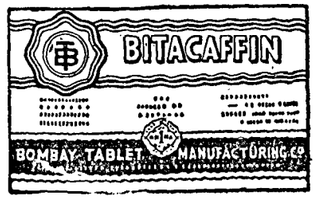
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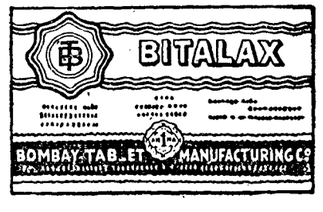
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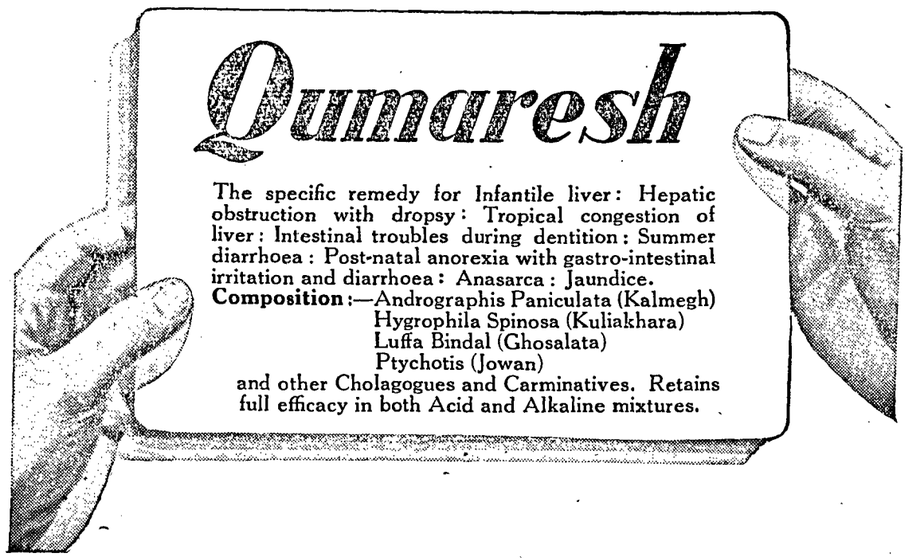
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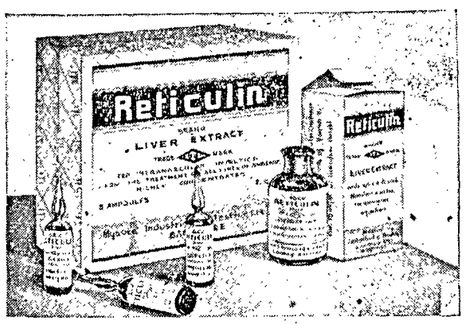
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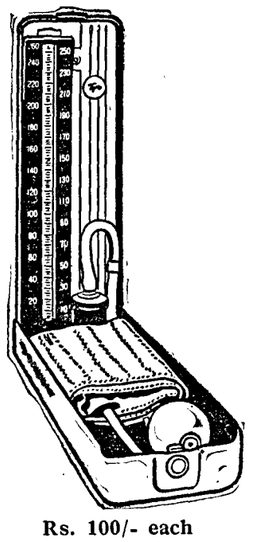
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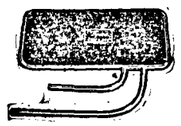
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Indian Medical Journal

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OUR MONTHLY SURVEY

Synthetic Folic Acid :—Before the synthesis of folic acid in 1945 by Angier and his co-workers, it was derived from natural products of vegetable and animal origin. Its synthesis however has enabled its use on a larger scale and the volume of literatrue on its therapeutic application has been quite considerable, particularly in America. It is not yet widely used in our country and therefore no appreciable literature has accumulated to guide the Indian Practitioners.

Folic acid is a member of the vitamin B complex and its deficiency greatly depresses the formation of red cells, white cells and platelets. Hence it has been suggested in certain types of anaemia, particularly megaloblastic anaemia. It does not ameliorate anaemia due to iron deficiency, or leukaemia or aplastic anaemia. While the anaemia due to sprue does not respond to folic acid, it does however cause the disappearance of oral and gastro-intestinal symptoms. The mode of its action is still unknown.

Effect of Lemon juice on the Teeth :—We reproduce elsewhere in this issue an article from the Proceedings of the Mayo Clinic (March 5, 1947) which gives us the news that excessive drinking of concentrated lime juice causes dissolution of substance of teeth. There are two types of cases : those who suck lemons, and those who take lemon juice in water frequently as a therapeutic measure. In the former there are marked defects on the labial surfaces of the upper anterior teeth. In the latter there is a general dissolution of dental structure. The article concludes with the following general observations :

> "It seems therefore that marked dissolution of dental structure may occur as a result of drinking lemon juice, particularly if the juice is taken daily and at times other than with meals. In a few cases studied, lemon juice has been prescribed by professional persons; in some it has been taken on advice of non-professional persons; in the majority of cases however, its use has begun as a result of reading advertisements which advocated drinking lemon juice, It is obvious that an adequate amount of vitamin C is necessary but it can be had without resorting to improper use of lemon juice, In view of its harmful effects on the teeth its use as a daily drink in any appreciable concentration, should be discouraged."

This precaution is specially applicable to our country, because our people are accustomed to take lemon juice, some in very excessive quantities, during the hot season. Lemon juice is harmless to the teeth if it is taken diluted. Sucking of lime juice or taking of concentrated juice should be discouraged.

Artificial Insemination :—This is being advocated in some circles in America and to a lesser extent in Great Britain. It is said that there is a powerful instinct in women for producing children, and if that is not possible by natural means artificial insemination is justified either by husband's semen or by that of a donor. The moral and ethical issues involved in this ultra-scientific method of fecundation are too great to be brushed aside as meaningless or futile. There are certain imponderable aspects of life which cannot be ignored in our attempts to harness science to our material needs. It is our opinion that science should not be prostituted for such purpose as artificial insemination, because it strikes at the very root of the institution of marriage and would corrode its spiritual basis. We are quite sure that the practice of artificial insemination would not at any time be popular in our country for any reason whatsoever as it is fundamentally opposed to the spirit and practice of Indian culture and civilisation. This is evident from the fact that not a single case of artificial insemination has so far been reported in our country.

Paludrine in Malaria :—Writing in *Carmichael Medical College Magazine* (December 1946) Dr. B. B. Roy discusses the therapeutic utility of Paludrine in the three cardinal types of malaria and comes to the following conclusions :

(1) Sporozoites are unaffected by paludrine.

(2) It exerts a complete lethal action on the primary tissue phase of falciparum infections. It is a perfect causal prophylactic in falciparum infections.

(3) It is schizonticidal, producing remarkable effects in controlling acute attacks of all types of malaria and radical cure in falciparum infections.

ADDRESSES AND ARTICLES

Rabies

BY

DR. B. N. MAZUMDAR, D.P.H.,

Medical Officer of Health, Golmuri Works, Jamshedpur.

Rabies is an acute specific and rapidly fatal infection of the central nervous system characterised by spasms and paralysis of the muscles, notably those of deglutition and respiration. From the epidemiological aspect it can be defined as a specific disease of moderately infectious nature, caused by an ultra microscopic virus, transmitted through the biting of dogs, wolves, jackals and other animals, affecting both sexes and all ages. It is endemic in various countries of the world, namely France, Germany, Poland, Russia, Balkan countries, Africa and Asia. It is also common in Indo-China, Dutch Indies, Phillipine Islands and North America. Of late canine rabies has become common in South America by a new vector, the vampire bat, which has become a dangerous source of the disease. The incubation period is long and the duration of immunity acquired by vaccination has not been determined.

History.—It is a disease which has been known, since ancient times. "Demonistic theory" was accepted by Rome, Greece and Egypt in bygone ages. *Democritus* in fifth century B.C. was the first to write about the disease and described it as an inflammation of the nerves resembling tetanus. *Aristotle* in the fourth century gave an account in dogs and wild animals. *Celsus* in 100 A.D. described an account of the disease in man and practised cauterization of wounds resulting from the bite. It was recognised in India from very early times but there is no satisfactory evidence to show its progressive geographical distribution.

No great pandemic has been recorded of the disease. The disease was found endemic in various countries and epidemics occurred amongst dogs from time to time. *Abelium* in 1634 described epidemic of canine rabies in the German Provinces of Rhineland and Saxony.

Present Position—Spatial Distribution :—The disease spread over most of Europe during the early part of the 18th century, beginning in Italy in 1708, invading Germany and France in 1719, and England in 1734. The majority of human rabies then, were due to rabid wolves. Then there was a period of low incidence till 1800 when it became epidemic in Germany, Prussia and Switzerland. Rabies appeared in 1815 in Denmark, Norway and Sweeden but the disease was soon eliminated by sanitary measures and they have remained free upto the present time. Epidemic of canine rabies occurred in Austria, Germany and France from time to time. Poland and Russia were also victims of infection. The incidence of rabies has been low in Western Europe. It was first reported in Great Britain in 1734 and in Ireland in 1807 and continued till 1886 when dog control regulations were enforced and the incidence of the disease then came down. Again with the relaxation of these regulations, the incidence gradually rose until 1903 when the disease was completely eradicated by strict measures and there is no incidence uptill now except from 1918-21 when the disease was re-introduced by a dog carried over from the continent by plane.

Africa and Asia :—Rabies was prevalent from very ancient times and constantly present in Egypt and Arabia. The disease has been especially common in India, and is present in China from a very ancient time. Rabies first appeared in Phillipine Islands in 1900. It is interesting to note that Australia and the Hawillan Islands have remained free from the disease.

North America :—Earliest account of rabies was reported in Boston in the middle of eighteenth century. The disease soon spread and by 1860 it invaded most states east of Missisipi and then spread over California and since then it has remained endemic over most of the United States. Rabies have occurred in Canada but due to strictly enforced quarantine restrictions the disease has decreased in incidence almost to extinction.

South America :—Appears to have been free from the disease until the later part of the nineteenth century, but as already mentioned above, the new vector, the vampire bat, has become a dangerous source of the disease in recent years.

India :—Rabies is still common throughout India, where no strict sanitary regulations have yet been enforced, although the disease is retracing its steps. But the nature of the disease is still virulent and distribution sporadic.

Variation in disease prevalence :—The periodicity of the disease is not very clear. In fact there is short-time-periodicity of the disease, which varies year to year in different places of the world. Rabies has been reported from the arctic as well as the highly tropical regions. Climate seems to have no effect on the character or incidence of the disease.

It has however been found from repeated analysis that the peak of incidence falls in the late winter and spring period. This may well be due to the fact that the stray dog wolf and fox are the principal vactors and during these months will travel about in search of food and mate. Epidemics of rabies may and do occur at anytime of the year.

Morbidity or Attack Rate :—There are no satisfactory evidence or data available concerning the attack rate for rabies in man following exposure by the bite of a rabid dog. It has been the practice to give the anti-rabic vaccine treatment to all persons exposed since the preventive treatment was first introduced in 1885.

The location of the bite is an important factor in the susceptibility to rabies. It has been found that 10 per cent. of cases develop rabies when bitten on head, 2 per cent when bitten on arms, 0·2 per cent when bitten on legs and no deaths when bitten on trunk.

Another factor which reduces the attack rate is the occasional absence of the virus in the saliva of vicious rabid animals. It is probable that the bite of rabid wild animals is more infectious than that of rabid domesticated dogs.

Age, Sex occupation and race :—There is no satisfactory evidence to indicate differences in susceptibility of the white, yellow or black races. Males and females appear equally susceptible, although incidence is higher in males. The majority of cases of human rabies occur in children but this cannot be considered as proof of a greater susceptibility on their part. They are most liable to exposure due to their fondness for playing with animals and lack of defence when attacked. The mortality statistics are diverse as found by different workers and septic infection is the principal cause of death among persons bitten by rabid animals. Tetanus may also occur as the result of puncture wounds produced by rabid animals. The death rate may be lower in modern times due to more adequate cleansing of wounds and anti-rabic treatment.

Notification :—Rabies is not a notifiable disease in all parts of India. It is notifiable in Orissa, Madras Presidency and the States of Mysore and Aundh and also in Kurudward (Junior) States.

The early history of rabies shows that the wolf and related wild canine species have played a major role in the perpetuation of the disease. Recently stray and semi wild variety has been responsible for the continuation of the disease in the thickly inhabited places. From statistics at Kasauli it appears that patients who received treatment were attacked mainly by dogs (80%) jackals (15%) horse (5%) other animals as fox, ox, buffalo, mangoose, goat, deer (each under 4%.)

Continuance of rabies is dependent upon infection of animals of the canine tribe and that the human prevalence, as well as that of many other species which may become infected is a secondary manifestation of the canine epidemic.

Epidemicity :—The causative agent of rabies is an ultra-microscopic filterable virus.

Zinke in 1804 was able to infect a healthy dog with the saliva of a rabid dog. Pasteur in 1885 suggested that rabies was due to an ultramicroscopic virus. Negri in 1903 described peculiar bodies in the cells of the central nervous system of rabid dogs while Remlinger and Riffat Bey in the same year successfully fittered rabies virus through Berkfield Filter.

The virus occurs mainly in the saliva and in the central nervous system. It may remain in the saliva from 5 to 14 days before the animal shows any symptoms. It is therefore sufficient to watch a dog that has bitten a person for 14 days, and, if no symptoms of rabies appear in the dog, during this period, there is no danger of conveying the disease, and the Pasteur prophylactic treatment is then considered unnecessary. The danger from a bite during the preclinical stage of the disease is slight.

Invasiveness :—The virus enters the system through the broken skin and follows the nerve trunks, from the seat of injury to the spinal cord, thence to medulla and brain. The mode of invasion of the virus may explain why pain, throbbing, tingling, numbness and other nervous disturbances are the first symptoms to occur in parts of body that have received the virus. The virus readily enters the rich nerve supply in the edges of the broken skin.

Pathogenicity :—Rabies virus is pathogenic for all warm-blooded animals. Infection does not take place through the intact skin or by ingestion, but the dog and mouse may develop the disease, if the virus is instilled into the nose. It is difficult to infect animals by subcutaneous or intraperitoneal inoculation but injections into the skin, muscle or nervous tissue, in that order, is increasingly efficacious in producing the disease. Subdural, intracerebral or intravenous inoculation of the virus will transmit the disease in animals

Antigenically all virus strains are almost the same. They are filterable through Berkfield candles. Inclusion bodies or Negri bodies are found in the cytoplasm of infected nerve cells. Negri bodies do not form when fixed virus is infected. No soluble toxin has been isolated. If exposed to air the virulence of infected brain tissue is repidly lost. Rabies virus is very sensitive to sunlight or artificially produced light (ultraviolet). Suspensions of fixed virus usually becomes inactivated in 4 or 5 days at 37°C. Heat (55°C) will kill it in 15 minutes but cold preserves. Perchloride of mercury and Pot Permanganas destroys readily. Methylene Blue also destroys. Strong acids kill the virus quickly.

To send samples of animal's head for identification of rabid virus, put the dead animal's head in lysol solution for sometime, cover with gunny and break the skull with a hammer. Remove bone and take out brain and put it in 10 per cent formalin solution or in pure methylated spirit or cut a portion of the hippocampus major and put in 50 per cent glycerine in water and then send it to the laboratory. The former is used for sectioning and the latter for smear examination for Negri bodies.

Mode of Transmission :—Transmission of the disease depends on the ability of the virus to reach and to multiply in the salivary glands of a rabid animal. The virus, then, is excreted with the saliva. The animal becomes vicious and generally bites so that the virus is implanted in a fresh wound. Saliva becomes infectious in some cases before the onset of symptoms. There is still some doubt as to whether the virus reaches the central nervous system by way of axons or perineural lymphatics, but the former route appears more likely. The symtomatology and pathology indicate that the virus travels predominantly by way of sensory nerves. The blood stream and lymphatics do not appear to play any significant part in the invasion or propagation of the virus.

Canine madness can only be suspected when (1) the dog after short illness of ten days or less dies or when it shows symptoms of restlessness, fear, eating mud and convulsions, hallucinations, fury, peculiar bark, salivation, blindness and paralysis (2) when a cat attacks unprovoked, it is usually mad. Recrudescense of canine epidemic has been frequently observed. "Carrier" : There is possibility that a symptomless "Carrier" state may develop occasionally in the canine species. These is also possibility of "Carrier" state amongst human beings.

Natural Resistance to Rabies Virus:—Man appears to have some natural resistance to infection with rabies virus. The pathogenicity of the virus for man is altered by passage in certain animals, such as the rabbit. The resistance to infection seems to increase with age. There is no evidence of virus-neutralizing substance in the blood of man or animals, not preceded by vaccination or known exposure to the virus.

Reservoirs-Natural Vectors:—Wolf and related canine species have played a major role in the perpetuation of the disease. Stray and semi-wild dogs have been found responsible for the continuation of the disease. The vampire bat acts as a true "carrier" and is able to perpertuate the disease.

Acquired Immunity:—If fixed virus is inoculated subcutaneously in dogs, infection is found rarely produced and if infections are repeated the animals subsequently become highly resistant. It has been found that the intraperitoneal infections of a large amount of virus produced a high degree of immunity. There appears to be a quantitative relationship between the amount of virus given and the degree of immunity produced. Immunity can be produced by the injection of vaccines prepared from infected brain tissue treated by certain chemical agents so as to render the virus inactive.

Prophylaxis and Control:—Although notifiable in certain provinces, all the suspected cases do not come early for vaccination, which is the only measure of prophylaxis available. Rabies in animals should be a notifiable disease.

The rabies virus has been found to remain in the saliva 5 to 14 days before the animal shows any symptoms. It is therefore sufficient to watch a dog that has bitten a person for 14 days, and if no symptoms of rabies appear in the dog, during this period there is no danger of incurring the disease and the pasteur prophylactic treatment is unnecessary. If the patient is known to have been bitten by a rabid animal and the symptomatology is characteristic, there is no difficulty in making a correct clinical diagnosis.

Control of Rabies:—Due to lack of concerted action in establishing rigid dog control legislation, rabies has continued to be prevalent in many countries till now. When rabies has become established in wild animal species, it has been possible to control the disease by reduction of the species affected. Rigid dog control legislation made possible the eradication of the disease from England. Similar procedures were followed by Sweden Norway, Denmark, Prussia and Switzerland. The following sanitary procedures were enforced.

(1) Imposition of a tax on all dogs.

(2) Seizure and destruction of all 'ownerless and wandering dogs.

(3) Destruction of all dogs with rabies or suspected of being or becoming rabid.

(4) Requirement that all other dogs wear a properly constructed and well fitting muzzle while rabies prevails, and for a period of the longest latency after the last reported case.

(5) Subjection of all imported dogs to a six month's quarantine.

(6) Vaccination of dogs is an useful adjunct to the dog control regulations and might be made compulsory in infected areas.

When rabies become established in wild animals, it is necessary to institute a vigorous trapping and hunting programme.

(7) Proper disposal of human dead bodies especially during epidemics.

Immunization:—Pasteur's prophylactic vaccine for 14 days in daily doses of 5 c.c. is given either to a child or to an adult. The Temple vaccine is widely used now instead of Pasteur's and the dose is 2 c. c. daily. 14 consectuve injections are required for the treatment of the exposed persons.

Criteria for treatment:—Rabies vaccine treatment is to be started immediately when the person has been bitten or scratched under the following conditions.

(1) The animal was apprehended and presented clinical signs of rabies.

(2) The animal was killed and the brain showed positive signs for rabies by microscopical examination.

(3) The animal was killed and although the brain was negative, the animal was suspected of being rabid.

(4) The person was exposed by a stray animal which escaped and where rabies was known to be present in the community.

(5) For persons who have handled animals diagnosed as rabid by clinical or laboratory means, and when fresh abrasions of the skin were contaminated by the saliva of the infected animal.

It must be emphasised that when an animal is apprehended after attacking a person and rabies is suspected, it should not be killed but should be confined under supervision of a veterinarian. If the animal has rabies, normally it will die within 2 to 3 days. It is apparent that the treatment should be begun, if the biting animal though apparently normal at the time of biting, later develops clinical signs of rabies while in quarantine. Treatment may be discontinued, if the biting dog, held in quarantine remains well for ten days.

Clinical symptoms:—The disease is characterized by great excitability, spamodic reflex contractions of the muscles of respiration and deglutition, convulsive seizures and progressive sensory or motor paralysis, The disease invariably is fatal in man. The average incubation period is 42 days with a possible range of from ten days to one year.

Differential Diagnosis:—In some instances it is impossible to obtain a history of exposure to a rabid animal. In such cases should the clinical course be atypical, the differential diagnosis may prove difficult.

(1) *Treatment Paralysis*:—It is a difficult disease to distinguish from rabies. Ascertain whether the patient had any systemic reaction to the vaccine treatment. The excitation phase so characteristic of rabies is absent.

(2) *Hysteria*.—Diagnosis should be considered always as it is encountered frequently. The nature of the convulsive-like seizures should make diagnosis evident.

(3) *Poliomyelitis*.—Both the bulbar and spinal type of this disease may be confused with rabies. The spinal fluid cell count in this is higher than in rabies, and the relative absence of polymorphoneucler cells in rabies.

(4) *Tetanus*.—Incubation period in this is shorter than that of rabies, usually 6 to 14 days and the mind is normal. Trismus of jaw though a very constant symptom is rarely present in rabies. Muscular spasticity is constant and general, while in rabies it is intermittent and restricted to muscles of throat.

Treatment:—Local and general.

Local.—Wounds in areas heavily supplied with sensory organs such as the face and hands are especially dangerous, and more so if the bite has penetrated the muscle tissue. Thorough cleansing with warm water and soap, thereby removing saliva and encouraging bleeding before cantery is applied, should be resorted to and then cauterization by application of strong nitric acid, care being taken not to miss any small superficial abrasions and the margins of the torn skin.

General.—A variety of chemicals have been used in an attempt to cure, such as hyper—immune serum, intravenous administration of fluids, administration of strong sedatives and anaesthetic drugs to stop the convulsions, but nothing has been found effective. Morphine and barbiturates are given subcutaneously or intravenously to relieve the symptoms of rabies.

Rabies vaccine of one type or another is recommended by Public Health authorities throughout the world for the treatment of exposed persons. The remarkably low mortality is to be noted amongst treated persons, and this is an adequate proof for its use, despite the absence of satisfactory data as to the susceptibility of man to rabies and the effect of local treatment alone.

Variety of vaccines is available for treatment of persons exposed to rabies but there is no clear cut evidence that any one is superior in preventing the disease and no significant statistical difference has been observed in the results of the different vaccine.

Live virus vaccines *viz*., Pasteur's dried cord vaccine is still used in India and other countries with good results.

Plague, Its Diagnosis, Prevention and Treatment

BY

Dr. K. T. VERMA, M.O.,

Aliganj, Etah, U. P.

In 1934, when Plague was endemic in this area, I had got an article published on Plague in "*Health and Happiness*." Now it has again taken a firm grip of this area and the neighbouring towns and villages of Farukhabad District. Hence considering the emergency and recent advances in treatment, I have proposed to put before the readers of the *Journal* my experience in the treatment of the disease.

Forms of the disease:—It is endemic and epidemic in various parts of Asia. There are three forms of the disease chiefly: 1. Bubonic. 2. Pneumonic and 3. Septicaemic. The last two are most dangerous. There are two types, abortive and fulminating, the latter is the most fatal and the former somewhat mild. It was the Black Death in England of 1348 and 1668, Now it is not found in Europe. Dr. Ketasto and Yermin both demonstrated the causative organism, Bacillus Pestis, in blood, sputum and the fluid of the bubo of the suffering patients. This organism is bipolar in stain and is not stained by Gram's Method.

Mode of Infection:—This is the disease of rats and is caused by rat flea "Pulex cheopis" which can leap upto 3" only from the surface. Bacillus Pestis is found in the stomach of the flea.

Diagnosis:—This is not very difficult. However the symptoms of the disease are quite peculiar—very high temperature 103° F to 107° F, stammering and difficult speech, great palpitation, staggering gait like an alcoholic, appearance of a bubo in inguinal or axillary area mostly and typhoid like rashes on the skin. In pneumonic type there are symptoms of broncho-pneumonia without alteration in pusle and respiration ratio and haemorrhagic tendency and vomiting of blood. In septicaemic type, extreme prostration and great toxaemia, diarrhoea and melaena in certain cases are present. Abortive type is mild in which there is comparatively less fever and bubo bursts of its own accord. Fulminating type is almost immediately fatal.

Prevention:—The houses should be rat proof if possible. There should be no pit holes for the rats. If they are in existence, they should be trapped and killed in chloroform water, and burnt away. There is another way to kill them by means of baiting through Barmo pills (Barium Carbonate gr. iii wheat flour gr. x). I have got a bitter experience of this method. Often in families the bait pills remain lying and a child in his play unknowingly takes it and dies. Such happenings I have seen in the villages. Besides, the dead rats are not taken out and burnt away, which gives very foul smell causing bad sanitation. They must invariably be burnt away. The walls, floors, and the roofs should be disinfected by Torch Method (by burning "massal".) The rats may be killed in pits which should be closed with earth and the nozzle of the pump of the cynogas be inserted in it and then the pump should be worked up. The cynogas should also be pumped in the closed rooms for disinfection. The lotion of kerosene oil 1 part and 3 parts of soap water emulsion be sprinkled over the floor and the walls upto 3 feet duly. Penestrine lotion is also used for disinfection of rooms and the furniture. During epidemic, inoculation of anti-plague vaccine must be given to produce immunity.

Treatment of plague:—The line of treatment for plague should be based on the following principles:

(1) To support the heart, which is exhausted by over stimulation caused by high degree of toxins produced by the Bacillus Pestis in the blood stream

(2) To check the haemorrages which may set in due to clogging of bacilli in the capillaries, and as it chiefly affects the heart it may bring about its failure.

(3) To maintain the balance of mind which is upset due to over-anxiety of the impending disaster.

(4! To neutralise the toxins and combat the infection.

(5) Symptomatic treatment e.g., Diarrhoea, backache, high temperature etc.

(6) Local treatment of bubos.

Medicaments :—*Heart* : Tr. Digitalis, Digifortis, or Digitol ; Coramine injections ; brandy, Tr. musk, adrenaline chloride, glucose D, etc.

(ii) *Haemorrage* :—Vitamin C. injection (Redoxin (Roche) injection, and tablets per mouth), calcium gluconate and colloidal calcium with ostelin and Vit. D. etc.

(iii) **Balance of mind** :—Ice cap to head during high temperature, complete rest, brandy ; for insomnia and pain, bromides, soneryl etc.

(iv) **Neutralisation of Toxins** :—Lot of water by mouth. Celin 1 c. c. in glucose 10% intravenously and in serious cases saline infusion intravenously. To combat the infection, anti-plague serum, Sulphathiazole (Thiazamide M & B) or Cibazol (Ciba) are given with good results, although they have got no specific action on B. Pestis. They probably check their growth. Similar is the action of Penicillin which is also found useful in such cases if four hourly injections are resorted to.

(v) **Symptomatic treatment** :—Pyrexia is relieved by hydrotheraphy and diaphoretics. For diarrhoea, bismuth Carb. and other bismuth salts or sulphaguinadine are given.

(vi) **Local treatment of Bubos** :—Iodine injection may be given into hard bubos which are not suppurating. Belladonna Plaster application, or poultices like Antiphlogistine give great relief, When the bubo bursts or is incised, Thiazamide powder with proflavin or Cibazol powders are useful as dressings.

CASE NOTES

A Case of Ascariasis Simulating Enteric Fever. Dr. M. Z. CHOWDHURY, L.M.F. *Residential S. A. S., B. A. Rly, Lumding (Assam).*

I was called to see a case, a boy of eight years on 14-1-46 at 10 A.M. Duration of fever was six days. Mepacrine Tab. B.D. was given by the father of the child for 4/5 days but fever did not come down. He passed four roundworms with stool on the previous two days of my visit.

The temperature was found to be 102.6° F. pulse and respiration proportionate to temperature, tongue coated and dry ; no enlargement of liver or spleen ; tumid abdomen and diarrhoea, no restlessness nor toxemic nor delirious. History of grinding of teeth and picking at the nose. Lungs clear, Tonsils normal and heathy.

After Mepacrine treatment, though blood was supposed to be negative, still a smear was taken and it was found negative.

Santonin in divided doses was given followed by saline in moderate doses. The boy had passed twelve round worms on the successive two days.

The fever was as usual of remittent type. He was then treated on the line of treatment for Enteric Fever. There was no time to send the blood for culture. The following tests were done as these are said to be positive during the first week of disease.

(1) Petzetakis' Typhoid Test.
(2) KMNO, Test
(3) Methylene Blue Test.
(4) Diazo Reaction.

Marris Atropine Test though positive during first week was not purposely done.

These were all negative. I mention here these tests as these might be helpful in out of the way places far from Laboratory to be considered along with the clinical symptoms.

On the 14th day of fever Widal Test was done and found negative both microscopical (1 in 80 dilution) and microscopical.

Differential Count :—

Poly. 52%
Lympho 47%
Large mono 1%
Eosinophele Nil.

Eosinophilia is commonly regarded as a certain feature of worm infestation but it is by no means constant (B. E M. P. by Allen).

Stool Examination :—Ova of Ascaris and Trichomonas positive.

Urine Examination :—Reaction acid, a few pus cells found.

On the 16th day of fever, I took Dr. M. M. Mukherjee as a consultant, who was of same opinion with me as regards the diagnosis and line of treatment adopted.

The temperature came down to normal on the 22nd day of fever by lysis.

My heartful thanks are due to Dr. S. B. Sen for laboratory findings, to Dr. M. M. Mukherjee for his kind opinion and to Dr. F. C. Lees, D. M O., and Dr. P. C. Dutta, C. M. O., B. A. Railway, for kind permission for publication.

An Unusual Case of Ascariasis : Dr. S. K. CHAUDHURY, BAGHJAN T. E. *Doom Dooma Post. Upper Assam.*

A girl about 2 years, caste Koudh, who arrived in the Garden on 29th December 40 was admitted to the Estate Hospital on 1st March, 47 for the treatment of ascariasis. On the previous day the child vomitted out 4 roundworms in the lines and 4 more in the hospital on the admission day. On 3rd March some serosanguinous discharge came out of her right ear in the morning. I examined the ear and found the tympainc membrane bulging outwards with a small congested spot medially. In the afternoon the mother of the child noticed a white threadlike thing peeping out from inside the ear and going back very quickly. At this the mother became alarmed and came to me with folded hands to save her child. I again examined the ear which was full of whitish

lischarge. The ear was cleaned with sodii bicarb otion. The tympanic membrane was found penetraed at that congested spot making a small circular penings but no threadlike thing was noticed. So I old the mother that she need not worry and there was nothing in the ear to cause any alarm. But she was not satisfied and requested met to wait for a few minutes with a careful look into the ear. I obliged ner. To my utter surprise I saw threadlike thing suddenly peeping out and retreating as suddenly as it came. I was waiting with a forceps for the second time and when it came out again I tried to catch it but failed because it disappeared very quickly. I caught it as soon as it made its final appearance and pulled it out gently. This was a small round worm. I did not till now come across any similar case and I shall be very glad to hear from the readers of the *Journal* of their experience if any. I do not like to mention anything here about the treatment of this case because there was nothing extra-ordinary.

Some Interesting Cases :—By Dr. S. K. SHRIVASTAVA, *Nagad Post C. I.*

1. **Insanity due to Mepacrine.**

On 10-11-46 I was called to attend a boy aged 10 years with the complaint that for the last 2 days he is down with fever and head-ache.

2. **Previous history** :—Four days before, while he was playing in the field he came to his mother saying he felt cold. The boy got fever with rigors and after 12 hours he got perspiration and fever came down. The boy took his usual meal and out door activities. The next day in the same hour he got fever ; since then the the fever did not come to normal.

3. I examined him and found he had 102° temperature, pulse 120 and respiration 30 per minute. Lungs normal. He was fully conscious, could reply questions rightly. Organs of locomotion normal. Reflexes normal. Bowels loaded. I diagnosed it as malaria. Lower bowels evacuated by glycerine enama. Quinine with bromide given internally. About 20 gr. of quinine was administered within 24 hours. The fever came to normal within 20 hours. The next day 16 gr. of quinine was repeated. Due to shortage of quinine 3 tablets of Mepacrine were given followed by alkaline mixture. The boy was quite all right, In all he took 12 tablets in 5 days. He was taking his usual diet. On the 17th November, 1946, i. e., after a week the father of the boy came and told me that the boy has gone mad. I examined the boy again He had no temperature. He was violent in talk and movement. He was shouting that somebody was beating him. He showed auditory and visual hallucination and delusion ; reflexes were increased. In the intervals he was quite sane ; could recognize his relatives and answer questions rightly. In between he behaved like insane. He could not sleep the first night of the attack, even after bromide medication. The next day, he was not so voilent. He was given Bromide Soneryl Tab. at bed time. Glucose Solution 25% 25 cc I. V. morning and evening He did not take the food. Now the intervals of attack was greater and of less intensity. Gradually the nervious symptoms subsided and with treatment by bromide and glucose, the boy got quite alright within 6 days.

4. In conclusion I could say that the nervous symptoms were due to use of Mepacrine, though he took only 12 tab. in 5 days which produced such symptoms. The dose was not high, but the boy might have had idiosyncrasy for the drug.

5. So we should be very cautious to use this drug (Mepacrine).

Hydrocele with three separate sacs.

A young man of 30 years old got admission to the Hospital on 2-2-47 for radical cure of hydrocele. I examined him under illumination and diagnosed hydrocele on both sides. The shape of the hydrocele on the left side was irregular and elongated with two bands one after another. There was no hernia.

The patient was prepared for operation. The operation was done under chloroform anesthesia. After finishing with the right side, the left side was taken. On making an incision on the lower part, the fluid came out, but the swelling above it was not reduced. The tunica vaginalis was adherent. It was freed. The fluid came out. Still the swelling above it was bulging looking like hernial sack, but no hernial impulse was felt. The swelling was dull and fluctuating thus making sure that it was not hernial swelling. I freed the adhesions and the fluid came out. The sac was cut off round the testis. The testis was put in the scrotal cavity and I closed the wounds with a drainage tube.

What was the cause of formation of three sacs in in one hydrocele ? It was neither tapped before nor was there any previous history of orchitis to cause adhesion.

Cystic Swelling on the side and Dorsum of the tongue.

A female child, 6 months old, came to the Hospital from a village on 4-2-47. The mouth was always kept widely open giving a fearful appearance. The tongue was protruding out with the swelling partly inside the mouth and partly outside. The saliva was dribbling profusely. The baby could hardly swallow milk or suckle her mother's breast. The swelling was not painful and tender. It was a little bluish in colour perhaps due to distension of the mucous membrane of the base of the tongue, with venous congestion on the surface. Duration of the swelling was three months. It gradually increased. I tapped it with trocar and cannula to make sure of its contents—whether cystic or otherwise. A sticky jelly like substance like white of an egg in colour came out. I enlarged the incision and all the content of the cyst evacuated. There was no separate sac of the cyst. I cut off the margins which were enlarged and sutured the wound. On the 7th day the sutures were removed and the wound healed by first intention. The patient was discharged as cured on the 12th February, 1947. The tongne became came normal, The baby could swallow milk quite nicely without any difficulty.

The mucous membrane of the under surface of the tongue is thin and smooth and it contains a great number of follicles of lymphoid tissue forming lymphatic glands and ducts. Some duct being blocked began to accumulate its secretion and gave rise to the formation of this cyst. Secondly congenital cyst may develope from persistent remains of thyroglossal duct.

SELECTED ARTICLES

Dissolution of substance of teeth by Lemon Juice : *Proceedings of the Staff Meetings of the Mayo Clinic, March, 1945.*

Edward C. Stafne, D. D. S., and Stanley A. Lovestedt, D. D. S., Section on Dental Surgery: In recent years, the marked increase in the use of lemon juice has been accompanied by injury to the structure of teeth.

In instances wherein loss of structure is caused by acid solutions, four findings are of more or less common occurrence.

1. Teeth may be hypersensitive to thermal changes and hygroscopic substances. This may be a major complaint and is often the patient's primary reason for seeking the services of the dentist.

2. Often stain and stain lines are absent, which gives one the impression that measures of dental prophylaxis have been applied recently.

3. Defects in enamel produced by action of acid solutions usually have rounded margins while, in contrast, defects produced as a result of mechanical wear only have sharper margins.

4. A finding which probably is of greatest diagnostic value is the presence of fillings which project above the surface of the teeth.

Miller has shown that dental fillings tend to wear away as rapidly as does enamel in the event that the loss is produced by mechanical wear only, whereas when the teeth come in contact with acids, the enamel is worn away more rapidly than are fillings. He also showed that mechanical wear is initiated and greatly accelerated when teeth are subjected to the action of acid solutions.

Etching and decalcification of the substance of teeth, produced by the action of lemons have been noted long since but, until recent years, their occurrence in any appreciable amount was limited to certain peoples and geographic regions. Increased production and wider distribution of lemons and other citrus fruits have led to marked increase in their consumption; now they are available almost at all times. This, no doubt, has brought about a highly beneficial improvement in the diet, for citrus fruits are a relatively cheap, rich and convenient source of vitamin C. However, some habits and methods related to use of citrus fruits apparently have resulted in definite destructive effects on the teeth.

Persons in whom destruction of dental substance, presumably by lemons, has been observed consist mainly of those who have sucked lemons and those who have taken lemon juice in water as an intended therapeutic measure. The practice of sucking lemons can produce marked defects on the labial surfaces of the upper anterior teeth. Fortunately occurrence of such cases is not frequent and, therefore, relatively unimportant. By far the most insidious and prevalent way of taking lemon juice in cases in which destruction is found is the use of interval feedings of the juice in water as an intended therapeutic measure. This solution is taken most frequently immediately on arising in the morning.

Of fifty patients who were using lemon juice as a therapeutic measure and who also showed evidence of dissolution of dental structure, thirty-nine were women and eleven were men, a ratio of approximately 4:1. The patients came from twenty-two states, two Canadian provinces, Mexico and Puerto Rico; this finding suggests that use of lemon juice as a therapeutic measure is widespread. There was also striking uniformity in the manner in which lemon juice was taken; namely, by interval feedings, in water, as has been mentioned. In almost all instances dental examination was incidental to general physical examination. In a few instances the presence of dental defects was a major complaint; these patients were seen primarily because of the dental complaint.

It is probably among persons who are seeking medical service and particularly among those who are suffering from a chronic illness, that the largest number of drinkers of lemon juice may be seen. Use of lemon juice was most common among persons who were suffering from rhematism according to results of the study referred to in the preceding paragraph. The juice also was used for treatment of constipation, to prevent and relieve colds and, occasionally, as a tonic. In some instances it was used as part of a reduction diet; in this event, the juice most often replaced entire meals. In most instances patients were aware of the high vitamin C content of lemons and desired an adequate intake of that vitamin.

In the cases studied the degree and rapidity of decalcification undoubtedly varied from person to person even though the lemon juice was taken in like quantities and under similar conditions. A marked degree of decalcification was observed in the teeth of some individuals who had used lemon juice for a few months only, while in contrast, in other cases the teeth had undergone less decalcification following use of this juice for more than a year. This variation may be due to differences in amount and buffer capacity of saliva.

It seems. therefore, that marked dissolution of dental structure may occur as a result of drinking lemon juice, particularly if the juice is taken daily and at times other than with meals. In a few of the cases studied lemon juice had been prescribed by professional persons; in some it had been taken on advice of non-professional persons; in the majority of cases, however, its use had been begun as a result of reading advertisements which advocated drinking lemon juice. It is a concern of everyone who deals with diet that there be adequate intake of vitamins, including vitamin C. It is obvious, however, that an adequate amount of vitamin C can be had without resorting to improper use of lemon juice. In view of its harmful effects on the teeth its use as a daily drink in any appreciable concentration should be discouraged.

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Diasone in the Treatment of Leprosy: By E. MUIR, (*The Leprosy Review Vol.* 17. No. 3.)

In 1944-45 I had an opportunity of testing the effect of diasone in the treatment of some 83 patients in Trinidad, B. W. Indies. Unfortunately on my leaving Trinidad in February, 1945, I had to discontinue the test, but a preliminary report was published. (Muir, 1944.) In this the opinion was expressed that without doubt diasone is of definite value in the treatment of leprosy, especially in clearing up febrile and inflammatory conditions associated with lepra reaction. The question was raised as to whether diasone has a direct effect in destroying or preventing the growth of the leprosy bacillus, or whether improvement is attributable only to the destruction of accompanying pyogenic organisms which had complicated the majority of cases in the trials. To determine this a few patients in the early stage of the lepromatous type and not yet affected by septic complications, had been included. These had shown improvement but there had not been time to determine whether the treatment would lead to complete elimination of lepra bacilli.

The results obtained in the first trials were considered encouraging and, though it was still too soon to make any definite statement as to the extent to which this drug would be of use, there was reason to believe that a distinct step forward had been made in the treatment of leprosy.

After returning to England I had, through the kindness of the Department of Medicine, Abbott Laboratories, an opportunity of arranging for supplies of diasone to be sent for further trials to two suitable centres in India and one in West Africa, and also of making trials myself in twelve patients in this country. The following brief report gives the details of treatment and the results so far obtained in these twelve patients, most of whom have now been taking diasone for over a year.

In the Trinidad trials the majority received the drug intravenously and some orally, but there was not time to determine which of these methods was preferable. In the present test the oral method has been used alone.

The few patients available for trial in this country did not allow of selection of cases. Of the twelve, ten were fairly advanced lepromatous cases, and two may be described as intermediate, although at the commencement of treatment their bacteriological examinations gave strongly positive results.

Method of Administration

Diasone is described as the di-sodium formaldehyde sulphoxylate derivative of diaminodiphenyl sulphone.

It is supplied as a white powder and is usually made up in ½ gram capsules. Previous clinical observations in tuberculosis have shown that in that disease the most suitable dose is 1 gram per day, although patients have tolerated daily doses of 5-7 grams for periods up to a maximum of 6 weeks. Two grams a day has been found to cause anaemia unless iron, along with liver or yeast, is administered.

Relying on the previous experience referred to, we adopted the plan of giving one capsule on alternate days three times a week, say on Mondays, Wednesdays and Fridays and, provided there are no contra-indications, increased the dose on each of these three days by one capsule every week until 6 capsules three times a week was reached in the sixth week. After this, provided the patient was doing well and there was no reason to the contrary, diasone was given in addition on Tuesdays, Thursdays and Saturdays again beginning with one capsulse on each day and increasing by one capsule each day up to six.

Thus, as is shown in the table, the patient reached the average dose of six capsules (approximately 2 grammes) a day six days a week. This is considered to be the maximum for a patient of 140 lbs. weight, but it may be increased or diminished according to the weight. After the maximum dose is reached each three weeks' period of treatment is followed by a week's rest without diasone.

DOSAGE TABLE

	Number of Capsule.					
Week.	*Mon.*	*Tues.*	*Wed.*	*Thurs.*	*Fri.*	*Sat.*
1 ...	1		1		1	
2 ...	2		2		2	
3 ...	3		3		3	
4 ...	4		4		4	
5 ...	5		5		5	
6 ...	6		6		6	
7 ...	6	1	6	1	6	1
8 ...	6	2	6	2	6	2
9 ...	6	3	6	3	6	3
10 ...	6	4	6	4	6	4
11 ...	6	5	6	5	6	5
12 ...	6	6	6	6	6	6
13 ...	0	0	0	0	0	0
14 ...	6	6	6	6	6	6
15 ...	6	6	6	6	6	6
16 ...	6	6	6	6	6	6
17 ...	0	0	0	0	0	0

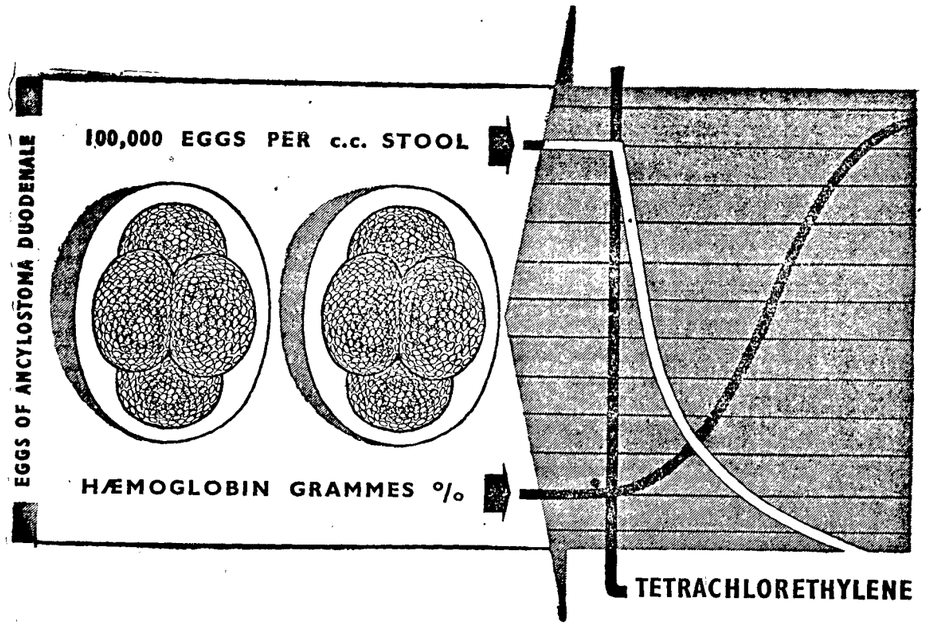
Contra-Indications.

The danger signals or reasons for diminishing or temporarily discontinuing diasone treatment are lepra reaction and anaemia.

1. *Lepra Reaction.* This shows itself by a rise of temperature, by the flaring up of existing clinical lesions or the appearence of new lesions. In the beginning of treatment diasone often has the effect of alleviating this condition where it already exists, and causes healing of ulcers, clearing up inflammatory eye and nose complications.

On the other hand, after the treatment has been begun, a dose, however small, which for the moment is excessive, may provoke reaction, and this is an indication for diminishing or temporarily stopping diasone treatment until the reaction has subsided. Gradually the patient becomes able to tolerate larger doses and signs of reaction become less marked until they disappear entirely.

2. *Anaemia.* In many advancing cases of the lepromatous type the patient suffers from anaemia, especially in the tropics. Before beginning treatment it is well to make a thorough blood examination, with



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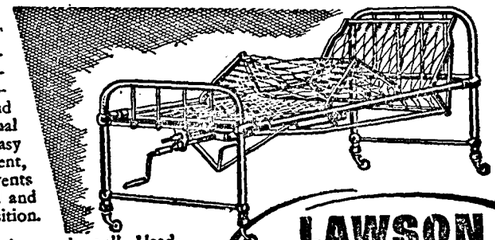
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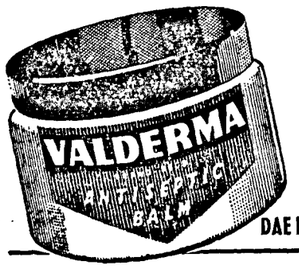
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special attention to the haemoglobin percentage. If this be below 75 per cent the patient should be given full doses of iron for at least a week before diasone treatment begins, and this should be continued along with the diasone till the percentage rises to 80 per cent or more.

Like other sulphone and sulphonamide drugs diasone has a tendency at first to cause or increase anaemia, and it is well to make haemoglobin examinations once a week or fortnight during the early stages of the treatment. If the percentage in spite of iron continues to fall or remains low, then diasone should be stopped or the dose diminished temporarily and iron pushed. Sometimes also liver extract is of marked value.

In most patients in whom there is an initial tendency towards anaemia, this gradually diminishes and, as the general condition improves the haemoglobin percentage rises and remains at a high level and larger doses of diasone are tolerated.

3. Other complications to be watched for are renal and cardiac disease, but in none of the cases treated have those complications given any trouble.

Tolerance.

Apparently the body gradually acquires tolerance to diasone as, once the maximum dose mentioned has been reached it is generally possible to continue indefinitely, giving 12 grammes a week for three weeks a month, without further occurrence of the two adverse signs mentioned above. Instead of flaring up, as the lesions are apt to do at the beginning of treatment, they gradually tend to flatten out and disappear and the haemoglobin percentage, which often inclines to be low in the lepromatous type of leprosy and to become lower at the beginning of treatment, may reach a higher level than the original level once the treatment is well under way. Once this stage has been reached it is possible to continue treatment for an indefinite period with a far less degree of supervision.

There are probably two factors which account for this tolerance. In the literature supplied by Messrs. Abbott Laboratories it is mentioned that when diasone is administered over a period of time the blood levels drop rapidly from what they are initially. "At a dosage level of 1 gram per day, the blood concentration ranges usually between 1.5 and 2 mg. per 100 cc. The blood concentration does not increase in proportion to an increased oral dose. A 100% increase in the daily oral dose will usually produce only a 10% to 20% increase in the diasone blood level. The diasone blood level begins to drop off in the majority of cases after a period of six to eight weeks therapy and continues to drop as the period of therapy extends, until there may be as little as 0.5 mg. or less per 100 cc. of blood " This would explain to a large extent the absence of anaemia and of reactionary signs after the initial period of treatment.

The other factor which might be expected to affect the latter if not the former of these complications is the improvement of general health, the better appetite and ability to take more exercise which commonly follow the initial period of treatment.

It is not claimed that the method of dosage used in this trial is the safest, most economical and most effective. The fact that the blood level does not increase proportionately when the daily dose is increased above 1 gram, and that during six or eight week's treatment the blood level gradually falls till it is only a third or a quarter of the previous level, suggest that there might be an advantage in lengthening the periods both of administration and of rest. If the fall in blood level is due to lowering of the threshold of renal excretion, as suggested by the experimental work of Smith, Emmart and Stohlman (1943), it is important to find out what period of non-administration is necessary to restore the original threshold level. In three of our patients slight reactions followed the resumption of treatment after the period of rest, suggesting that a higher blood level had been reached resulting in this reaction. Careful experiments are called for to work out the safest and most effective dosage.

Sciatic Pain * By H. LOVELL HOFFMAN M.D., M.R.C.P., *Post-graduate Medical Journal, March, 1947.*

There is no need for me to stress the chaotic state of our ideas in the past regarding sciatic pain. The fault lies undoubtedly with those who, from the depths of their armchairs, propounded theories based on inadequate pathological evidence, or succumbed to the almost overwhelming temptation to adopt a simple explanation for all cases. To the latter Walshe has tritely replied in discussing this particular subject, ' Nature is not interested in simplicity.'

Being faced with the task of producing for you some order out of this chaos, it is my aim to steer a course midway between the Scylla of dogmatism and the Charybdis of sheer vagueness. With regard to sciatic pain we need facts, and first I propose to mention briefly those which are incontrovertible.

Proved Causes of Sciatica

It is quite definite that sciatic pain may arise when the nerve or its central connections are affected by a pathological process such as herpes zoster, tabes, new growth or the neuritis of diabetes, alcohol or arsenic; disseminated sclerosis is a very rare cause. It may also be due to disease in the vicinity of the nerve's course or central connections, and the following conditions may be cited as examples. In the meninges, arachnoiditis, syphilis or meningioma. In the vertebral bodies, caries, osteomyelitis, Paget's disease and new growth. In the pelvis, inflammation or new growth either in the bones or viscera, or inflammatory changes in the sacro-iliac joint.

It is also certain that sciatic pain may be produced by herniation of the nucleus pulposus of a lumbar intervertebral disc. The lesion has now been verified at countless operations, and its removal has relieved the symptoms. We also know that sciatica was just as common before the discovery of this condition, and that patients recovered without operation. The inference to be drawn from this fact is that healing or reduction of the lesion may in some cases occur without surgical intervention.

* A Postgraduate lecture delivered at the Royal National Hospital for Rheumatic Diseases, August, 1946.

These are the causes of sciatic pain of which we have no doubt. We must now consider other possible causes based on less certain pathological grounds.

Less Certain Causes of Sciatica

Sciatic Neuritis or Interstitial Neuritis

I have already mentioned that this may occur when due to diabetes, alcohol, or arsenic. We know also that interstitial neuritis of other nerves is not uncommon, and examples such as occipital or supra-orbital neuritis, and brachial neuritis may be mentioned. These conditions may arise, like other rheumatic manifestations, after exposure to damp or cold, and be part of what we have termed a local or general ' fibrositis ' although the pathological basis of this lesion is a rather vague one. Although I feel sure that a true brachial neuritis or neuralgia of this nature does exist, many cases of pain in the arm with definite root signs, have recently been proved to be caused by a cervical disc lesion, which need not necessarily cause signs of cord compression. Our ideas regarding the symptom are therefore falling more into line with our conception of sciatica. Spurling and Scoville (1944) ; Elliott and Kremer (1945).

It has been argued that an inflamed sciatic nerve has rarely been seen and examined; naturally there are few opportunities for this. One case was described by Denny Brown (1933) in a woman who died after oxygen had been therapeutically injected into the thigh. The author found exudate under the perineurium of the individual nerve fibres, but certain other changes which he discovered, may have been due to the oxygen injection.

More recently Holmes and Sworn (1946) have found evidence of what was termed ' radiculitis ' at operation. This consisted either of swelling of a nerve root, or adhesions around it, for which they were unable to find a mechanical cause.

The general impression, with which I personally concur, is that sciatic ' neuritis ' or radiculitis does exist, but is rare. It was responsible for orly 3 per cent. of a series of cases collected by Jackson in 1943 (*vide infra*).

Referred Sciatica and the Role of Fibrositis

Kellgren produced pain referred to the corresponding root distribution by injecting an irritant substance into the interspinous ligaments. It is certain that sciatic pain can be referred from disease of the sacro-iliac joint, as in early ankylosing spondylitis, or from osteoarthritis of the hip. Steindler (1940) states that similar pain may be referred from areas of trauma or ' fibrositis ' in the back and gluteal muscles, which are in the territory of the posterior primary divisions of the spinal nerves, the anterior primary divisions of which go to form the sciatic trunk. He further states that relief is obtained by injecting novocaine into these myalgic areas. Elliott (1944), however, has pointed out that similar tender areas are found in the upper gluteal region of cases with undoubted disc lesions, and I have confirmed this observation on several occasions. By electromyographic study of these spots he has found spontaneous motor activity in the muscle, and considers that they are due to involuntary spasm of small groups of muscle fibres, caused by irritation of the nerve root more centrally. He repeated Kellgren's experiment and in some cases found continuous motor discharge from muscles in the area of referred pain. He therefore suggests that localized spasm can be induced through a reflex path which involves the anterior horn cells, and that the source of excitation may be in, or outside the nerve root. He has recorded similar motor activity in the so-called fibrositis of the shoulder girdle associated with cervical osteoarthritis, and in the extensor muscles of the arm in brachial neuritis with or without root signs.

This work is of great interest and importance suggesting a new conception not only of referred pain, but also of that mysterious condition ' fibrositis.' As regards the latter, it is fascinating to postulate a vicious circle, initiated perhaps, by cold or minor trauma, producing muscle spasm and pain. By reflex action through the cord, this pain may produce a motor impulse causing further muscle spasm in the affected segment, and so on. Such a reflex process could explain the sudden onset of fibrositis, so unlike an inflammation, and our treatment at once becomes rational, breaking the vicious circle at various points. Heat and immobilization tend to reduce muscle spasm, and novocaine injection relieves pain. Later, massage and manipulation will further free the muscle fibres and encourage them to resume their normal activity. In a recent article which, *inter alia* describes myalgic areas secondary to visceral disease, Kelly (1946) favours a similar hypothesis, and suggests that ' . . . nervous reflexes are instrumental in the causation of fibrositic lesions in general. '

It is not my intention to theorize further regarding the nature of fibrositis, in the absence of more definite pathological proof. It should be remembered that gout, gonorrhoea and focal sepsis may play a part in its causation. The condition has been said to produce sciatic pain in two ways. either by reference from remote areas, or by direct spread to the nerve itself. From what has already been stated it seems reasonable to assume that referred sciatica may be so caused, but the conception of fibrositis spreading directly to the nerve is more difficult to accept in the light of new theories.

The Role of Lumbar Osteoarthritis.

Harris (1933) and Putti (1927) describe cases where the nerve roots are compressed at the foramina by arthritis of the intervertebral joints. A spine, however, may bristle with osteophytes and yet produce no symptoms; further, in advanced ankylosing spondylitis sciatic pain is rare. Burt (1933) explained this fact by pointing out that the latter condition is a sclerosing arthritis, without effusion, which rapidly immobilizes the spine. It is probable that certain cases of sciatica are due to vertebral osteoarthritis, especially in older subjects, and that cold, damp and trauma play a part in initiating the symptoms; but it is generally agreed that the soft tissue changes of the arthritis, not the bony ones, are responsible for the pain. Great care is necessary in making this diagnosis, as radiological signs of spinal osteoarthritis are common in cases with proved disc lesions.

The following table is reproduced from an article by Jackson (1943). He states that, of the doubtful cases, seven were probably due to disc lesions, and

the series gives a good idea of the relative frequency of the causes of sciatica in Service personnel.

Diagnosis.	Number
Doubtful	21
Fibrositis (local)	20
Ruptured intervertebral disc ...	18
Hysteria	10
Fibrositis and neurosis ...	8
Congenital bony abnormality ...	4
Fibrositis (generalized) ...	3
Sciatic neuritis	3
Malingering	2
Sacro-iliac strain	2
Lumbo-sacrao strain	2
Spinal osteo-arthritis	1
Bony infection	1
Neoplasm of cauda equina ...	1
Polyradiculitis	1
Secondary carcinoma	1
Disseminated sclerosis	1
Spastic paraplegia (? aetiology) ...	1
	100

Sciatica Pain due to Protruded Intervertebral Disc.

The intervertebral disc consists of the annulus fibrosus which is weaker posteriorly than anteriorly, a cartillaginous plate above and below, and the nucleus pulposus, which lies slightly more to the posterior part of the disc. As a result of trauma and degenerative changes, the annulus fibrosus may rupture partially, and the nucleus pulposis will herniate either in certain postures only, or permanently. If the annulus ruptures completely, the nucleus prolapses, and part or all of it will come to lie under the posterior longitudinal ligament. Owing to the position of the nucleus in the posterior part of the disc, and the relative weakness of the posterior part of the annulus, these protrusions tend to occur posteriorly, the nucleus being squeezed like a pea out of a pod when the spine is in flexion. Compression of a nerve root may result. The fifth lumbar root is most commonly compressed by the fourth disc, the first sacral root by the fifth disc and so on.

The clinical history and physical signs of the syndrome vary from case to case, and if certain possibilities are borne in mind it is easy to see how these variations may occur. I have already mentioned that the nucleus may herniate temporarily and only in certain postures. This accounts for the intermittent character of the symptoms in some cases. The figure shows the possible anatomical relationship of the herniation to the nerve root. It is easy to see that the nerve may slip off the herniation; this explains the relief of symptoms, which is sometimes brought about by spinal manipulation or epidural injection of saline and novocaine, the root being 'floated off' the projection. Further, it may be that the three possible positions account for the variability of the scoliosis in these cases. Scoliosis may be either towards the affected side, away from it, or alternating. In many cases adhesions form between the nerve and the protrusion, in which case it would be reasonable to expect more intractable symptoms. Flexion of the spine or straight leg raising puts the theca on the stretch and will tend to aggravate pain by stretching the affected nerve root over the projection. Flexion, however, opens up the intervertebral foramina and may relieve pressure on an oedematous nerve root. Extension of the spine has precisely the opposite effect, and may aggravate pain by causing increased pressure on the root at the intervertebral foramen. Capener (1944).

Clinical History.

A history of frank trauma initiating the symptoms was given by 23 per cent. of Macey's cases (1940). Broadford and Spurling (1941) give the figure as 50 per cent. The trauma may be an actual fall on the back, a strain caused by lifting a heavy weight with the spine flexed, a false swing at golf, or similar sudden movement. There may be no remembered history of injury, or the patient's occupation may suggest that he has suffered repeated small strains over a prolonged period. Pregnancy and labour are sometimes responsible for the lesion. Usually the first symptom is a fairly sudden onset of backache, and it is fair to assume that this is due to rupture of the annulus fibrosus. Sciatic pain may develop at the same time or be delayed for days or months, occurring, most probably, when actual protrusion of the nucleus takes place and compresses a nerve root. The distribution of the pain varies according to which root is compressed, and the areas affected may be summarized thus, Connell (1946):—

L.4 Anterior crural to medial malleolus.

L.5 Posterior crural to dorsum and medial margin of foot.

S. I Posterior crural to sole and lateral margin of foot.

The pain is usually relieved only when the patient lies absolutely still. It is aggravated by movement and by sneezing or coughing. This aggravation is supposed to be due to a rise in cerebrospinal fluid tension with consequent pressure on the nerve root, and has been considered to be a diagnostic feature of root involvement. I cannot believe that this is true. On coughing, all the trunk and buttock muscles contract, and I am sure that it is contraction of the latter, including the pyriformis in close relation to the sciatic nerve, which produces the exacerbation of pain. Paraesthesiae may be experienced in the same distribution as the pain, and consist of tingling, numbness, pins and needles or a burning sensation.

Physical Signs.

These are orthopaedic and neurological, both being of importance in the recognition and localization of the lesion.

Orthopaedic. The normal lumbar lordosis may be lost or diminished. Sometimes a slight kyphosis is encountered in the lumbar region. Scoliosis is common, usually to the side of the lesion, but may be away from it, or even vary from time to time in the same patient. Sometimes the scoliosis is not present when standing erect, but becomes evident only when an attempt is made to flex the spine. Movements of the lumbar region are limited, especially flexion, which nearly always increases the pain. An important sign is the presence of tenderness, either in the mid line over the affected interspace, or just lateral to it, on the side of the lesion. This tenderness is best elicited by firm pressure with the thumb. If, in addition to local tenderness, there is an exacerbation of pain in the corresponding dermatome, the evidence is strongly in favour of root compression by a disc lesion, Little (1946).

Neurological. There may be slight wasting of the buttock, posterior, thigh, or calf muscles on the affected side, but this is not usually very marked. Muscle weakness is most commonly found in the dorsiflexors of the ankle, but may be present in any of the muscles supplied by the affected roots. Sometimes the only weakness discovered is in dorsiflexion of the great toe and this sign should always be sought in suspected cases of disc protrusion. Sensory loss is not always present. It is usually slight in degree, consisting of blunting to pin prick or loss of sense of light touch. In my experience it rarely involves the complete dermatome as illustrated in the text books. This is because there is considerable overlap and variation of the skin areas supplied by the spinal roots. Thus in a lesion of the fifth lumbar root, loss of sensation will occur in the area of skin supplied solely by this root. The picture is further complicated by the fact that two nerve roots may be involved by a single disc protrusion, Spurling and Grantham (1940). Moreover the lumbo-sacral plexus may be pre-or post-fixed, and it will thus be seen that a reliable localization of the disc lesion is not always possible from consideration of the sensory signs alone. The sciatic nerve is often tender at its exit from the pelvis and in the posterior thigh. Other tender areas may be found in the gluteal region, the significance of which has already been discussed. Straight leg raising, or extension of the knee with the hip flexed to a right angle (Lasegue's sign) may be limited by pain on the affected side. If these manipulations are stopped just short of producing pain, neck flexion or dorsiflexion of the ankle may cause it to apper. Neck flexion carried out in this way acts by stretching the affected nerve root or the theca, and if pain results, it is good evidence that a root lesion exists. Lasegue's sign itself, on the other hand, is often positive in cases of referred sciatica, and it seems reasonable to assume that this may be due, in part at least, to stretching of the spastic hamstring muscles. Naffziger's test for root involvement consists of bilateral jugular compression, and is positive when pain or paraesthesia result in the affected area. The CSF pressure is raised, and further tension results in the compressed nerve root. If positive, the sign is of considerable diagnostic value.

In lesions of the fourth lumbar root the knee jerk will tend to be diminished or absent; with a lesion of the fifth lumbar root the ankle jerk may be diminished or normal, while if the first sacral root is involved the ankle jerk is usually lost or at least diminished. As in the sensory supply of the limb, there is considerable overlap in the roots subserving the reflexes, and individual variations are responsible for inconstancy both of reflex and sensory signs. Occasionally a disc protrusion is so large that the cauda equina is compressed, in which case will be signs as of a tumour in this region, with bladder disturbance and anaesthesia in the saddle area.

Special Investigations

CSF. This may show a raised protein, especially if lumbar puncture is performed below the level of the lesion, *e.g.* in the L. 5-S.I interspace. As the nuclear protrusion is relatively small, complete spinal block with a positive Queckenstedt's test and From's syndrome seldom occurs, but slight rise in protein up to 60 mgms, per cent. is a fairly common finding. The reversed Queckenstedt test is carried out with a manometer attached to a needle in the lumbar theca, while saline is injected into the epidural space at the sacral hiatus. If the pressure fails to rise in the manometer, a block may be assumed to exist between the two needles.

X ray. Straight X-rays sometimes show narrowing of the intervertebral space corresponding to the affected disc, but this is not usual. Development anomalies of the lumbosacral region are sometimes seen in cases of disc protrusion; for example, there may be sacralization of the fifth lumbar vertebra, unilateral alteration of the plane of the articular facets, or spondilolithesis. These need not necessarily be the direct cause of sciatic pain, as has previously been supposed. It seems more likely that, by upsetting the spinal mechanics, they can predispose to degeneration of the annulus, and consequent nuclear protrusion. It is important to realize that the lumbar spine is an extremely complicated system of joints, liable to all the diseases and insults which may affect the other joints of the body, and that many different signs and systems may arise therefrom. It is also important to view disc lesions in their proper perspective The disc is merely a part of the joint, comparable to the fibro-certillage of other joints; but it is also the focal point through which abnormalities of the spinal mechanics will most frequently produce actual nerve root compression, and so give rise to sciatica.

Myodil is now being used for myelography in place of lipiadol. It is a stable compound, causing little irritation and is slowly absorbed by the spinal canal. It is of low viscosity and can therefore be removed through a lumbar puncture needle. I have no experience of myelography in disc lesions; the technique and positioning is complicated and time consuming, but many consider that it is of great value in these cases. Personally I agree with those who hold that a disc lesion can be diagnosed and located on clinical grounds alone.

Differential Diagnosis

Sciatic Neuritis. It is almost impossible to differentiate with certainty between this condition and a disc lesion. In neuritis one is more likely to see signs of involvement of the whole nerve than of its individual roots. Walshe (1946) states that single attacks of acute onset and relatively short duration are more likely to be due to this cause.

Root Compression from Neoplasm. Here the signs are more insidious in onset and steady in progression. Weakness, wasting, and sensory loss are always more marked and bladder disturbance more common. If the growth is malignant, there are likely to be signs of cachexia.

Referred Sciatica. In referred pain there will be no signs of actual nerve involvement; thus sensory loss, marked weaknes or wasting, and absent tendon reflexes will not be found. The pain of root compression is always felt in the territory of that

root, whereas referred pain is far more diffuse and vague in its distribution. Pain referred from osteoarthritis of the hip tends to radiate to the anterior part of the thigh, there will be limitation of movement of the joint, percussion of the heel may cause pain. X-rays of the pelvis should always be examined carefully for lesions of the sacroiliac joint such as tuberculosis or early ankylosing spondylitis. which are important causes of referred sciatica.

Hysteria. Although sciatic pain of purely hysterical origin is rare, it is extremely common to find a hysterical prolongation of a previous organic sciatica. Such cases are difficult to assess because there may be residual neurological signs as a legacy of the antecedent attack. It is most important in all such cases to look for positive signs of hysteria rather than for negative signs of organic disease, and to seek possible escapist motives, and unsettled compensation claims. These patients may show an exaggerated or even fantastic limp. They will, with great show of emotion, resist all movements of the limb, irrespective of those which should actually cause pain. Areas of anaesthesia may be typically hysterical, involving the patient's conception of a limb segment and bearing no relation to nerve or root distribution; such areas, moreover, may easily be suggested to the patient. Occasionally it will be found that bending forward from the erect posture or straight leg raising is bitterly resisted, as the patient has learnt from previous examinations that this should cause pain. Yet he may be induced, without complaint, to bend forward and touch his toes while sitting on a couch, showing that the movements, which are essentially the same in each case, are really not painful at all.

Treatment

In all cases of sciatica, unless there are sure signs of cord or cauda equina pressure, then conservative treatment should first be tried. Rest in bed is the first essential and should be maintained for four to to six weeks if necessary. A pillow under the affected knee may give relief, or the leg may be immobilized with sandbags or a long Liston splint; weight extension is often useful. During this period local heat in the form of hot water bottles, electric pads, radiant heat and mud packs may be employed. Analgesic drugs are usually essential in the early stages, and aspirin, phenacetin, veganin, or sonalgin may be used. In some cases, however, only morphia will give relief. If, at the end of this time, pain is relieved, massage and exercises to the spine are carried out to correct faulty posture which may have been responsible for weakening of the annulus and consequent disc protrusion; these may, with advantage, be carried out in a hot pool.

If rest is not successful, it is the practice of our orthopaedic department, under Mr. John Bastow, to give an epidural injection of 120 c.c.s. of half per cent. procaine in saline under pentothal anaesthesia, followed by gentle rotatary manipulation of the spine, and straight leg raising. A plaster corset is then applied which is worn for three months. At the end of this period, massage and exercises are carried out as above. Should these measures not give relief, and other signs point to the presence of a disc lesion, laminectomy, with removal of the prolapsed nucleus pulposus, is considered.

The Place of Caesarean Section in Modern Obstetrics:—By JOSEPHINE BARNES, M.A., D.M., M.R.C.P., F.R.C.S., M.R.C.O.G., *Post-graduate Medical Journal, March, 1947.*

One of the most striking developments in modern obstetrics has been the immense increase in the number of women delivered by Caesarean section. Two hundred years ago the Caesarean operation was regarded as the last resort in a desperate emergency when delivery was possible by no other means. The mortality was exceedingly high—in fact recovery from the operation was considered very remarkable. Smellie (eighth posthumous edition) wrote concerning the operation that it might be occasionally indicated 'because the mother and child have no other chance to be saved, and it is better to have recourse to an operation which has sometimes succeeded than to leave them both to inevitable death.'

Today the position is very different. It has become necessary for eminent obstetricians to warn their colleagues against the abuse of an operation which, thanks to the development of anaesthesia of aseptic and antiseptic technique, and to a lesser extent of chemotherapeutic methods has become, in some hands, a means of avoiding even the slightest difficulty in labour. These warnings are timely since no other procedure is more open to abuse. No high degree of operative skill is needed, certainly not of the classical operation, but only wide obstetrical-experience can give the judgment needed to decide when delivey by the natural passages is likely to prove sufficiently dangerous to mother or child that operative delivery is to be preferred.

The Advantages of Caesarean Section

It must not be assumed that because the operation of Caesarean is so easily open to abuse that its wider employment is not, on the whole, a great advance in midwifery. The advantage of reasonably safe abdominal delivery in cases such as those of severely contracted pelvis where natural delivery would be hazardous, if not impossible, are self-evident. The advantages of abdominal delivery may be summed up under two main headings.

Firstly, it avoids the danger of delivery by the vagina and there are many circumstances, as will be seen, where it is inadvisable even to attempt such delivery, while in other cases the course of labour may be seen to be so unfavourable that it seems unwise to allow it to proceed further. Secondly, Caesarean section offers a rapid method of terminating pregnancy and may thus be considered as an alternative to induction of labour. The methods of induction in current use, admirable though they are in favourable cases, are all very uncertain in their effect, particularly where the pregnancy is not near term and until some new and more sure means is found, possibly by the endocrinologists, of ensuring the effect of induction. Caesarean section is to be preferred in many cases where a condition affecting mother or child indicates immediate termination of pregnancy.

Here a point of great difficulty often arises, to what extent is it right to submit the mother to Caesarean section in the interest of the child? In many cases the issue is in no doubt, the risk to the child is great and there is in addition some risk to the mother if spontaneous delivery is to be attempted. It does seem, however, as though a gradual revolution is taking place in modern obstetric practice and that the value of the child is assuming greater importance even in relation to the safety of the mother. Several factors are contributing to a change in attitude. Later marriage, postponement of childbearing and the tendency to smaller families all tend to increase the value of the child to its parents. It may be argued that this change of attitude on the part of the parents should not influence the judgment of the obstetrician, but there are occasions when it is realized that the loss of the child will devastate the lives of its parents to such an extent, and that the chances of the mother bearing further children is slight, on which may be justified to submit the mother to a slightly increased risk.

The Disadvantages of Caesarean Section

The most obvious disadvantage of Caesarean section is the increased risk to the mother. Several series of 100 or more cases without a maternal death have been published, but it must be remembered that the average maternal mortality from Caesarean section is not, in the best hands, more than one or two per cent., and that therefore a very large series of cases, probably more than a single operator could or should perform in a lifetime, is required to obtain statistical comparison with the results of spontaneous labour. When it comes to the graver obstetrical complications as, for example, the major degrees of placenta praevia, the maternal mortality from Caesarean section compares favourably with that from other methods of treatment.

Apart from the increased maternal mortality. Caesarean section has other disadvantages to the mother. Apart from obvious disabilities which may arise out of complications after the operation, recovery after childbirth is definitely delayed and patients may not fully recover for many months. The patient has the strain of recovering from a major abdominal operation and is at the same time plunged into the arduous routine involved in the care of the infant.

The prognosis for future childbearing depends on many factors. It is unlikely that Caesarean section leads to any diminution in fertility. In a subsequent pregnancy, the chief risk is of rupture of the uterine scar. This risk will depend on the type of operation, being many times higher after classical section than after the lower segment operation. It will depend also on the presence or absence of post-operative infection and to some extent on the indication for which the operation was performed, clearly in a case of contracted pelvis, the risk of rupture will be greater than if the pelvis is normal. But few will now agree with the dictum 'once a Caesarean always Caesarean.' In a recent paper from the United States a large number of women who had lower segment Caesarean section were followed through a subsequent pregnancy and labour-like normal primigravidae, and that in the absence of any recurring cause the risk to mother or child was not affected by the previous operation. In spite of these reassuring figures, the conduct of labour in a patient who has undergone abdominal section is likely to be more anxious than in one who has already had a delivery by the natural passages.

Does Caesarean section offer greater safety to the foetus? In theory it should do so, but in practice it is found that there is a minimal foetal mortality even in the best hands and many obstetricians of experience believe that the foetus gains something from normal labour. A great deal depends, of course, on the condition necessitating section, on the skill of the operator and on the anaesthetic. With the premature baby, foetal mortality is high, but here it is probably because the infants are premature rather than from any effect of the operation, though a premature infant is naturally more susceptible to the effects of inhalation anesthesia administered to the mother.

One of the worst tragedies in obstetrics is to perform a Caesarean section perhaps for the sake of the child and then to find that the infant is seriously deformed. The particular deformity likely to cause such an error to be made is hydrocephalus. Before performing Caesarean section in a case of disproportion the possibility of an abnormal foetus should always be borne in mind and every possible step taken to exclude this.

In summing up the general remarks on the place of Caesarean section in modern obstetrics one may say that the enormous increase in the performance of the operation has, on the whole, been of benefit to mother and child, that Caesarean section is now being performed more often in the interest of the child, that an unnecessary Caesarean is a major error of obstetrical judgment and it is one which may lead to tragedy or may prejudice the chances of the mother in future pregnancies.

Indications for Caesarean Section.

It is usual to divide the indications for Caesarean section into relative and absolute. Absolute indications are a contracted pelvis with, in this country, a true conjugate of less than 3½ in., and a pelvic tumour that is causing insuperable obstruction to delivery. Relative indications now include a wide variety of conditions, and the decision for or against section often depends on a number of considerations including the age of the mother, her previous obstetrical history, and period of sterility and the severity of the condition for which section is contemplated. The primigravida over 40 years of age needs special consideration since it is known that such patients are liable to complications of all kinds, that the incidence of toxaemia is high, and that instrumental delivery is often necessary. Such a patient may have little chance of bearing more children, and though it is not suggested that Caesarean section should always be performed, any relatively slight abnormality, such as a high head or uterine inertia should lead the obstetrician to favour operation rather than risk perhaps a long labour with a difficult delivery and even a still-born child at the end of it.

Of the many relative indications for Caesarean section, three groups merit special consideration:—contracted pelvis, antepartum haemorrhage and toxaemia of late pregnancy.

Caesarean Section for Contracted Pelvis.

The treatment of contracted pelvis will be dealt with more fully in a subsequent article on the subject of difficult labour. The modern position with regard

to contracted pelvis seems to be that most obstetricians in this country agree that with a true conjugate of less than 3½ in. delivery of a normal infant per vagina is unlikely, or may be fraught with great difficulty. In such cases elective Caesarean section a week or so before term is indicated. For the case where the conjugate exceeds 3½ in. but is less than 4½ in. the modern tendency is to choose trial of labour for the young primigravida, provided always that the vertex presents. In elderly primigravida and in cases of breech presentation where prophylactic external version has failed, Caesarean section is to be deferred. It is important to emphasize the value of X-ray pelvimetry in cases where the size or shape of the pelvis is in doubt.

Caesarean Section for Antepartum Haemorrhage.

It is now generally recognized that antepartum haemorrhage, however slight, should be regarded as one of the gravest of obstetrical emergencies. When haemorrhage, however slight, occurs after the 28th week of pregnancy, the patient should be immediately removed to an institution with facilities for immediate Caesarean section and blood transfusion, and for such other methods of treatment as may be required. The cervix and vagina are inspected with a sterile speculum to exclude any extra-placental cause for bleeding. If none is found, it is our practice to do nothing further for the patient, except to keep her under observation *in hospital* until term. The indication to act is severe haemorrhage and if this occurs the patient is examined *per vagina* in an operating theatre with preparations for Caesarean section and other forms of treatment. If a placenta praevia is found, Caesarean section should be performed immediately in all cases where the placenta covers the internal or is within easy reach of it. It may also be preferred in an elderly primigravida with a more minor degree of placenta praevia. We cannot agree with the practice of performing Caesarean section in all cases of antepartum haemorrhage, without first attempting to determine the cause. Interference, including vaginal examination is contraindicated in cases where the haemorrhage is only slight, and the examination may provoke severe bleeding or cause the onset of premature labour, to say nothing of the risk of introducing infection. A minor degree of placenta praevia can often be successfully treated by the more conservative method of rupturing the membranes, but in the major degrees Caesarean section offers the best chance for both mother and child. From the opinions expressed at a recent meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, it is clear that modern obstetric opinion has swung strongly in favour of Caesarean section for placenta praevia, combined with expectant treatment for the initial haemorrhage to give the child the chance of reaching sufficient maturity for survival.

In accidental antepartum haemorrhage, Caesarean section may occasionally be indicated. It is the best treatment for the unusual case of severe external haemorrhage with a living baby and it may be indicated in the rare cases of concealed haemorrhage which do not respond to conservative treatment. The majority of these cases, however, are best treated by other means.

Caesarean Section for Toxaemia of Late Pregnancy.

In cases of severe pre-eclamptic toxaemia there are three main dangers, there may be eclampsia, the child may die *in utero* or accidental haemorrhage may occur. Most cases can be treated expectantly but in those cases where there is deterioration in spite of such treatment, with rising blood pressure and increase in albuminuria, termination of pregnancy may be desirable. In many cases, especially of course in the elderly primigravida, Caesarean section may be preferred to induction, and particularly in cases where there is sudden deterioration. The operation is a rapid and certain way of terminating pregnancy, whereas induction, especially when the pregnancy is not at term, is often uncertain and some time may elapse before delivery. Section should be deferred if possible until the end of the 37th week to give the child the best chance of survival. Similarly in the preeclamptic state section may be performed after a preliminary brief period of medical treatment including sedatives, starvation and vene-section. Eclampsia occurring before labour is generally treated expectantly by a modification of the Stroganoff method, but if after the convulsions have been controlled, the foetus *in utero* is followed by marked improvement in maternal symptoms and signs, these cases can usually be left to deliver themselves.

Caesarean section may also be performed in two other varieties of toxaemia of late pregnancy, hypertensive toxaemia (chronic nephrits in pregnancy), where there is great liability for the foetus to die *in utero* during the last month of pregnancy. Unless urgent symptoms appear it is advisable to wait until the end of the 37th week as these mothers tend to have small infants.

It is not suggested that Caesarean section is to be considered in any way as a routine procedure for cases of toxaemia of late pregnancy. As with other indications for section, the needs of each particular case needs to be carefully weighed before the decision.

Miscellaneous Indications for Caesarean Section.

It is not proposed to give a list of all the many and varied conditions for which Caesarean section may on occasion be indicated but rather to indicate certain fairly common conditions which are often best dealt with by this means.

The presence of fibroids in the pregnant uterus is often considered to be an indication for section, but it is doubtful whether this should be a general rule. A fibroid impacted in the pelvis and obstructing labour should be dealt with by abdominal section, but this is a relatively rare finding and many patients even with large fibromata deliver themselves spontaneously. The chief troubles caused by fibroids are malpresentation and uterine inertia. Many cases can be given a short trial of labour, which can be terminated by abdominal section if all is not going well, particularly if the membranes rupture prematurely or if inertia appears. Caesarean section seems to be performed too readily for fibroids.

Persistent malpresentaion may indicate Caesarean section, especially in a primigravida, and provided there is no evidence of foetal abnormality. This applies to cases of breech presentation where there is



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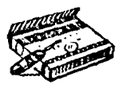
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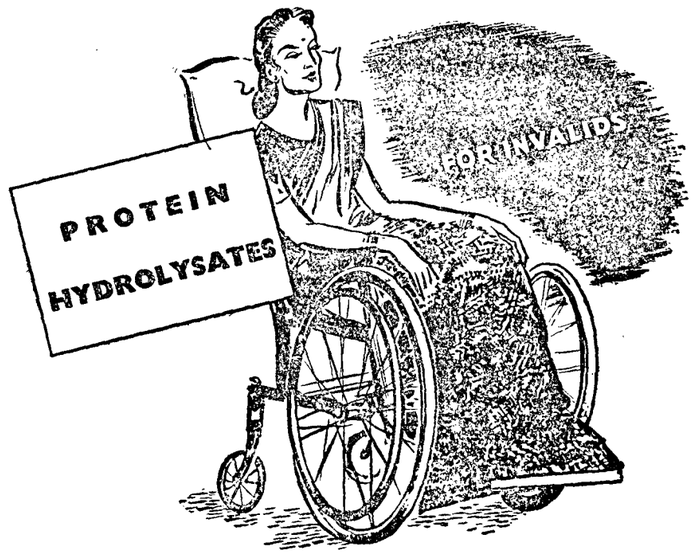
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some complication such as even a slight degree of pelvic contraction. Prolapse of the cord occurring early in labour may be another indication, provided the foetus is alive. Attempts to replace the cord and keep it in position are often unsuccessful, and the manipulations necessary may tend to lead to uterine infection.

In conditions where death of the foetus *in utero* tends to occur in the later weeks of pregnancy, Caesarean section may be performed in the interest of the child. This has already been mentioned in relation to toxaemia of late pregnancy. Maternal diabetes is considered by some to be such an indication, though in a multipara induction of premature labour may be preferred. Habitual death of the foetus *in utero*, an obscure and not common condition may also indicate section. It is probable that some cases of foetal erythroblastosis may be saved by section, provided the condition has not progressed too far before the child is viable. In a reheus negative mother samples of maternal blood should be tested regularly for antibodies and if these appear or are increasing, operation may be performed to remove the child; it is viable from the unfavourable environment. Facilities should be available for transfusing the child with rehsus negative blood if required. It is difficult to be dogmatic about a condition concerning which knowledge is accumulating almost daily and a few years should see the position greatly clarified. In the light of present knowledge though it does seem that timely intervention may save some infants that would otherwise be lost.

Technique

Modern obstetric opinion is tending to favour the lower segment operation for most cases where abdominal section is indicated. This procedure has many advantages. There is generally less haemorrhage, less risk of general peritonitis, a smoother convalescence and, above all, a much diminished risk of rupture of the uterine scar in a subsequent pregnancy and labour than with the classical operation. For the infected case, the lower segment operation gives a much lower maternal mortality and morbidity rate. In these cases some operators now prefer the extraperitoneal operation, avoiding entirely opening the peritoneal cavity. The technique of this operation is more difficult than that of the intraperitoneal operations, but excellent results are claimed from its use.

The question of anaesthesia for Caesarean section is one which raises much controversy. In this country, local analgesia, at least until the baby is born has many protagonists. It has many advantages for both mother and child, haemorrhage is usually slight and the condition of the infant excellent. It seems especially advantageous for the premature infant which is very susceptible to inhalation anaesthesia given to the mother. Spinal, caudal and the various types of inhalation anaesthesia all have their supporters and opponents, and a great deal will depend on conditions and on the skill and experience of the operator and the anaesthetist.

Conclusions

In this article an attempt has been made to survey the place of Caesarean section in modern obstetrics and to indicate the types of cases where the operation is advantageous and where its performance represents a real advance on older methods of treatment. It must end with a futher warning against abuse of the operation which is so easily decided upon, so easily performed and yet which may, on occasion, lead to unexpected tragedy. Truly the skile lies not in the performance of the operation, but in deciding when it is to be performed.

ABSTRACTS

Simple Local Treatment for Throat Infections.—Results obtained from use of penicillin and lozenges sulphonamide chewing wafers, prepared according to new formulae, have been so strikingly effective that it is believed wide utilization of these preparations would mark a distinct advance in throat therapy.

Of unusual value in cases of follicular tonsillitis and ulcerous Vincent's angina, the penicillin throat lozenge is made according to the following formula:

Sodium citrate	...	2·0
Starch	...	20·0
Gelatin	...	40.0
Sucrose	...	60·0
Distilled water	...	140·0
Penicilin calcium	...	20·0 (100,000 units)
Oil of peppermint	...	6 minims

The solids and distilled water are boiled together for three minutes under constant stirring. The mixture is cooled to approximately 80 deg. F. and penicillin added while stirring constantly. The mixture then is poured into a small waxed container, covered and kept in a refrigerator. The gel is readily divisible into 40 pleasant-tasting cubes, enough for a two-day treatment.

One lozenge is administered hourly and the patient is admonished to permit the lozenge to dissolve slowly on the tongue. The medication goes into solution in approximately 15 minutes, during which time the lesions constantly are bathed in a buffered solution of penicillin (2,500 units). The following events occur in sequence: (1) dramatic relief of pain on deglutition within four hours, (2) reduction of tonsilar oedema and necrotic tissue by as much as 25 to 50 per cent. Within 12 hours, and (3) disappearance of toxic features and fever within 24 to 36 hours. In addition. diluted peroxide gargles are administered three times daily to wash away necrotic material and for possible effect on saprophytes.

A chewing wafer of sulphonamide mixture which has given excellent results in cases of severe pharyngitis and mild forms of tonsillitis has the following composition:

Sulphanilamide	...	2·0
Sodium bicarbonate	...	2·0
Sulphathiazole	...	4·0
Paraffin wax	...	16·0
Oil of peppermint	...	10 minims

The solids are made into a fine powder, and under constant stirring are added to the melted wax and peppermint poured into a mould and divided into 20 tablets.

One tablet is administered every two hours, the patient chewing the substance as he would gum. Subjectively, there is almost immediate soothing effect on the inflamed mucosa. Resolution of the inflammatory process usually occurs within two or three days.—*H. H. Rosenthal, U. S. Naval Med. Bull., July, 1945, (G. P. Australia)*

Nasal Haemorrhage in Daily Practice (Richard Waldapfel, "*The Rocky Mountain Medical Journal*," Nov., 1946).—It may not be generally known that 95 out of a 100 nasal haemorrhages originate in the same area, which lies in the anterior cartilaginous portion of the nasal septum.

There are two explanations for this. The first one is an anatomic peculiarity; namely the occurrence of telangiectatic distended veins within the anterior portion of the cartilaginous nasal septum. The veins are so superficial and show such a vulnerabiity of their thin wall, that relatively slight happenings such as coughing, sneezing blowing the nose, or bending the head are sufficient to cause a bursting of a part of the dilated vessels. Once injured, these vessels cannot retract. Their wall is adherent to the surrounding cartilage and they

gap open when injured. This explains the profuse bleeding from sometimes barely visible lesions of the vessel's wall.

The second cause is a traumatic factor. The anterior portion of the nasal septum is, more than all other sections of the nasal cavity, expected to traumatic insults; especially to the picking fingernail. It injures the superficially located dilated veins and causes a haemorrhage outwards. Blood clots in this part of the septum are, therefore, a frequent picture. It bleeds, at the same time, into the mucous membrane. The mucous membrane acquires a yellowish-brown tint which is known as *Xanthrosis*. It remains congested in this circumscribed district; secretion dries and sticks in this place. This condition, called *Rhinitis sicca anterior*, tempts the owner to remove the dry secretion with the finger, and produces new hamorrhages. It is a vicious circle. Continuously traumatized, ulceration of this part of the mucous membrane occurs; then, ulceration of the underlying cartilge, called perforating ulcer, and finally perforation of the septum. All these pictures are different stages of the same process; they keep opening the dilated veins and creating new nasal haemorrhages in the same area.

The simplest therapy is to compress the bleeding vessel directly by putting a hard pack of cotton or gauze into *each* nostril and pressing them against this anterior portion of the septum, by squeezing the nostrils together *from outside* with two fingers. The pack shall be left on the bleeding side for 24 hours. In both events after the bleeding has stopped temporarily, cauterization of the vessel has to follow in order to definitely cover the gap in the vessel's wall.

Cauterization is best done with chromic acid, which is melted by heat to the tip of the probe and, after cooling off, forms a bead at the tip of the probe. When this bead touches the vessel, it coagulates it, forming a yellow scab. To keep the acid from spreading, it is neutralized by sodium bicarbonate *solution* and then plain vaseline is applied by the patient 3 times a day for about a week.

Most of the cases of nasal haemorrhage can be taken care of in this way. If it does not suffice, because the bleeding originates from the back, the *tolal anterior packing* is applied. The bleeding side of the nose is systematically packed in layes from below, upwards, or in the opposite direction.

There remains only a few cases in which this packing is not sufficient Each side of the nasal cavity is a box with 4 stiff walls: outside, inside, above, and below, and with two openings, in front and behind: the anterior and posterior nares. However tightly you pack the mose from the front, you will only be able to plug the anterior opening; but it may still be oozing through the posterior opening. This last opening is definitely closed by *posterior packing*. *(G. P. Australia)*

Folic Acid in Macrocytic Anaemia in Relapse.—Spies (*J.A.M.A.*, 130:475, 1946) observes that synthetic folic acid administered either parenterally or orally is effective in producing a significant haemopoietic response in persons with nutritional macrocytic anaemia, or with the macrocytic anaemias of pellagra, of pernicious anaemia, of sprue or of pregnancy. This haemopoietic response is characterized by an increase in reticulocytes, red blood cells, white blood cells, platelets, normoblasts, and haemoglobin. The magaloblasts in the bone marrow are decreased following therapy.

It is worthy of emphasis that none of the patients with aplastic anaemia, iron deficiency anaemia or the anaemia associated with leukaemia showed any improvement. We have found that folic acid corrects the leukopenia of certain nutritional condition, but does not correct the leukopenia of a number of infectious diseases or idiopathic states.

The subjective and the objective improvement which follows the administration of the folic acid to persons with macrocytic anaemia in relapse is similar to that which follows liver extract therapy.

The exact minimal and optimal doses of folic acid have not been determined, but these studies indicate that there is some variation from patient to patient. Although the authors have found that the administration of as much as 400 mg. daily has not caused any untoward symptoms, a daily dosage of from 5 to 10 mg. parenterally or some 10 mg. by mouth will often produce a maximum haemopoietic response. In order to determine the optimal and the avarage doses, the study of many more patients will be required.

Two additional patients have been studied with macrocytic anaemia who have developed such severe sensitivity to various forms of liver extract that they were unable to tolerate injections in sufficient amounts to maintain proper blood values. In both cases folic acid was substituted for the liver extract safely and satisfactorily.

Folic acid (synthetic Lactobacillus casei factor), a vitamin present in liver, yeast and other food materials, is a potent anti-anaemic factor in certain types of macrocytic anaemia in relapse. Folic acid *performs a specific* function in the maturation of the various cells of the bone marrow and has other obvious profound effects on our bodies. *G. P. (Australia)*

New Treatment for Viginitis and Cervicits.—Siegler believes that the ideal anti-infective agent should be buffered effectively so as to promote the re-establishment of the physiologically correct acidity and growth of Doderlain's bacilli consistent with a healthy vagina. It should be anti-bacterial so as to control rapidly persistent infections, especially in cervicitis requiring electrosurgery, it should be of such a physical consistency as to assure intimate and prolonged contact with vaginal and cervical mucosa, and it should be non-irritating and non-toxic. These conditions ere most closely approached by an acid jelly containing sulphathiazole, lactic acid. acetic acid, sodium tetradecyl sulphate and polythylene glycol. The jelly is non-irritating, non-staining and of agrreable odour. It spreads over the cervical and vaginal surfaces and is completely soluble in the secretions. It does not easily leak out ofthe vagina unless the discharge is profuse. It has a mild but definite astringent effect on the vaginal mucosa. Use of the jelly *has resulted* in excellent control of vaginitis of trichomonal, monilail, gonococcal and non-specific origin in 93 per cent. of the cases studied, and in permanent cure in 83 per cent. The period of convalescence can be shortened and annoying symptoms reduced by using the jelly before and after such procedures as conization. coagulation, cautery and plastic repairs and other intravaginal surgery. Healing was complete within an average time of five weeks, with a minimum of sequelae. The convenience and simplicity of the single dose disposable paper applicator facilitates intravaginal medication *in the office* and in the patient's home (*American J. Obstetrics and Gynaecology, July*, 1946). *(G. P. Australia).*

LETTERS TO THE EDITOR

Mental Symptoms due to Mepacrine.

I have gone through Dr. Kardaley's case note under the caption *Temporary Insanity Due to Mapacrine Hydrochloride*" published in May issue of the Journal, 1947 with due interest. In response to his querries as to whether thi insanity has got any connection with Mapacrine in that particular case I offer the following lines for publication in the *Journal*.

Regular readers of the *Journal* may possibly recall that Dr. Krishnadas Das reported for the first time a case developing insanity after swallowing only 6 tablets of Mapacrine which was published in its November issue, 1945 with the Editor's rremarks, "We do not think it is due to Mapacrine. It may after all be a result of malaria itself." About the same time I myself had a Muslim female patient who showed mild mental excitement after taking only 4 Mapacrine tablets as exhibited by singing and dancing about with a gourd on her shoulder violating saucitity of strict purdah system which was controlled by long immersion in cold water for several times and administration of sedative drugs. In consideration of the fact that malaria itself may produce similar effects on the central nervous sestem, I did not feel disinclined to share the views of the learned Editor. But soon afterwards I had to reconsider my opinion as a few clinical notes by differnt doctors with conflicting opinions appeared in January issue of the *Journal*, 1947. Dr. Rogan and Coombes published one special article in the *INDIAN MEDICAL CAZETTE* in its November issue, 1945 describing in full details their experiences gathered from their extensive trial of Mapacrine tablets in different doses in malaria in Assam during 1942-44. Out of 17 cases showing abnormal mental states some during and others after completion of the course, only two cases were held to be due to Mepacrine, the remaining being admitted to be due to malaria itself. In its next issue further case notes were abstracted from *Tropical Diseases Bulletin*, Vol. XLII, August 1945 and *British Medical Journal* 4th August, 1945 reporting amongst other things the possibility of Mepacrine inducing Psychoses. They, of course did not fail to sound a note of warning against being too much optimistic. To diagnose a case of insanity due to Mepacrine one must have to exclude cerebral and to note "that the patients have recently received anti-malarial treatment, that the slightest initial fever which may be present we a few cases subsides in 12 to 24 hrs. and that the symptoms are all psychiatric. that the behaviour pattern remains constant, and that there is no objective neurological disturbances". Though it is known to-day that very large doses of Mepacrine tablets cause mental disturbances even in normal persons, it is, however, to be understood that malaria and idiosyncrasy may enter the picture besides Mepacrine which may play the part of a precipitating factor.

In view of the foregoing reports and in light of my personal experience I am of opinion that in the case reported by Dr. Kardaley, Mepacrine tablets, playing the role of an exciting agent, might have been responsible for the tragedy.

Dr. AMJAD HOSSAIN, L. M. F. M. O., MIRZAPUR CH. DISPY.,
Post Singa-Salpur, Jessore. Dt., Bengal.

Ref: Dr. Kardaley's case note on Temporary Insanity due tc Mepacrine Hydrochloride, *I. M. J.* May 47, I think that the mental symptoms he refers to, are not due to Mapacrine Hydrochloride but to embolism of malarial parasites in the brain capillaruies.

I have been using heavy doses of Mapacrine extensively both in the army and civil practice, but I never came across any untoward symptoms due to it, except perhaps gastro intestinal irritation in a few cases. On the other hand I noticed mental symptome in some positive malaria cases even before the introduction of Mepacrine.

CAPT. M. S. AHAMED, I.A.M.C. (Retd)
Choirallie T. E. P. O. Boruli, Assam.

BOOK REVIEWS

Hand-book of Correctional Psychology: Edited by R. M. Linder and R. V. Seliger. Published by Philosophical Library, Inc , New York. Price S. 10-0-0.

Correctional Psychology, as the editors in their preface to the book remark, is a new medical speciality dealing with the treatment of individuals under conditions of detention for various types of crimes. The volume under review is a practical and helpful compendium of methods and means used for correctional medical work. Each chapter is contributed by a worker of expert knowledge and experience. A book of this kind is sadly needed for our country where the treatment of criminal prisoners is still ancient and archaic, and very little organised effort is made for their rehabilitation and recovery to normalacy of mind. We have therefore no hestitation in recommending it to the prison Medical Officers, Superintendents of jails and others who are interested in reconverting the criminal to an useful citizen.

Edinburgh Post-graduate Lectures in Medicine: Vol. III. Published by Oliver & Boyd., Edinburgh, Price 15/- Nett.

This series constitutes the text of lectures delivered in the Royal Infirmary by a team of specialists and provides a very helpful survey of recent advances and attainments in medicine and surgery. It is a pity that Volume I is out of print, but other volumes are available. The one under reference contains 33 lectures delivered in 1942-43, and it is difficult to list the subjects dealt with except to remark that each lecture is a masterpiece, and throws such useful hints at diagnosis and treatment which the practitioners would greatly appreciate. We warmly recommend the book to them.

Local Anaesthesia: Brachial Plexis: By Macintosh and Mushin. Published by Blackwell Scientific Publications Ltd., Oxford. Price 10sh. 10d. net.

Brachial Plexus block renders insensitive all the deep structures of the upper extremity and the skin distal to the middle ofthe upper arm. The technique of Brachial plexus block is well described more by illustrations than by the written word. Even a novice can easily understand the method advocated by the author. We welcome this book and rcommend it to practitioners.

The Overseas Post-Graduate Medical Journal: Vol. I. No. 3 Published by the Fellowship of Post-graduate Medicine, London.

We have reviewed the previous Numbers in the *Journal* and we repeat again that the articles published are highly practical and useful. As such they are invaluable to the busy practitioners. The volume under review contains the following articles: Cancer of the Rectum, Dysentery and Colitis; The Management of Colitis, Benign strictures of the Rectum; Urological Diagnosis in General Practice: The practical application of the Rhesus Blood Factor to the Art and Practice of Obstetrics; New Hips for old; The comparative Biology of Anxiety; Thyroid Dysfunction in Children; Management of Bleeding Tonsils. Those who want to subscribe to the Journal may write to: Current Technical Literature Co Ltd., Jehangir Building, Esplanade Road, Post Box No. 1374, Bombay 1.

NOTES AND NEWS

Utterly Unjust.

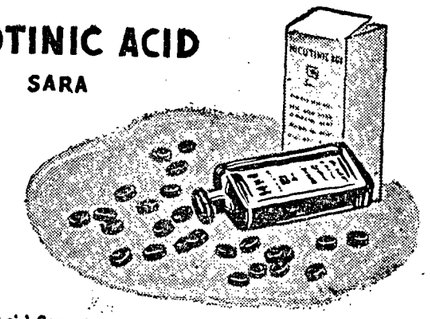
We publish below the copy of the Circular issued by the Medical Directorate, Bengal, to the Civil Surgeons asking them to replace the licentiate by the graduate medical personnel in all the Auxiliary Government Hospitals in the proportion referred to there-in. According to this circular, no licentiate can hold charge of a hospital with more than 20 beds, and in hospitals with more than 20 beds the licentiates are given only a junior position whatever might have been their previous experience or seniority in the profession. We wonder when has the Bengal Medical Directorate found out that the licentiate are incapable of holding charge of hospitals with more than 20 beds. There is something very fishy in this arrangement. It is an insult to the Licentiates of Bengal who have served her with sustained loyalty and devotion, despite the meagre pay, for the last 100 years. The General Secretary of the A.I.M.L.A. has appealed to the Health Minister to set right this injustice and we hope he would revoke this circular.—*Editor.*

Circular No. AG/1/R-4/47 by the Medical Directorate Bengal, Writers Buildings, Calcutta.
Auxiliary Government Hospitals,

When F. R. E. Hospitals were first started there was great difficulty in recruiting medical personnel due to dearth of medical men in Bengal., and consequently some posts of Superintendents of Hospitals were occupied by medical licentiates instead of graduates. In closing down the excess beds and in discharging the staff it should be made the principle

NICOTINIC ACID

SARA



Nicotinic Acid Sara is a white odourless crystalline powder, melting between 234°—237°C. It is non-hygroscopic and one gram dissolves in 60cc. of water at ordinary temperatures. It is stable in the dry state.

INDICATIONS: Nicotinic Acid is a specific in the treatment of pellagra and its administration in clinical doses produces striking results in clearing up the glossitis, stomatitis, gingivitis, pharyngitis, dermal lesions and mental stupor and depression of this deficiency disease.

Pellagra, indigestion, forgetfulness and insomnia respond to Nicotinic Acid Sara. Porphyrinuria, whether due to Pellagra or to the toxic effects of the Sulphonamide drugs is counteracted by Nicotinic Acid Sara. In association with liver extract, it gives good results in sprue and pernicious anaemia. It is also useful in the treatment of delirium tremens.

DOSAGE: Although optimal dosage varies according to the deficiency of the vitamin, oral administration of 500 mgms., in 10 doses of 50 mgms. each is safe and effective for the average patient with pellagra. Administration of 50 mgms., at one-hour intervals ten times a day is more effective than a single large dose.

In grown up children, the dosage varies from 50 to 300 mgms., and for children from 2 to 6 years, 25 mgms. are sufficient. Nicotinic Acid Sara is available as tablets containing 50 mgms., each packed in bottles of 25, 100 and 500 tablets.

REACTION: The absorption of this vitamin is followed by flushing, burning and itching. But these are harmless and disappear within a short time.

Note: This Vitamin—an important member of the Vitamin B Complex—is now prepared in India synthetically by Sarabhai Chemicals (Fine Chemicals Division).

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In extensive grounds, high on the slopes of a hill overlooking Schaffhouse, Switzerland, stands the home of Cilag products. In these ideal surroundings a highly-skilled team of scientists and technicians co-operate in research and in the manufacture of the medicaments that have made the name Cilag famous. For each Cilag preparation represents a dual achievement. First, the evolution of a new product in the laboratory, and then the solution of the problems involved in producing the new medicament on a large scale. Such is the reputation the Cilag Company has gained during the past ten years that clinics and universities all over Switzerland collaborate in the testing of Cilag medicaments. Thus the work of a Cilag product is proved by practical results . . . before it is placed on the open market.

Cilag medicaments are known all over the world. Most of them are now available in India. Another advertisement in this magazine gives more detailed information about one of them.

CILAG



to replace the licentiates Suptds. by medical graduates and for increasing efficiency of AG Hospitals, the following principles will be followed and the staff should be reshuffled accordingly.

(a) Superintendents of all the Hospitals from 50 beds down upto 50 beds should be graduates.

(*b*) In a 60 bed hospital out of 5 House Surgeons 2 should be graduates as senior House Surgeons and 3 Licentiates as juniors. The graduates will be in charge of wards.

(*c*) In a 200 bed hospital out of 4 House Surgeons 2 should be graduates as Senior House Surgeons and 2 Licentiates as Juniors. The graduates will be in charge of wards.

(*d*) In a 150 bed hospital out of 3 House Surgeons one should be a graduate as Senior House Surgeon and 2 Licentiates as Juniors. The senior should be in charge of wards.

(*e*) In a 100 bed hospital amongst 2 House Surgeons I should be a as Senior and the other a Licentiate.

(*f*) In a 50 bed hospital there is 1 House Surgeon who should be a licentiate.

(*g*) 20 bed hospitals as at present, under the charge of licentiates Muslims, Schedule caste, Members of minority communities other than Caste Hindus, Ex-Army personnel (whatever their community may be) will not be discharged.

(*Sd*)

Dy. S. G. with the Government of Bengal.

Copy of General Secretary's letter to the Hon'ble Minister for Health, Government of Bengal, Calcutta, Dated 4th June 1947.

We learn from reliable sources that the Medical Department is considering the proposal of reshuffling the staff in the Auxiliary Government Hospitals. We also learn that there is also a move to replace licentiates by graduates and circulars to that effect are issued to the Civil Surgeons. If the information is correct, we wish to put before you the following for your kind consideration.

The A. G. Hospitals were started in the hot days of the last war. There was a dearth of medical personnel to look after the onerous task of management of such hospitals. At such crucial hour our licentiate brethern came forward and to the satisfaction of all, managed hospitals creditably and efficiently for the last 3-4 years. They were appointed there when graduates were not available during the war time and have gained enough experience in conducting these emergency hospitals. But now we hear that Government has made up its mind to replace them by novice graduates. This move contemplated by the Government is a great injustice to the licentiates who offered their services in the severe and crucial times and who have shown their mettle in day-to-day working of the hospitals. This move of the Government will create disunity and superiority and inferiority complexes in the medical profession at a time when time is ripe for the constitution of a uniform medical service.

We therefore submit that you should reconsider your decision and give justice to the licentiates who are working in the Auxiliary Government Hospitals.

ASSOCIATION NOTES

18. Darbanga (*Bihar*): The annual meeting of this branch was held on 16-4-47. In the meeting the annual report was read and adopted. The meeting elected the following office-bearers for the year 1946-47.

President: Dr. M. N. Sarkar.
Secretary: Dr. L. C. Sinha.

19. Shrimangal (*Assam*): Meeting held on 20-4-47. The following resolutions were passed:

(1) This branch of the All-India Medical Licentiates' Association request the Government of Assam to amalgamate the various services of the Sub-Assistant Surgeons *viz.*, the Public Health Department, Medical Department, and Local Board Sub-Assistant Surgeons into one head and also to amalgamate the Public Health and Civil Medical Department as recommended by the Bhore Committee.

(2) This branch also requests that after the amalgamation of the different services the district administration should be consolidated into one office.

(3) This branch of the All-India Medical Licentiates Association brings to the notice of the Government of Assam the increase in quackery in Allopathic system of medicine by which the established fame of this system of medicine is being undermined. This branch requests the Government to enforce such legislation as to stop this growing menace to the public safety at an early date.

In the scientific section of the meeting Dr. N. K. Roy and Dr. S. K. Das Gupta read their papers on Sulphonamide in Anthrax and on Meningitis respectively.

20. Nowgong (*Assam*): The annual meeting was held on 6-4-47. Dr. H. K. Chowdhury presided. The meeting after electing Dr. H. K. Chowdhury and Dr. J. K. Borah as president and Hon. Secretary for the new year, appointed a committee to arrange for the collection of funds for the construction of a building.

21. Sylhet (*Assam*): The annual meeting of the Sylhe Branch was held on 25th March, 47. Dr. J. N. Bhattacharjee was in the chair. After unanimously passing the annual report, the election of office bearers took place and Dr. N. C. Roy of Jallarpar, Sylhet and Dr. Matindra Chakrabarty Zindabazaar Sylhet were elected as President and Secretary respectively. The Hon. Secretary and Dr. Birendal Krishna Datta Roy were also elected as members of the Provincial Standing Committee. Another resolution of raising the annual subscription by Rs. 3 was also adopted by the meeting.

Announcement:—The following doctors have been elected as branch President and Secretary of the Lyallpur Branch of the A.I.M.L.A. for the year of 1947.

Dr. Ayya Ram Suri, Kotkhudayar, *President*.
Dr. Abdul Majid, Radiologist, Lyallpur, *Secretary*.

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Natural mixed Tocopherols equivalent in biological activity to Alpha Tocopherol in each capsule	5 mg.

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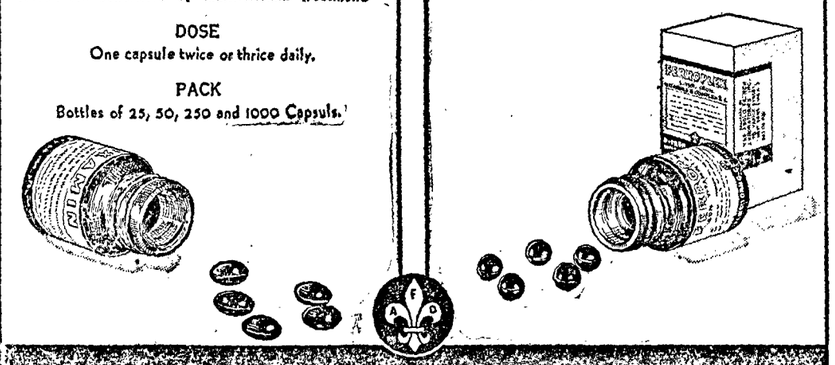
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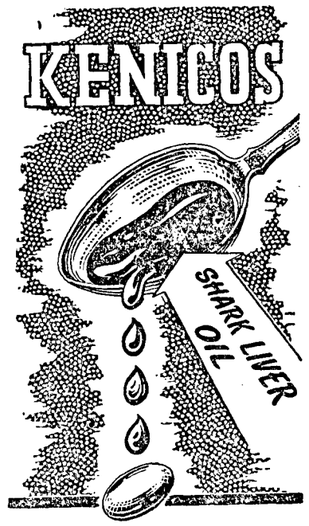
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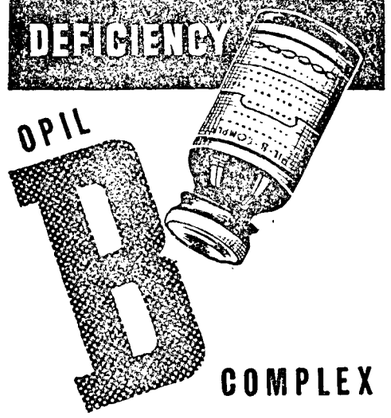
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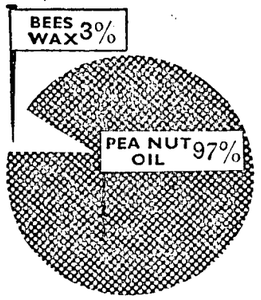
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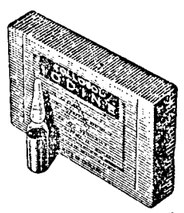
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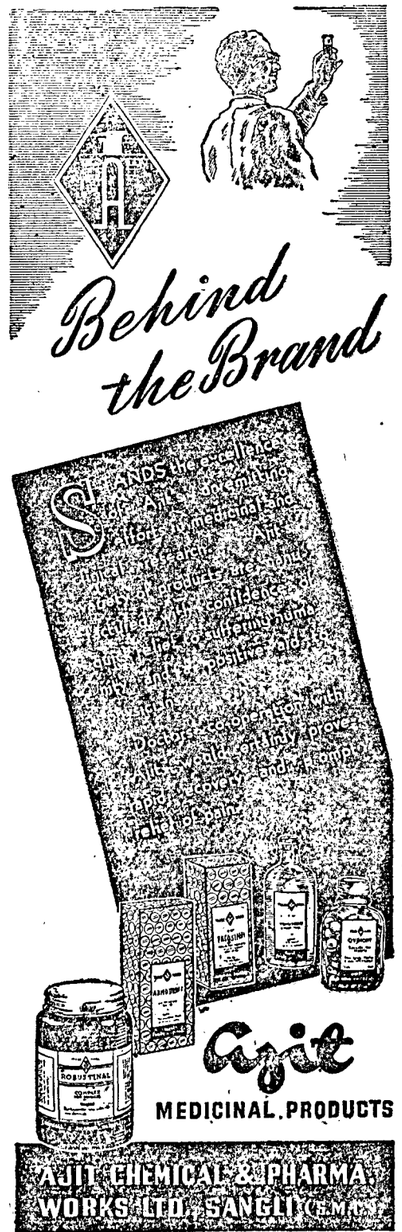
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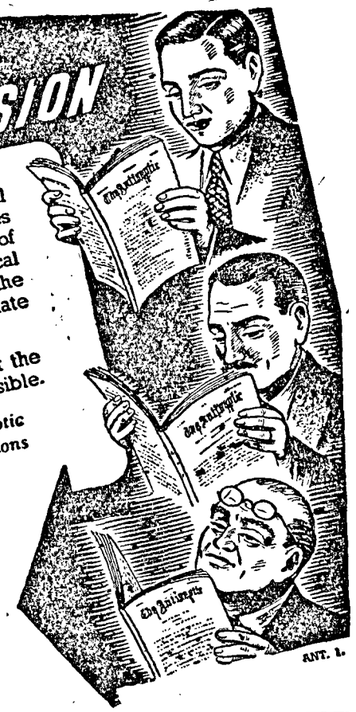
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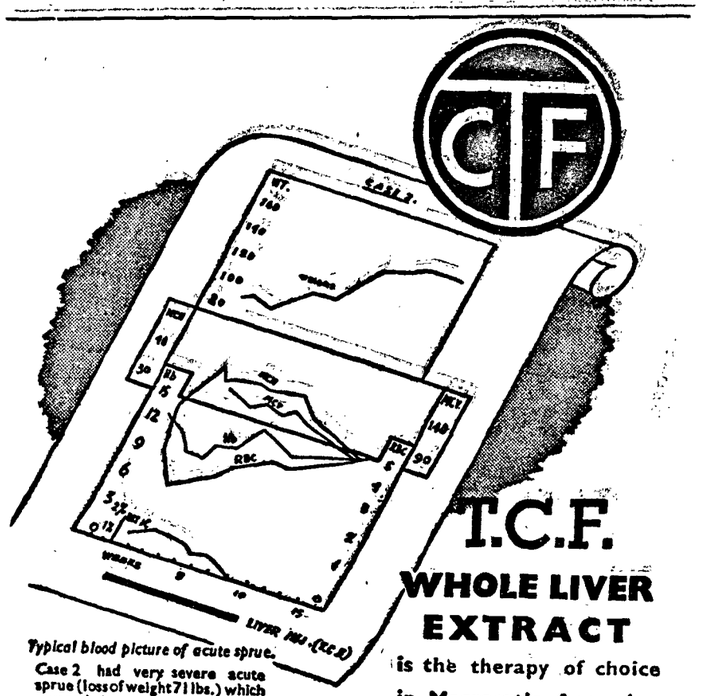
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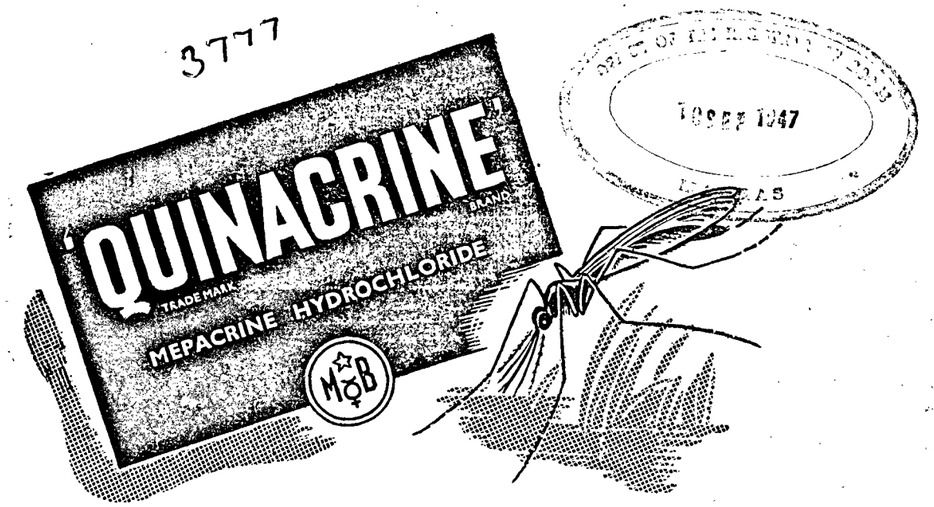
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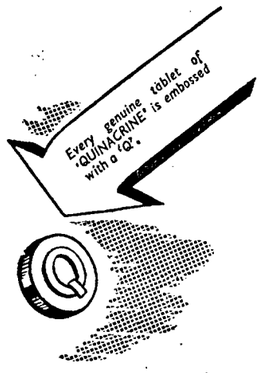
(Journal of the All-India Medical Licentiates' Association with which the Agra Medical Club Journal is incorporated)
(WITH MEDICO-POLITICAL SUPPLEMENT)

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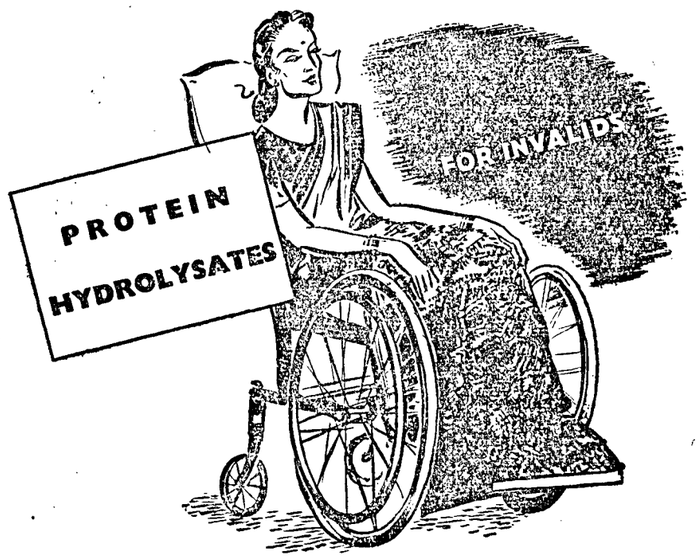
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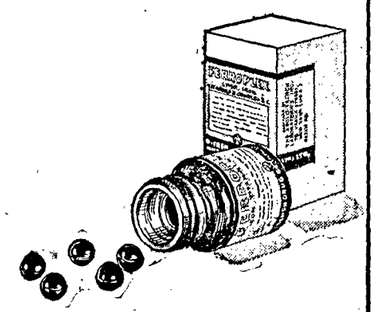
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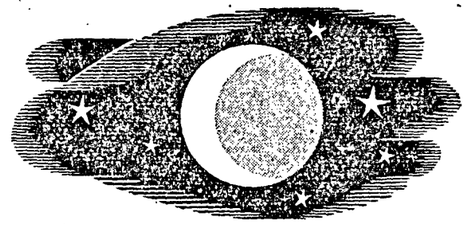
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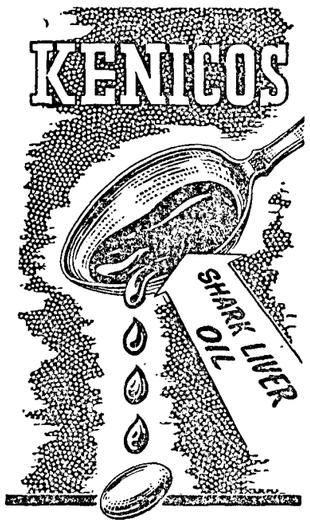
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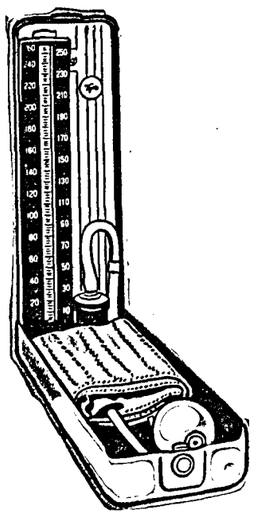
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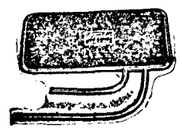
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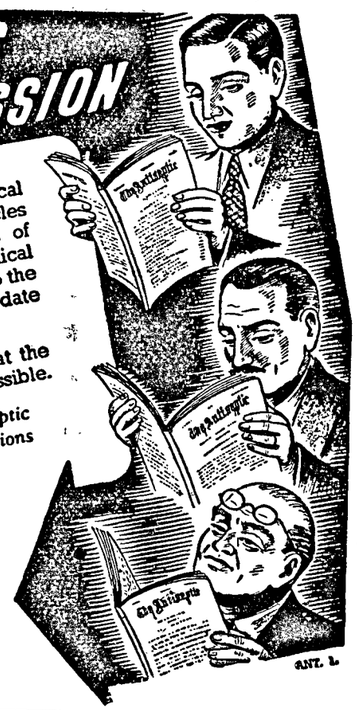
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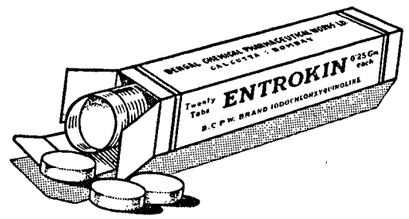
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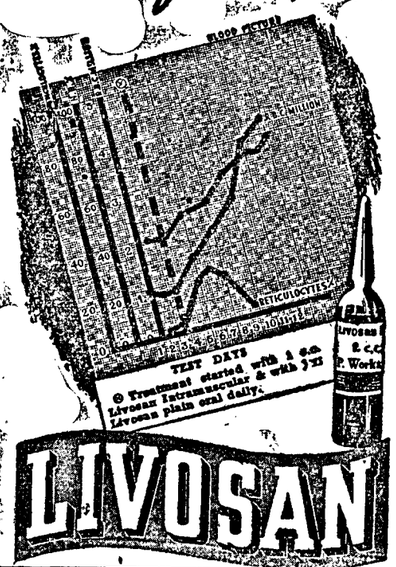
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Indian Medical Journal

(Journal of the All-India Medical Licentiates' Association

Vol. 41. Madras: August 15, 1947. No. 8

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Indian Medical Journal

(Journal of the All-India Medical Licentiates' Association)

Vol. 41. Madras, August 15, 1947 No. 8.

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OUR MONTHLY SURVEY

Medical Research in India during 1946:—The Indian Research Fund Association has just issued its report of work done during 1946. As our readers are aware, it is the only institution in our country engaged in medical and allied research financed by the Central Government and the workers are selected from the different provinces. The Scientific Advisory Board programmes the plan of work every year according to the results obtained in the previous year and the urgent needs of Public Health. The Board held two meetings one in July 1946 and the other in December, 1946 when the Report under review was passed and a programme of work for 1947 was made. The I.R.F.A. publishes two journals, the *Indian Journal of Medical Research and the Journal of the Malaria Institute of India* in which are published the details of various research organised and conducted by different workers. The report for 1946 is but a summary of the contributions published in these Journals. Another research institution in our country comparable to I.R.F.A. is the Calcutta Tropical School of Medicine and All-India Institute of Hygiene. Although these institutions have been doing good work all these years, yet the work to be done is so vast that there is an urgent need of at least one similar institution in each province. We do hope that in the New India that is emerging a great filip would be given to Medical and Public Health Research.

We give below an abstract of the research work done on subjects of immediate importance and usefulness to the general practitioners.

Cholera:—Attempts at experimental production of cholera in animals such as monkeys and guineapigs proved unsuccessful as none of the animals showed any definite symptoms of cholera except a slight congestion of the omentum in some animals. Trials of sulpha drugs, such as sulphaguanidine and sulphadiazine, were continued on a limited scale. These is no doubt that these drugs are of definite value in the successful treatment of cholera. The Haffkin Institute has laid down the following points in preparing an effective chemotherapeutic drug for cholera:

(1) The drug must be soluble to a certain extent at a *P.H.* of about 7.8.

(2) It should be absorbed to a very limited extent from the intestinal tract.

(3) It should attain a concentration in the intestines which should be more than that required for inhibition of cholera vibro.

(4) It should have preferably a selective action on the vibrios.

(5) It should be possible to maintain a uniformly high concentration in the intestines by adequate spacing of doses.

The Haffkin Institute has been able to prepare a chemical compound with a combination of sulphanilamide and formalin which satisfy the first three of the obove conditions. Clinical trials with this drug are being arranged at the Guindy Institute.

Malaria: Work on the preparation of D.D.T. emulsion concentrates has been continued with the object of preparing a concentrated solution miscible with water in very high dilutions using medium kerosene extract and terpentine as solvents. Number of experiments were also done to test the comparative efficacy of different doses of D.D.T. emulsions, solutions and suspensions. For indoor work, the stirrup pump was found more satisfactory than any other type of spraying equipment. Major General Covell refers to the work on paludrine in other countries and states that comparative tests on paludrine and mepacrine indicated that paludrine was in every respect superior to mepacrine and that Australian forces have ceased to use mepacrine. It was found that daily dose of 100 m.gm. continued for 3 weeks after exposure to heavy infection with Sporozoites of P. *falcifarum* resulted in complete freedom from any symptom of malaria. For the treatment of B.T. Malaria dosage of 300 m.gm. daily for 10 days followed by 1 tablet of 100 m.gm. once a week for 6 months is recommended. There may however be a few cases of relapse. This drug does not prevent gametocyte production but arrested its growth in such a way that it does not grow beyond the oocyst stage.

In **P. Vivax** infections, it arrests the symptoms but does not eradicate the infection. Regarding toxicity of the drug, it appears that the difference between the effective therapeutic dose and the toxic dose is very considerable. Symptoms of intoxication are those of irritation of gastro-intestinal and genito-urinary tracts, but they subside rapidly either on withdrawal of the drug or reduction in dosage. The maximum therapeutic dose is 0.3 gramme a day.

Nutrition:—Dietary and Nutrition surveys were carried out in Bihar, Punjab, C.P., Bombay, Madras

and Hyderabad State. Besides such surveys, education and publicity work was done. It is reported that the provincial governments have responded to the recommendations of the nutrition experts with the results that the midday feeding of school children and industrial canteens were introduced in some of the areas. It is interesting to note that in a group of children 10% of whom had stomatitis the disease disappeared on their being fed by yeast in spite of the fact that the dose was no bigger than 45 grs. a day. Particular mention may be made of the efforts of the Government of Bombay towards the problem of providing a better nutrition for its population by means of fortifying wheat atta with groundnut cake flour (10 to 20%) for making chappattis, preparation and distribution of Vitamin A tablets from shark liver oil and community feeding and industrial canteens where a balanced diet is supplied to workers.

It is well-known that Indian diets which are largely drawn from cereals are generally deficient in calcium and vitamins. The report therefore recommends that the addition of pure calcium carbonate to wheat flour should be made compulsory in large mills where atta is produced. Paraboiling of rice is recommended and addition of calcium salts during parboiling. The report stresses the need for researches on the nutritional value of vanaspathy which has gained great popularity in this country but continues to agitate the public mind in view of conflicting and disturbing opinions. The general view held is that it should be fortified with vitamins A & D and its melting point should not exceed 28° C.

Leprosy:—Attempts at cultivation of lepra bacillus on egg media enriched with enzymes oxidase and per-oxidase proved a failure. Dr. R. Row has reported successful cultivation of the lepra bacillus in symbiosis with leishmania culture, but this is yet unconfirmed by other workers. The report emphasises that it is rare to find leprosy bacilli in the nose of a patient with neural leprosy if they are absent in the skin, but it does not discourage the additional examination of the nasal smear on that score. Regarding treatment, promin and diasone were tried with encouraging results. There was clinical improvement but none of the cases became bacteriologically negative.

Clinical Researches : Naga Sore : Ten estates in the Dibrugharh area in Upper Assam were surveyed. 75 individuals gave a history of having had the sore in 1945, of whom 34 were males and 41 were females. Except a few of them, all had healed ulcers. Most of the ulcers were in the lower extremities, and with the exception of six men who were factory hands all others were engaged in out-door work. In 39 individuals there was a definite history of trauma at the site of ulcers, while in the remaining vesicles or papules appeared spontaneously with itching. There was no evidence to show that an insect vector played any role in the causation of the disease. In the acute stage of the ulcers, fusiform bacilli were found constantly in enormous numbers and usually predominated. Spirochetes were found in four cases. The evidence collected so far shows that the bacillus fusiformis is of aetiological significance. This gains importance in view of the fact that intradermal inoculation of the pus as well as the direct application on the scarified skin on human volunteers produced typical ulcers with a preponderance of fusiform bacilli. We may mention in passing that contributions on Naga Sore which were published in the *Journal* in recent years showed the same findings as are mentioned in the report under review.

Infantile Biliary Cirrhosis:—On the presumption that castor oil may be an aetiological factor, since it is the common purgative given to children, experiments were made on puppies and rabbits but no definite cirrhotic lesions were encountered. Twenty-one cases were studied clinically. Analysis of these cases showed that the disease affects mostly the middle and the poor classes of people and that most of the children were on mixed feed—breast milk and diluted cow's milk. There were two types of cases, one in which the disease process runs an acute course ending fatally in a few weeks, and the other in which the process is drawn out over several months and even years. Choline chloride was tried as treatment in oral doses of 3 grs. daily for 3 months, but the results were not very encouraging.

Pharmacology:—Deterioration in the biological activity of digitalis preparations in tropical climates has been established, particularly in the case of Tr. Digitalis in which deterioration of potency may be as much as 50% within a few months, while in the powdered digitalis leaf it may not be more than 8 to 10 per cent.

Maternity and Child Welfare:—Enquiries made in the city of Bombay showed that only 10 per cent of the mothers had adequate and well-balanced diet. The diet of the rest was very poor, inadequate and contained very little animal protein. Fats and mineral salts were deficient and carbohydrates in excess. Vitamins were absent.

Industrial Health:—Bedford, who had come to India on the invitation of the Central Government to give his advice on industrial health, reports that these visits to Indian factories reveal that the living conditions of the vast majority of workers were appalling and there was complete indifference on the part of the employers on this score and that even the workers themselves were apathetic. He has made useful suggestions regarding industrial buildings, lighting, water-supply, prevention of health-hazards and effective factory inspection.

Our Suggestions:—There is no doubt the I. R. F. A. has done useful work during 1946 as in the previous years in spite of many limitations, financial and otherwise. But the field for research in our country is so vast that one central organisation alone cannot cope with it. As the Bhore Committee has recommended, there should be a net work of provincial research institutes under the aegis of a central organisation. While fundamental research with long range programmes is essential, there is no doubt in our mind about the imperative need for more extensive clinical research on various diseases of common occurrence. This has been sadly neglected so far, and should be made good in future. The manner of presentation of the report should be such as would enable an average general practitioner to understand the trends of research on a particular subject and to utilise some of its conclusions in his practice. The present line of reporting is too factual and disjointed, and without a short summary of previous work done it is impossible for the casual readers to make out anything useful or intelligible. Clinical significance of investigations, enquiries and experiments is not mentioned. Research reports need not be dry and drab at all. They could, and should, be presented in an interesting and readable manner.

Our Ex-President Honoured:—Dr. A. D. Mukherji, Ex-President, All-India Medical Licentiates' Association, has been admitted to the fellowship, *honoris causa* of the State Medical Faculty of Bengal on 11th June 1947 by the Governor of Bengal as per Statutes of the Faculty as notified by the Public Health Department of Bengal Government. We congratulate him on this well merited recognition.

ADDRESSES AND ARTICLES

Common Causes of Chronic Sciatic Pain and Rational Approach to Their Treatment.

BY

DR. S. K. ROY, B.M.S., L.A.M.C., (R), M.O.,

I/c Police Hospital, Bankura (Bengal) and Teacher of Medical Jurisprudence, Bankura Sammilani Medical School.

Intermittent pain radiating down to the posterior aspect of a lower limb is not an uncommon ailment. It is usually attributed by many to the solitary phenomenon of interstitial neuritis of the sciatic nerve but on thorough investigation it is revealed that besides sciatic neuritis, there are other conditions which play an important role in the causation of this painful syndrome.

It may be of some practical advantage to discuss here the origin and distribution of the sciatic and lumbosacral nerves to follow the causes more closely.

The sacral nerve roots are distributed through the sciatic plexus and its branches, to the skin of the perineum, buttocks, posterior aspect of the thigh and leg, the external aspect of the leg and the sole of the foot and all the muscles of the limb except the quadriceps and the adductor group. The fourth and fifth lumbar nerve-roots passing over the brim of the pelvis also contribute to the sacral plexus and reach the muscles of the leg and dorsum of the foot.

Thus it follows that pain shooting down the back of the leg may have its origin in damage to the lumbosacral innervation at any level from the nerve-roots within the spinal canal to the sciatic nerve trunk. Similarly sharp pains which radiate intermittently in a definite direction from the back to the posterior aspect of the thigh and to a particular point in the leg or foot, should indicate interference with nerve root. A steady ache in the posterior aspect of the leg or the outer aspect of the knee is more likely to be referred from some structure related to the sciatic innervation *e.g.*, sacro-iliac joint rather than from direct interference with the nerve or nerve root.

For closer study and complete differentiation of chronic sciatic pains, let us now take up the commoner causes one by one as enumerated below :—

(1) Prolapsed Intervertebral disc.
(2) Sciatic Neuritis.
(3) Sacro-iliac and other articular strain.
(4) Spinal tumour and vertebral disease.
(5) Psycho-neurosis.

1. Prolapsed Intervertebral disc:—Prolapse of an intervertebral disc is commonly the result of sudden trauma and the disc between 5th lumbar and 1st sacral vertebral bodies is most commonly affected; that between 4th and 5th lumbar next in frequency, and very rarely those in the higher lumbar and mid thoracic regions.

The characteristic picture resulting from herniation of an intervertebral disc will therefore be a history of sudden trauma *i.e.*, over-flexion of lumbar spine, severe fall upon feet or buttocks, with instantaneous sharp pain in the lumbo-sacral region followed latter by pain shooting from the lower lumbar region down the posterior aspect of the thigh to the outer aspect of the ankle and the aggravation of this pain by any attempt at flexion of the lumbar spine or with coughing and sneezing. Since the displaced disc may be wedged in the intervertebral forearm compressing a nerve root, any rise in the intra-spinal presssure owing to dilatation of the veins by coughing or straining or any pull on the nerve during elicitation of Lasegue's test or Kernig's sign will accentuate the pain. Impairment in function of the affected nerve root may usher in some hyperalgesia of the skin over the outer aspect of the leg and possibly in defective dorsiflexion of the great toe. The calf muscles on the affected side may at first be flabby and these atrophy to some degree. The ankle-jerk is also lost. But the most reliable and constant signs are lack of movement of the lumbar spine i.e., rigidity and limitation of straight leg-raising (Lasegue's sign). In X-Ray examination of the spine, a narrowing of the affected disc-space may be visible. The condition is more or less intractable, because however completely it may be relieved by treatment, there is liability to further prolapse with further strain on the spine.

Treatment:—Absolute rest is the first essential criterion of treatment. In majority of cases the prolapsed fragment of the disc is gradually absorbed so that in course of 2 to 6 weeks the symptoms diminish or may disappear completely. Only some slight evidence of damage to the nerve-root, namely, sluggish ankle-jerk, weakness of muscles and some rigidity of lumbar spine may persist. This natural involution is a slow process and is liable to be hampered by continuous vertebral movement or stress and hence the necessity of absolute rest. In some cases varying degrees of pain remain and as such may be treated by further rest or by more radical measures.

After further proper localisation of the site of affection, epidural injection of saline solution (normal) once a week for three weeks is given, which is often very effective, probably by inducing some displacement of the prolapsed cartilage. In intractable cases, radical relief may be ensured by the operative removal of the prolapsed portion of the disc by laminectomy. In any case some persistent discomfort

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Vitamin E	... 10 mg.
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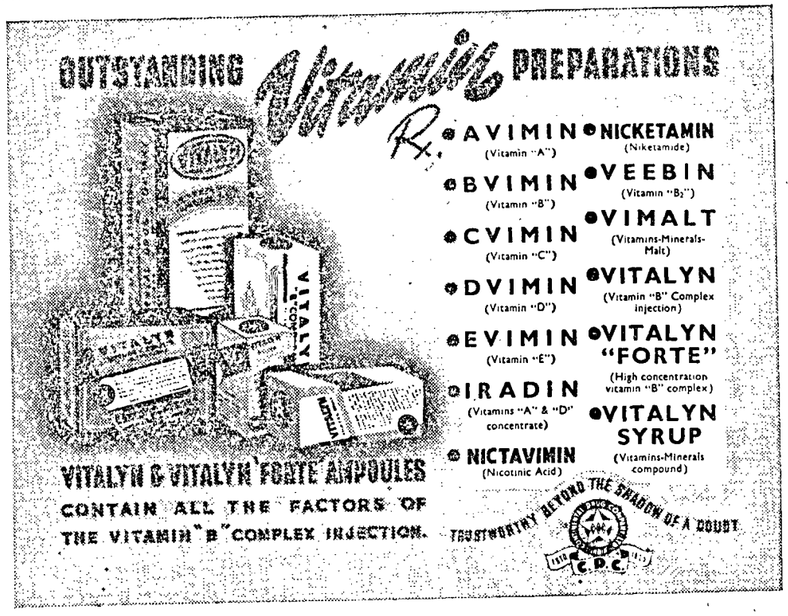
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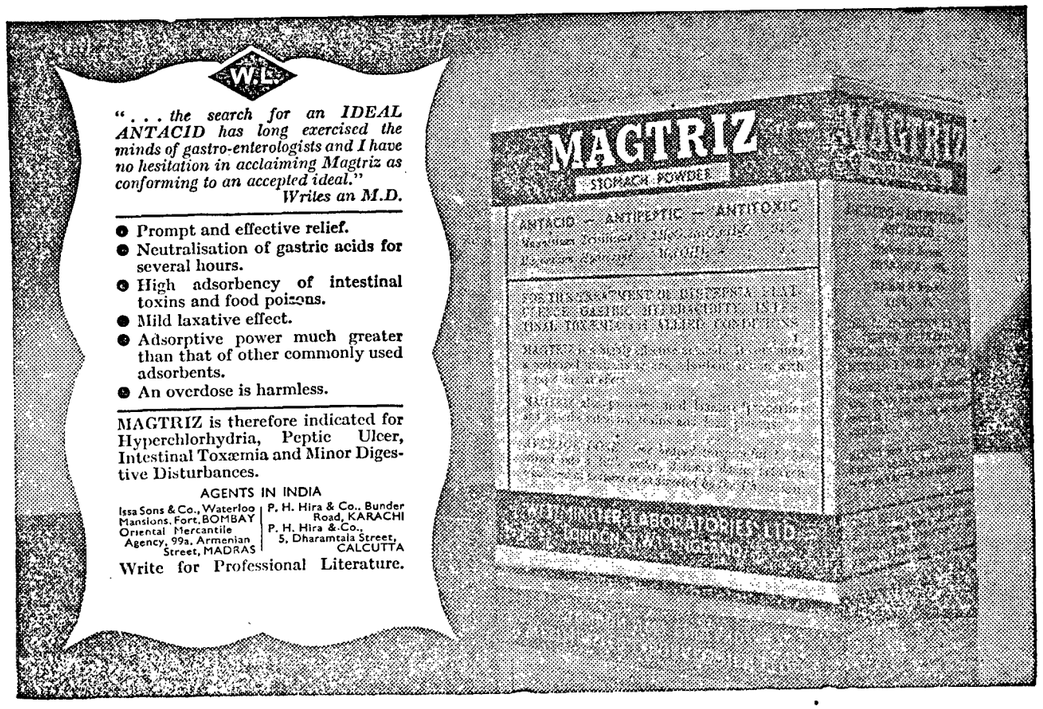
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due to malalignment of the vertebra is likely and in view of the general tendency to improvement operative treatment in not usually advisable unless relief is not secured otherwise.

2. Sciatic Neuritis :— It is a very painful affection and develops as a result of fibrositis due to exposure to cold and injury, gout and rheumatism, diabetes, syphilis and gonorrhoea etc.

The onset is acute and is characterised by pain in the posterior aspect of the thigh, shooting down to the front of the leg or to the heel. There is also felt some diffuse ache and tenderness in the gluteal region but usually no pain in the back. Tenderness along the course of the nerve exists and its acutely tender trunk is also detected on palpation as a thickened cord. The pain does not vary with coughing or sneezing. The ankle-jerk is lost but the movement of the lumbar spine is not limited. The lower affected limb extended at the knee cannot be flexed on the abdomen due to the excruciating pain during such movement—this is known as Lasegue's sign or test.

If remedial measures are adopted without undue delay, complete recovery from this condition may be possible within a few weeks but sciatic neuritis due to diabetes has a tendency to run a chronic course.

Treatment :—The underlying factor responsible for this condition should be explored first of all, as the line of treatment varies with the cause. If it be due to perineuritis resulting from syphilis, gonorrhoea or rheumatism etc., specific treatment is to be adopted accordingly.

In general, the remedy consists in the following :

(*a*) absolute rest during the acute stage ;
(*b*) application of local heat on the gluteal region by antiphlogistic dressing ;
(*c*) rubbing of liniment anodyne, *e.g.*, Elliman's Embrocation etc., along the course of the nerve ;
(*d*) and administration of salicylate in doses of gr. *XV* thrice a day. Of course bowels must be kept regular during the course of treatment by purgatives, preferably sodii sulphate and mag. sulph.

In recent times, intra-muscular injectons, biweekly, of milk-iodine-sol. *e.g.*, Siolan-cum-Iodine, keucodin, Iodolan etc.) have proved very efficacious. Administration of vitamin B preparations orally and parenterally is of undoubted value and a very useful adjuvant to its treatment.

In intractable cases, stretching of the nerve has been advocated with good results. The technique of nerve-stretching is a simple one and is considered unnecessary to describe here for want of space, as it is well delineated in every text book of surgery. But it is seldom required to undertake this operative method of treatment.

3. Sacro-iliac and other articular strain :— In this condition also there is a history of sudden trauma, namely, overflexion of the lumbar spine, severe fall upon buttocks or feet. It starts with back-ache and pain and tenderness on the affected joint. This pain radiates down the back of the thigh and is not affected by coughing or sneezing. There is neither loss of sensation nor muscular weakness in the limbs but slight atrophy of the leg is likely. The ankle-jerk and the lumbar spine are unaffected but a limping gait with slightly flexed hip usually results. Straight leg-raising elicits pain and is restricted. Over extension of the hip joint (*i.e.*, passive raising of the leg on the affected side with the patient lying in the prone position) also causes pain.

Complete recovery with appropriate treatment is the rule but in a small percentage of cases relapse may occur if subjected to work demanding much stress and strain.

Treatment :—Absolute rest in bed is to be enforced. Local heat should be applied on the affected joint. Added to these, the local injection of 1 per cent solution of novocain leads to rapid recovery.

In cases of slight displacement of the ilium being associated with it, replacement of the ilium must be effected by hyperextending the thigh with the patient lying in the prone position, which is sometimes accompanied by a definite click. The buttocks are compressed together with strapping and are so maintained for 3 to 4 weeks so as to ensure proper apposition.

4. Spinal tumour and vertebral disease :— Tumours and diseases of the spinal cord and vertebra such as caries of spine, sarcoma, tabes dorsalis etc., are sometimes responsible for chronic pain, as any affection of the sciatic nerve roots will give rise to it. It is therefore essential to exclude diseases of the lumbar vertebra and the pelvis before forming any definite opinion as to its causation. This can best be done by X-Ray examination of the lumbo-sacral spine and also rectal examination and the findings so obtained will give the clue to the right diagnosis.

Since the nerve-roots of both sides are closely related within the meninges, a meningeal tumour will give rise to bilateral pain, loss of sensation, muscular weakness and disturbance of sphincters as a result of compression of the cauda equina. Similarly in the lumbosacral region an epidural spinal abscess originating from an osteomyelitic focus in a vertebral body or lamina or resulting as a metastatic staphylococcal lesion in the epidural fat gives rise to localised backache and severe sciatic pain followed rapidly by other signs of compression of nerve roots. The pain is attended with fever, leucocytosis, particularly increase in polymorphoneuclear cells in the cerebrospinal fluid, and oedema over the sacrum if the disease is acute.

Treatment :—Treatment depends on the causes ushering in the condition. Tumours and diseases of of the spinal cord and vertebra are to be dealt with on the usual surgical lines of treatment.

5. Neurosis :— Though not very common, chronic sciatic pain may develop as a seqence of anxiety neurosis, because patients who have residual discomfort after an earlier attack of sciatic pain, usually develop an anxiety state about their spine, which leads to psychonuerotic exaggeration of symptoms and this condition becomes conspicuous by the absence of any organic disorder.

The cardinal points to distinguish it from other condition are :—

(1) The absence of rigidity of the lumbar spine which is always due to some mechanical cause.

(2) If the patient, when asked to touch his toes, flexes his dorsel spine without holding the lumbar spine extended.
(3) If the patient complains of lumbo-sacral pain in all positions except forward flexion (as forward flexion is not possible in prolapse of intervertebral disc).
(4) Other evidences of psycho-neurosis, namely,
(a) disproportion between degree of limitation of straight-leg-raising and restriction of voluntary movements.
(b) diffusion and lack of precision of pain and tenderness.
(c) and exaggerated disturbances of gait out of proportion to the severity of other signs.

Treatment :—The line of approach to the treatment of this condition is mainly psychological and as such utmost endeavour must be exerted to make the patient feel and behave that he is not actually so ill as he considers himself to be ; in short, he should be helped to dispense with and discard the fallacious ideas and notions about his ailment.

So to gain this end, it is advisable to deal with such a patient with great sympathy, encouragement, and assurance. The supposed causes of his anxieties should be frankly discussed and the rationality of his symptoms are to be fully explained. He must be convinced that subsidence of the symptoms solely depends on him and movements of the spine and limbs can be done without pain provided he takes regular exercises of the spine by bending it forwards and backwards gradually daily and also thinks less of the disease which has its existence only in his mind. If all such efforts fail or relapses occur, he should better be referred to the Psychiatrist.

Acknowledgment.

I owe a deep sense of gratitude to Dr. P. K. Bhattacharjee, M. B., D. T. M., Civil Surgeon, Bankura, for his constructive criticism and practical suggestions to improve this article.

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A Brief Study on Sedimentation Test*

BY

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Definition :—The sedimentation test consists in observing the rapidity with which the red blood cells settle out from the plasma.

Fahraeus was one of the first to make observations upon the rate of sedimentation of red blood cells in citrated blood.

The normal sedimentation rate for men varies from 2-8 mm. per hour, with an average of 3-4 mm. For healthy women it varies from 2-10 mm. per hour with an average of 5-6 mm. ; during menstruation probably as high as 12 mm. per hour. It must be understood that sedimentation test is not a special test for any disease. It does appear however that this test may have some value in such a disease as tuberculosis. Westergren states that normal sedimentation rate is never obtained in active tuberculosis. High sedimentation rate means low resistance whereas low sedimentation rate means high resistance with good prognosis. Cutler's conclusions in regard to the value of this test in tuberculosis are summed up as follws :—

"As an aid in estimating activity, the sedimentation test is more reliable than temperature curve, pulse rate or gain in weight, the three major guides in the treatment of tuberculosis"

Importance :—It is a probable guide for the diagnosis, treatment and prognosis of tuberculosis and tropical eosinophilia.

In quiescent state sedimentation rate varies from 15-20 mm. per hour. In slightly to moderately active form it varies from 21-40 mm. per hour. Whereas in moderately to markedly active form the rate goes high above 40 mm. per hour.

When clinical symptoms and active signs are absent or not marked, sedimentation test is probably the cheapest and easiest possible method for early diagnosis. In quiescent state or slightly to moderately active form if proper treatment be given in time, the disease can be averted from developing markedly active form. The line and length of treatment and prognosis can also be determined by sedimentation test. In leprosy sedimentation rate is the index of treatment to determine the resistance of the body which is an essential factor for it.

From economic point of view and where X'ray is not easily available or beyond means sedimentation test is useful for diagnosis, treatment and prognosis.

Erythrocytes sedimentation rate should be studied and investigated in tropical eosinophilia also which is a quite different clinical entity from tuberculosis. Joseph records the Erythrocytes Sedimentation rate in tropical eosinophilia is invariably raised in all cases varying from 18—42 mm. per hour with an eosinophile percentage varied from 19—74. (vide *I. M. G.*, Dec. '46)

Dr. R. N. Choudhuri reports erythrocytes sedimentation rate 86 mm. per hour with an eosinophile 75·5 per cent (vide *I. M. G.*, Dec. '43.) But I have recorded sedimentation rate 105 mm. per hour with eosinophile 70 per cent in my laboratory. The records of my laboratory reveal the following data :—

Total number of sedimentation test done :—21

Total number of high sedimentation rate recorded :—19 (90·48 per cent).

Total number of normal sedimentation rate recorded :—2 (9·52 per cent).

The following table shows the merit of sedimentation rate in general practice :—

Clinical diagnosis of attending physicians.	No. of cases.
A. *Suspected tuberculosis of* :—	
(*a*) Lungs	... 11 cases
(*b*) Pluera	... 1 case
(*c*) Glands in the Neck ...	... 1 case
(*d*) Glands in abdomen ...	... 1 case
(*e*) Intestine ...	... 1 case
(*f*) Continued obscure fever	... 1 case
B. *Tropical Eosinophilia*	... 3 cases

* Read in the monthly meeting of the 24 Parganas Branch (Bengal), A.I.M.L.A. during May 1947.

This series show how the physician in-charge confirms his diagnosis without skiagraphy or Mantoux test which is apt to incur expenditure, shifting of the patient and requisition of an expert for the test.

Summary & conclusions :—Sedimentation test is one of the most economic and easiest methods apart from X'ray for the diagnosis, treatment and prognosis of tuberculosis especially where clinical symptoms are obscure. Of course blood examination for eosinophile count has to be done to exclude tropical eosinophilia. The sedimentation test is a non-specific reaction occuring in many infections and destructive diseases and should be studied extensively so that its limitations and probable value could be fully established. By repeating the test at regular intervals the true course of the disease can be graphically represented; as the individual improves the graph should approach more and more the horizantal line but should he become worse more and more the vertical curve. The graphic method is the most informative method that has yet been proposed for the study of the blood sedimentation test and should be the method of choice in all future investigation. High sedimentation rate does not alone point to tuberculosis but tropical eosinophilia should be considered and confirmed by blood examination along with radiological findings.

The value and importance of sedimentation test in diagnosis of ailments in the following group of cases is worth noting:—

(1) Chronic cough resistant to ordinary line of treatment. Study sedimentation rate and eosinophile count.

(2) Chronic diarrhoea or sprue resistant to all treatments. Sedimentation rate to be ascertained.

(3) Glands in neck not yeilding to sulpha drugs. Before taking specially non-specific protien therapy like milk ascertain sedimentation rate.

(4) Glands or any suspected malignancy in abdomen to aid diagnosis sedimentation rate helps much.

(5) Skin diseases continuing year after year with or without enlargement of accompanying lymph glands sedimentation rate to be taken.

(6) Chronic affection of joints or bones to exclude syphilis or tuberculosis sedimentation rate is helpful.

(7) Chronic salphingitis or pelvic inflammation sedimentation rate aids diagnosis.

(8) Sedimentation rate is of greatest importance in a case of Ptyphilitis or Periptyphilitis with or without involvement of appendix. These ailments often persist even after a prolonged course with emetine or high bowel wash or with sulpha or penicillin therapy. When all these fail to control the inflammation of cæcum or ascending colon an early treatment in the line of tuberculosis can be undertaken on the high sedimentation rate.

(9) Irregular fever continuing during the convalescent stages of many diseases like malaria, kala-azar, or enteric fever etc., may lead to provocation of a latent focus of tuberculosis otherwise lying dormant. Early treatment on sedimentation rate data leads to favourable prognosis when other clinical help is not possible or seems apparently superfluous to parties.

I am very much grateful and indebted to Dr. Siba Pada Mukerji M. B., one of the leading practitioners of Calcutta and visiting pysician, Carmichael Medical College and Hospital, Calcutta, who has kindly given me the lead to study the sedimentation rate in some of his cases in my laboratory.

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Neurosyphilis

BY
Dr. PARESH CHANDRA SEN,
Chaibassa,

Of all diseases of the nervous system, syphilis has a large importance by reason of its frequency, widespread distribution and its ability to simulate any other disease. It may involve any part and structure of the nervous system, although it may show a prediliction for some particular structures, which determines the clinical types.

Cause :—The causative organism is always the treponema pallidum. Neurosyphilis is common both early and late in the course of syphilitic infection. Hence, in any stage of syphilis, it is necessary not only to perform blood Wassermann tests, but also neurologic examinations and special fluid studies.

The factor chiefly responsible for the development of neurosyphilis is probably insufficient and inadequate treatment of primary syphilis.

Pathology :—Fundamentally the great majority of changes produced by syphilis are inflammatory in nature and consists more or less of peri-vascular lymphangitis. The degenerative changes are usually secondary. Neurosyphilis is primarily not a disease of the nervous elements, but rather an inflammatory condition in which the nervous elements are affected by either direct pressure and encroachment by interference with their nutritional supply or by poisoning of their nutritional fluids. Syphilis has a prediliction for certain blood-vessels especially those of the circle of Willis and the lenticulate artery, but vessels of much smaller calibre may be equally affected.

Classification :—The classification of neurosyphilis is difficult but important. A purely pathological classification is often impossible on clinical grounds ; at the same time a purely clinical classification tends to make a confusing number of disease entities. Yet some form of classification is important for prognostic and, especially, for therpeutic purposes.

Therefore the following classification is adopted :—

(1) Meningovascular forms of lues, with predominent involvement of the mesodermal structures (*i. e.*, bloodvessels, meninges and septa) with only secondary involvement of the paranchymal structures (*i. e.* ganglia cells, neuroglia, nerve fibre tracts). From a clinical standpoint these forms of neurosyphilis have a relatively benign prognosis, being amenable to specific treatment. Under meningovascular may be considered :—

(*a*) Cerebral syphilis, including meningitis encaphalitis, meningo-encaphalitis, and purely vascular lesions within the brain. Paresis is not included in cerebral syphilis.

(*b*) Spinal syphilis, including meningitis, hypertrophic cervical pachymeningitis, myelitis, meningomyelitis, and purely vascular lesion of the spinal cord. This does not include tabes dorsalis.

(*c*) Syphilitic neuritis.

(2) Paranchymatous Neurosyphilis, with predominant involvement of the paranchymatous structures. In these forms the involvement is more serious and the treatment is unsatisfactory and the prognosis correspondingly more grave.

Under this heading may be mentioned :—

(*a*) Tabes dorsalis (*b*) Primary tabetic atrophy.

(*c*) Dementia paralytica (Paresis).

Signs and Symptoms :—As the subject is very wide and space limited I would mention only a few signs, which are most important and common to all the varieties of neuro-syphilis.

(1) Tendon reflexes become unequal and there is a tendency towards irregularity.

(2) Pupillary disturbances show important signs. Inequality of the pupils is extremely common in all forms of syphilis, but not always pathognomonic. Bilaterally contracted pupils are frequently found in advanced tabes. Irregularity in the margin of the pupil is of syphilitic origin, provided it is not the after-effect of iritis and chronic alcoholism. The most important information is obtained from the reaction of the pupil to light and accommodation. Reaction to light means not only contraction of the pupil by the direct stimulation of light, but also consensually (i.e., when one eye is under stimulation of light, its fellow also contracts).

In testing the light reaction, the accommodation of the eyes should be relaxed by fixing the eyes over an object at some distance. Now in neurosyphilis there is a tendency to diminution or even a total failure of light response, both direct and consensual. It is more significant by a normal response to accommodation, which condition is named as Argyll-Robertson pupil. In a fully developed Argyll-Robertson pupil, the pupil does not respond to light, but reacts well in accommodation, this condition is practically pathognomonic of neurosyphilis.

Serological test is also an absolute factor for a definite diagnosis of the disease. Therefore a blood Wassermann must always be done. A positive Wassermann indicates that the patient has some form of syphilis, but it does not say that he has neurosyphilis ; at the same time a negative Wassermann does not exclude neurosyphilis. Therefore a blood Wassermann although necessary, yet is never conclusive of neurosyphilis, and so should always be checked with complete special fluid studies.

Treatment :—As regards treatment, it is not necessary to recapitulate the long used common drugs such as arsenicals, mercury, bismuth and iodide, but one must admit that uptill now we have got nothing else than these few so well tried and definite drugs. Penicillin is in use now-a-days, but its effectiveness has not yet been definitely evaluated.

Before discussing medicinal treatment, we should consider other aims and principles, which are in no way less important.

The prevention of the development of neurosyphilis is of paramount importance and for this the early and late syphilis should be treated intensively until the cerebro-spinal fluid studies are negative. If cerebro-spinal fluid study is not possible, then blood Wassermann together with complete neurological examinations should be negative before a complete cure is claimed.

For the treatment of syphilis Sanders gives an excellent summary as follows :—

1. A few doses of Arsphenamine does not cure syphilis in any stage of the disease.
2. Neoarsphenamine combined with murcury or bismuth given over a larger period produces excellent results.
3. Regularity in treatment is essential to success. Irregular treatment gives poor results and may be harmful.
4. Iodides in large doses do often convert a persistently positive to a negative Wassermann.
5. Early syphilis should be treated intensively and without rest for the first year, Late syphilis with damage in the vital structures should have a preliminary course of mercury or bismuth before administering Arsphenamine.
6. Removal of foci of infection and care of the general health are important procedures in the managemnt of syphilis.
7. Patients need encouragement and frankness to secure their co-operation during the prolonged treatment.
8. Careful periodic health examinations should be made of all patients who have been under treatment for syphilis
9. When in doubt as to the amount of treatment necessary a few extra courses are better than not enough.

Now we come to medicinal treatment of neurosyphilis. In this task we have to face the following obstacles :—

1. The antisyphilitic drugs whether used through a vein or by any other route may not penetrate the barrier, especially the choroid plexus before reaching the damaged paranchyma of the central nervous system.
2. The parenchymatous elements of the nervous system withstand certain antileutic drugs less well than other tissues of the body and may often cause disastrous complication such as optic atrophy,
3. Renal and cardiac complications are frequent in this disease which contradict the use of arsenicals as well as too vigorous use of other antileutic drugs.
4. Anaemia, malnutrition and focal infection are the points we overlook which limit satisfactory results.

Considering all the above obstacles, patient should be informed and impressed at the outset of the necessity of a prolonged and tedious course of

treatment. At the same time, to get the maximum benefit he must abstain from alcohol and must have all possible physical and mental rest.

Neurosyphilis can practically be never cured and the damage done to the parenchyma of the nervous system can never be followed by complete restitution. Nerve cells, glia, and nerve fibres in the central nervous system do not regenerate. Consequently the only aim of giving medicine is to

(*a*) increase the resistance and the defensive apparatus of the tissues (*b*) the destruction of the trepanoma pallidum (*c*) the reduction of abnormal inflammatory elements (*d*) prevention of new foci of inflammation and degeneration.

To achieve all these we generally use :

1. Arsenicals which have got the strongest destructive effect on the treponama pallidum.

2. Mercury and bismuth are the best agents to stimulate tissue resistance.

3. Iodides resolve granulomatus tissues.

4. Fever therapy and tryparsamide are the best remedies for arresting acute inflammatory processes.

All cases require a prolonged course of treatment of not less than 3 years, often much longer. It is most important to know when to stop it; otherwise the toxic effects of drugs may be disastrous to the patient.

Mercury:—has got a high resistance-building capacity of the tissues and less spirilicidal action. It acts very slowly, well-tolerated and their relatively less tendency to local or general complication. It saturates the tissues. The two principal dopots besides the muscle where the injection is made, are the liver and kidneys. The toxic signs are salivation, stomatitis and, most important, irritation of the kidneys resulting in albumen, casts and R.B.C. in the urine. Frequent examination of the urine is absolutely necessary during mercury treatment and to stop it whenever there is any sign of irritation of the kidney.

Bismuth:—has a somewhat higher spirillicidal action than mercury, but much lower than arsenicals. It is especially useful in obstinate and resistant cases and in the shooting pains of tabes dorsalis. It is distinctly less toxic than mercury. Signs of bismuth intolerance are oral feter, blue-gum-line, stomatitis, slight renal irritation; dermatitis, and gastro-intestinal disturbances. Introduction of bismuth suspension into a vein may cause immediate death.

Iodides:—Its action is distinctly nonspecific. It acts by its ability to resolve granulamatous tissues and helps in keeping mercury in solution as well as prevent excessive saturation of tissues with the latter drug. Iodides are readily absorbed and eliminated. Neuro. syphilitic tissues take up more iodine than normal tissues. For this reason, as well as for securing a rapid maximum penetration into the nervous system, it is sometimes useful to employ intravenously. Iodides before administered intravenously should be tried by mouth for a few days to detect any intolerance.

Toxic manifestations of iodine are catarrhal symptoms of the upper respiratory system. More severe symptoms are over-salivation, brassy taste in the mouth, nausea, vomiting, abdominal pains and diarrhoea and, in some cases, dermatitis. Iodides are absolutely contraindicated in cases of Thyroid Adenoma.

Arsenicals:—When given intravenously are rapidly distributed to all tissues but tend to accumulate mostly in the liver, spleen, gastrointestinal tract and kidneys. Only a small quantity appears in the spinal fluid, excepting tryparsamide which has a greater penetrating power. Elimination takes place chiefly through the gastro-intestinal tract and kidneys but it is less irritating to the kidney than mercury.

Toxic symptoms are vomiting and vasomotor disturbances immediately after the injection. Within an hour after injection, chills, fever and prostration occur; within 6 to 12 hours, fever with delirium, skin erruptions, gastro-intestinal and cardiac disturbances and especially the Herxhimer reaction may surpervene. After 12 hours there may appear purpuric haemorrhages, melena, arthritic reactions, anuria, evidences of encephalitis, acute yellow atrophy of liver, cardiac failure and exfoliative dermatitis. The value of adrenalin for anaphylactic and cardiovascular symptoms and sodium thiosulphate for dermatitis and hepatic complications should be remembered.

Amongst arsenicals, tryparsamide is chosen for the treatment of neurosyphilis as it has got the highest penetrative and tissue resisting power, but at the same time there is the greatest danger of impairment or loss of vision by its use.

Fever Therapy:—In our country hardly any patient takes even a fourth of the full course of treatment as mentioned in the text books for both early and late syhilis, yet neurosyphilis is very rarely found. It is because, in our country, almost every individual must have suffered from malarial fever sometime in his life; and this helps to prevent the development of the neurosyphilis in a large number of cases.

The fever therapy can be carried out as follows :—

(*a*) By chemicals such as sodium nucleanate and sulphur.

(*b*) By bacteriological products as Typhoid Vaccine and Coly's fluid.

(*c*) By inducing malaria or relapsing fever by artificial inoculation.

(*d*) Hot baths and diathermy.

NOTE:—Jarisch and Herxhemier Reaction:—These two gentlemen while treating syphilitic patients with mercury observed certain reactions, such as the accentuation of the syphilitie roseola together with headache. Therefore the flaring up of such symptoms during the course of treatment of syphilis are known as Jarisch Hexheimer Reaction.

This reaction is more commonly observed after the administration of arsenobenzenes and the following signs and symptoms need careful attention :—hepatitis together with jaundice, focal inflammation in a gumma of the larynx, or the brain or the heart or some other important structures. In any event, such a reaction in cases in which important organs are involved may be serious or even fatal. Therefore prompt action is necessary.

* A paper read during the annual meeting of the Chaibasa Branch, A. I. M. L. A. during May, 1947.

Gastric Carcinoma—A Plea for its Earlier Diagnosis.*

By

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We the members of the medical profession in general, and the surgeons in particular, may find cause for satisfaction in the general advance of surgery during the last two decades, but upon this subject of cancer of the stomach, we can look only with gloom. It is one of the *commonest* of all gastro-intestinal carcinomata and though its incidence varies in different countries, it nevertheless occupies this unenviable predominance. Though the commonest, the diagnosis is delayed to such an extent that the *operability* in cases of patients presenting themselves with symptoms, *is lower than with any other growth.* Because of this delay in diagnosis, the *operative mortality is still one of the highest* of any major abdominal operations and the *cure-rate*, among that survive the ordeal, *is one of the lowest in cancer surgery.* Yet, some of us who are entrusted with the relief of this depressing and almost hopeless state of affairs, find an appalling lack of interest and enthusiasm on the part of the public and the profession, in the early diagnosis of this condition—a condition in which early diagnosis alone will salvage many of these victims of an otherwise dire disease.

Within the period that is allotted to me this evening, I do not propose to go into the aetiology, symptomatology, diagnosis and treatment of this disease. In the beginning, I shall briefly enumerate the well-known symptoms and signs of gastric carcinoma. Then, I shall display the prognosis of gastric carcinoma, as it was till very recently. Before I finish, I shall endeavour to place before you a plan of action for the really early diagnosis of cancer of the stomach.

Symptoms and signs:—The so-called *classical symptoms* and signs are only too well-known. A carcinoma subject will have epigastric pain. This is slight at first, but gradually increases in intensity. The pain is characterised by its constant presence all through the waking hours and it does not generally have any definite relation to food, though occasionally the pain is aggravated by the ingestion of food. Later on, there is loss of appetite and loss of weight and, some time later, vomiting of foul-smelling coffee ground material, severe anaemia, and even a palpable epigastric mass.

To these general symptoms and signs certain special ones may be added, depending mainly on the situation of the growth in the stomach. Cancers situated at the inlet and the outlet of the stomach declare themselves moderately early by producing obstructive symptoms and a great deal of disturbance, whereas growths in the body of the stomach may be clinically silent and symptomless to the end or may be marked only by vague symptoms until a very late stage in the disease has been reached.

*A paper read before the Annual Meeting of the Coimbatore District Medical Association on 14th April, 1947. *Courtesy* : C. D. M. A. *Annual.*

The four main clinical types are :—

I. The pyloric obstruction type—due to growths near the pylorus.

II. The cardiac orifice type—due to growths near the cardia;

III. The insiduous type of cancer—due to growths in the body of the stomach; and

IV. The "ulcer-cancer" type—due to a chronic gastric ulcer becoming malignant.

I. The pyloric obstruction type : Is characterised by :—

(1) A *short* and *rapidly progressive* history of dyspepsia, indigestion and continuous epigastric pain.

(2) Epigastric pain becomes more severe after food.

(3) At first there is vomiting of small quantity, but later, larger quantities of decomposing food may be ejected out. Due to the presence of altered blood, the vomiting may be coffee-ground in appearance.

(4) Due to the presence of the obstruction the stomach hypertrophies and dilates; examination of the abdomen may then reveal visible gastric peristalsis, a gastric succussion splash and some times a hard epigastric lump to the right of mid-line.

II. The cardiac orifice type:—In this comparatively rare condition, the patient complains of epigastric pain particularly in the region of the xiphisternum in front and interscapular pain in the back, immediately after food is taken, and there may be a sensation of food remaining lodged in the lower portion of the gullet. While at first solids can be swallowed with difficulty, as the disease advances and the stricture tightens, only liquids go through and, later, even this becomes an impossibility and vomiting may be present. Loss of weight sets in fairly early and is very marked. Owing to the similarity of all the signs and symptoms it is often impossible clinically to distinguish this type of carcinoma from a malignant growth of the lower end of the oesophagus.

III. The insidious type:—The growth being situated in the body, the symptoms are very vague and the patient may complain of lassitude, dislike for food, epigastric discomfort, or heart burn, etc. Later on, anorexia, emaciation, anæmia etc., set in or the insidious disease may manifest itself suddenly and dramatically with acute haematemesis or malaena, or even an acute gastric perforation.

IV. The ulcer-cancer type:—This, as I have said already, is a carcinoma that develops from a chronic gastric ulcer. In a patient konwn to be suffering from a chronic gastric ulcer of some years duration the following symptoms would indicate or at least suggest the possibility that the ulcer has become malignant :—

1. *Loss of periodicity*:—Periodicity, *i.e.*, pain for a few weeks and no pain for a few more weeks and then pain again, is found in almost all chronic gastric ulcers. If there is a loss of this periodicity, then suspect a malignant change.

2. *The pain of gastric ulcer*:—Is not continuously present throughout the day and it has a definite relation to food. If there is a loss of this

regularity, if the pain becomes more or less continuous and has no definite relation to food as before, then suspect a malignant change.

3. *Anorexia*:—Which may be present in the later stages of a chronic gastric ulcer, usually increases when a carcinoma becomes grafted on to an innocent ulcer.

4. *Vomiting*:—Which had previously given relief from pain in a benign gastric ulcer, now no longer produces relief in an ulcer cancer.

5. *Loss of weight*;—Which was slight before, now increases as the malignant change advances.

Aids to diagnosis:—Having thus briefly dealt with the "classical symptoms and signs" of carcinoma of the stomach, let me now pass on to the other accessory aids to clinical diagnosis upon which we used to base the diagnosis of this malignant disease of the stomach.

The first *among these* will be the Fractional Test Meal. This is characterised by:—(1) *Achlorhydria—i.e.* absence of free acid in the gastric contents; (2) *Increase of total acids* due to stasis and bacterial decomposition of food; (3) *Presence of blood* in almost every specimen syphoned out from stomach, due to continuous oozing of blood from a malignant ulcer; and (4) Excess of mucus and starch in the gastric contents.

The second test that is very commonly employed is the Barium meal investigation and a "filling defect" is said to be diagnostic of a malignant growth, probably carcinoma.

The third test is a blood picture. In advanced cases, severe anaemia, generally of the secondary type, but sometimes of the primary type, may be present.

Treatment:—*What has the surgeon to offer* by way of relief, to these cases which have bean diagnosed by the clinician who has been helped by his colleagues the Biochemist, the Radiologist and the Clinical Pathologist?

The surgeon can cure the patient of his disease, if it is early, and please remember, surgery *is the only cure for these patients.* If the disease is too far advanced for the surgeon to cure, he can give good palliation and relieve the patient of a lot of his sufferings.

In carcinoma of the pyloric region, the curative treatment will be a radical gastrectomy which consists in removing the diseased area of the stomach and a good bit of the stomach on the either side of the growth, together with the lesser and greater omenta. The palliative procedure in an advanced pyloric growth will be to carry out a gastro-jejunostomy, so as to provide nourishment for the patient and relieve him of his vomiting etc. This prolongs life by 6—18 months.

In a growth of the body of the stomach and in an ulcer carcinoma, the curative treatment is again a radical subtotal gastrectomy. In quite a few instances of fairly advanced carcinoma of this type, instead of a subtotal, a total gastrectomy has been successfully caried out, the continuity of the alimentary tract being restored by an oesophago-jejunostomy (*i. e.*, anastomosis between the oesophagus and the jejunum). The palliative procedure for this type of growth (*i. e.*, where a subtotal or total gastrectomy is not possible) will be a jejunostomy—*i. e.*, feeding the patient through a tub put into his jejunum. This does not prolong life for more than 3—4 months.

In a growth of the cardiac region. the curative procedure will be a total gastrectomy and the palliative procedure will be a gastrostomy.

A question commonly asked is the place of Radium and Deep X-rays in treating this condition. Though a few radio-therapists have claimed occasional good results, the consensus of opinion is that it is a useless form of therapy.

Prognosis:—In addition to the treatment of carcinoma of the stomach, I have so far dealt briefly with the symptoms and signs that we, you and I, have been taught to look for in a carcinoma of the stomach and without which the large majority of us would have hesitated to diagnose carcinoma. It is these symptoms and signs that are still described in the majority of text-books of surgery that the medical students study. What is the result of this teaching? What is the prognosis of this carcinoma, if these are the criteria of diagnosis? I have here the results of three surveys, two extensive surveys from very big teaching hospitals outside India and one from a small series of cases from one unit at the General Hospital, Madras.

At the General Hospital, Madras, in one Unit. out of 20 cases admitted and diagnosed as carcinoma, a radical operation was possible in only two,and even in these, the local disease was so advanced that I am sure that not one would have been alive at the end of five years!

You will agree with me that this is a tragedy—this gastric carcinoma; that this, what I have depicted here, is an appalling state of affairs; to say the least, a most horrible and sorry plight, in the midst of such happiness and gaity that is ours to-day in allopathic medicine.

Who is to be blamed for this shocking state of affairs?

The blame is partly to be borne by the patient and partly, I must confess, by the members of our profession. The *patient* is to be blamed because, in spite of symptoms referable to the stomach being present at some time or other in the majority of patients with carcinoma of the stomach, the patient does not consult his physician for this early enough. This is because there are few organs in the body which the patient feels so well-qualified to treat as his own stomach. In this he is encouraged by the advertisements of stomach remedies which abound around him and by the temporary relief which may come from these even in malignant disease; yes, unfortunately even in malignant disease.

The medical adviser is to be blamed, in as much as he is thrown off his guard, when the patient first comes to him; (1) becauses of the vague and proteannatureofmanyof the earlysymptoms of gastric carcinoma and (ii) because, unfortunately, he has been taught that carcinoma of the stomach means, constant epigastric pain, loss of weight, anaemia, achlorhydria und a filling defect. The picture of the emaciated, ashen-faced, sunken-eyed old man, who had been exhibited to him as a typical case of gastric cancer is still so vivid in his memory that he, the doctor, does not dare to diagnose carcinoma easily. unless these appearances are present!

What is this remedy for the woeful state? The outlook, generally, speaking, would be vastly better, if certain circumstances could be brought to pass. The problem would be largely solved if very person, at least over the age of 35—40 years, could be induced to submit to routine physical examination and X-ray examination of the stomach, once every 3 to 6 months; the problem would be easier of solution if gastroscopy (*i. e.*, examination of the inside of the stomach with an optical instrument) could be employed as a routine to demonstrate and observe the progress of certain pre-cancerous conditions like atrophic gastritis, chronic gastric ulcer and polyposis of the stomach. These objectives, however, are utopian and it is merely wishful thinking to believe that they can ever be achieved. Therefore, we will have to turn to less utopian and more practical measures. These measures can be grouped under the headings of **(A)** For the patient and **(B)** For the Clinician.

(A) The Patient: It is a fact that most members of the lay public who are past middle age, consider a mild degree of gastric discomfort to be a part of the normal process of growing older and the words "indigestion" and "dyspepsia" to most minds signify an uncomfortable, but entirely benign process. Yet, in these two words—indigestion and dyspepsia—is the whole story of early gastric cancer symptomatology. The public should be impressed with the dangerous significance of symptoms of indigestion and dyspepsia and they should be asked to report to the doctor at once, particularly, if any one beyond 35—40 years of age

(1) has an abrupt onset of dyspepsia, when his previous state of health was good;

(2) is losing the sense of well-being following a meal, that was once his and its place is being taken by consciousness of having eaten;

(3) is losing the appetite, or more important, has developed a change in the food desire (*e.g.*. the patient who used to like a particular dish all his life suddenly develops an aversion to it.);

(4) is developing a smaller capacity for food or a sensation of continued warmth and fulness in the epigastric region;

(5) suddenly developes fatigue and depression which continue to progress fast; and

(6) loses interest in his work and in his hobby and is physically unable to carry on without great effort.

All these are particularly ominous if thsre is a family history of cancer.

(B) The Clinician: To the clinician who has no specific laboratory data, chemical, serological or microscopical on which reliance can be placed for an early diagnosis, I would strongly commend the following plan of action,

To regard as cancer, any indigestion with or without symptoms, which *appears after middle life*, acutely or insidiously, in a previously well person.

To regard as cancer, acute digestive disturbances within this age period (*i.e.*, after middle life) which are super imposed upon previously existing chronic digestive disturbances and which do not respond promptly (*i e.*,within two weeks) and permanently to routine measures which have heretofore been successful.

To regard as cancer or highly suspicious of it, such vague symptoms as fatigue, malaise, mental indifference. loss of weight, etc., even though associated gastric disturbances are entirely lacking.

Having thus suspected the dangerous possibilities suggested by the patient's history, the attending doctor should make a tentative diagnosis of carcinoma and proceed at once to prove or disprove it with all the methods at his command.

He should next carry out a thorough physical examination, which will probably do no more than fail to reveal any other cause for the patient's symptoms.

A Fractional Test Meal is then done, keeping in mind its diagnostic limitations. He must remember that though there may be a low or absent free hydrochloric acid in 70 to 80% of early carcinoma, in *nearly 20% to 30% the free hydrochloric acid is normal or there may be even hypherchlorhydria.*

I would request him to attach great importance to the presence of occult blood in every specimen of the Fractional Test meal as according to our Professor of Biochemistry, this is very strong evidence in favour of malignancy.

The clinician still pursuing his objective, must seek the aid of the Roentgenologist, who in his turn must be very pains-taking and peristent. Instead of waiting for the filling defect to appear, the radiologist must report as malignant, any one of the following conditions:—

(1) Minor, but persistent defects in gastric peristalsis; (2) Lack of pliability of the stomach wall over any area; (3) Obliteration of the rugae and changes in the normal mucosal pattern.

In addition, the roentgenologist should view with suspicion *all lesions of the greater curvature and the distal ⅓ of the lesser curvature.*

I must stress here that the patient should not be lulled into a feeling of security by a single negative roentgenographic report. The examination must be properly made, *must be repeated at frequent intervals*, and interpreted each time by the same expert radiologist. This method is so accurate that lesions as small as 1 to 1.5 c. m. have been detected by competent radiologistis,

To the suspicious clinician. who has sought the help of the bio-chemist and the roentgenologist in his attempts to spot an early cancers, another valuable aid has come during recent year, *viz*, the gastroscopy. This is a harmless procedure and can be done under local anaesthesia. With this instrument, the greater portion of the interior of the stomach can be viewed with ease and any early lesion can be detected.

It is only by adopting the routine that I have outlined, that we will be able to detect early neoplasms of the stomach and thus improve our operability rate, lower our operative mortality and increase the 5 year and 10 year cures. That I am not

dreaming is shown by the fact that already in many American and European contries the operability has been increased very much and so has the ultimate survival rate. PACK and LIVINGSTONE have recently shown that by these methods and in cases which were detected and treated when the carcinomatous process was still restricted to the stomach, more than 50% of all patients were alive and well 5 years later. What a contrast to the state of affairs till recently and in our country, even to-day!

I have finished. I hope, I have succeeded in creating in you an appreciation of the dangers of mild digestive symptoms especially after 40 years of age. No really early diagnosis of carcinoma of the stomach is possible until the exact diagnosis of indigestion and dyspepsia is taken up seriously both by the patient and his doctor. In the War against this dread and sinister disease it may be that our efforts are simply skirmishes on the margin of the battle; but even so, they must be fought with every means at our command and they call for our utmost vigilance and our most persistent effort. It has been remarked that gastric clinicians are of two classes— (1) *Those* who are *eternally suspicious* of gastric cancer and never find it; and (2) *Those* whose are *never suspicious* of it and eternally miss it.

If during these few minutes of your time that I have taken I have already set in motion, a shift of the majority of your inclinations from the latter category to the category of suspicious clinicians, I shall feel extremely gratified that those few minutes have been well and usefully spent.

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SELECTED ARTICLES

Cough in Children:—By PARMANAND AHUJA, M.B., B.S., *From Sind Medical Journal, March 1947.*

General:—Cough is said to be the watch dog of the lungs. It is a symptom of some underlying pathological condition and not a disease. In little infants and children, it is the fore-runner at times, of some of the grave complications arising in the respiratory passages which are often responsible for heavy toll at this phase of life. Hence the paramount importance of taking early note of even the bleak of the watch dog before it develops into a bark.

There are certain features which are peculiar to the respiratory organs of children to which a reference may be made at the outset. (a) An infant's chest is more circular than oval, one "result of which is that the child's lungs can expand easily in vertical direction and not nearly so much from side to side." (b) There are certain changes which may occur in the chest of children on account of softness of their chest wall and the yielding nature of its cartilages. As a result of rickets, they may get what is called the rickety shaped chest, falling in taking place at each side along the line of attachment of the ribs to the cartilages. Again they may get what is called "Pigeon breast" in which the chest wall comes to a peak and keel as it were in front." This is very common after protracted attack of whooping cough. The children may develop what is called the adenoid chest "a sinking in of the ziphisternum and lower costal cartilages in older children." (c) There are some peculiarities of respiration in children which should be taken note of. The rhythm becomes altered very easily at the advent of acute disease; the breath sounds are very harsh and the puerile breathing is a normal feature on account of great conductivity of the child's chest, breath sounds are apt to penetrate to the surface of the chest even though there may be a layer of fluid of some thickness between the lung and the end of the stethoscope."

Cough may be caused by :—

1. Diseases of the Nose Pharynx, Larynx.

Simple cold and catarrhal inflammation of the nose and upper respiratory passages, pharynx and larynx may cause cough by irritation of the mucous lining of these passages. So earliest signs of a running nose, and red angry looking appearance of the pharynx and an elongated and tumified uvula without much constitutional disturbances, absence of any signs in the lungs would, in nine cases out of ten, point to these as the cause of the irritating cough which disturbs the sleep and rest of the infant and little children. The cough is worse when the child lies down owing to trickling of mucous in the nasopharynx in the recumbent position. Enlarged tonsils and adenoids are great predisposing factors in causing frequent attacks of cold and consequent cough.

When the larynx is involved we may have simple laryngeal catarrh with occasional laryngeal spasm causing a hacking metallic cough the child walking up in a state of fright with difficulty in breathing accompanied by crowing inspiration. The attack lasts from half to 3 hours or even more and the child falls asleep again. There may be recurrence of these attacks during subsequent nights till the catarrhal condition improves.

In the severe form, there is partial or complete obstruction to the entrance of air depending upon the degree of swelling of the laryngeal mucous membrane. There is croupy breathing, dyspnea and considerable constitutional disturbance like fever etc. though cough is not very troublesome. Laryngeal diphtheria comes under this category.

2. Diseases of the Bronchi and Bronchioles.

Inflammation of these air passages is commoner in infancy and childhood than at any other period of life. Chilling of their large body surface and teething are contributing factors. The question to be considered is whether large tubes are involved causing simple bronchitis or small tubes are the seat of inflammation causing capillary bronchitis which is a serious matter in case of children. If the former, we get sonorous rhonchi in the preliminary dry stage and coarse bubbling sounds in the later moist stage of the disease. If the latter we get high pitched rhonchi in the dry stages, "fine crackling

rales" in the moist, and the accompaniments are also more numerous. The cough during the dry stage is excessive and unproductive but during the moist stage it is loose not so irritable and productive of mucous or muco-purulent secretion.

3. Asthma

This is not uncommon in children and more in boys than in girls. We may have ordinary typical asthma (as in adults) in children with neurotic diathesis, we may have bronchial asthma supervening on repeated attacks of bronchitis with spasmodic contraction of the bronchioles. There is good deal of wheezing dyspnœa associated with the attack. This is much more frequent than the typical asthmatic attack of the adult type. Nasal obstruction, adenoids and enlarged tonsils may be responsible for repeated attacks of spasmodic bronchitis.

4. Broncho-pneumonia and Pneumonia

In this condition not only the inflammatory process involves the bronchioles but the substance of the lungs is also implicated. Broncho pneumonia usually is secondary to attack of bronchitis. Pneumonia may be primary in which case it is commonly lobar, but it may be also secondary to inflammation of the air passages or as a sequelae of acute infectious fevers. The cough in the earlier stages is dry and troublesome but in the later stages with liquifaction of the consolidated areas in the lungs the cough is moist.

5. Tuberculosis

Tuberculosis in childhood is rarely primary but in overwhelming majority of cases is grafted on to chronic cases of bronchitis and broncho-pneumonia especially in children who have been exposed to the infection in their parents. There is persistant cough, wasting and low fever. The condition requires to be carefully distinguished from lingering catarrhal infection in the lungs which often times yields to appropriate treatment.

6. Stomach cough.

This is due to chronic dyspepsia in children; cough is spasmodic in nature, loud, barking and hoarse and comes on in severe fits in an otherwise healthy child.

7. The nervous cough.

This is observed in children of neurotic temperament, particularly at the time of teething. It is a short dry cough usually at night when it disturbs the child in sleep. General health is not much affected, there are no signs in the throat or lungs to account for it.

8. The whooping cough.

This infectious disorder of childhood causes paroxysm of coughing. It may begin as a common cold with sneezing, running of the nose, tickling of the throat and irritating cough. Gradually all other symptoms subside except the cough which increases in intensity and spasmodicity as the time passes and is worse at night. During the fit of coughing the child gets purple in face with bloating of the veins of the head and neck. After 2nd or 3rd week the fit is followed by vomiting of the foodstuff taken by the child. These fits of coughings are easily caused by emotional excitement such as anger, crying etc., duration varies from 3 to 6 weeks. Bronchitis, bronchopneumonia etc. may complicate the picture at any stage of the disease.

Diagnosis.

Careful attention should be paid to differentiate between cough arising from naso-pharyngeal and laryngeal conditions in the upper respiratory passages and the cough caused by condition in the bronchi and bronchioles and the substance of the lungs in the lower and deeper respiratory passages. Cough is the common symptom in all these affections of the respiratory tract. As a general rule cough due to causes in the upper respirator passages is dry, coarse, hacking and unproductive and there is not much constitutional disturbance accompanying the condition. It is aggravated by lying down and relieved in the upright position. In cases of capillary bronchitis, bronchopneumonia and pneumonia, the cough is dry in the beginning, but gets moist, loose and productive in the later stages. Some experience will enable the medical attendant to know whether it is throat cough or cough from the depth of the lungs if one may put it so. The constitutional disturbance like fever, restlessness, peevishness is marked in these cases. Physical examination with the stethoscope will reveal sonorous ronchi in the dry stages and coarse bubbling sounds in the moist stages in bronchitis. In cases of pneumonia the severity of the symptoms will be marked and the usual signs of consolidation discernable by percussion and auscultation. It will not be out of place to mention that the physical signs may not be detectable at the outset and it will tax the skill and ingenuity of the medical attendant to diagnose a case of pneumonia with cent per cent certainty at the very outset of the disease. In children apex is much more often affected than the base and most common situations are left lower lobe and right upper lobe. The chief characteristic change is the development of tubular breathing. Bacteriological examination of the throat swab which is the only alternative to the absence of expectoration in children may throw light on the infecting organisms.

Treatment.

Cough being only the symptom complex of the underlying disease would only be relieved by proper treatment of the same. Common cold and catarrh should never be taken lightly in children and infants, and cough should be considered as the danger signal of the impending catastrophy. Treatment is mainly symptomatic. Simple alkaline expectorant mixture with Tr. Camph Co. is enough to relieve ordinary cases. In cases of relaxed throat Tannic acid Glycerine or Ferri-glycerine or Boro-glycerine are soothing local applications to relieve cough. A little tip to relieve the dry barking throat cough at night is to put a pinch of table salt on the tongue or draw a line or two on the tongue with a piece of raw alum. This common household trick has often succeeded in the hands of the writer when remedies like Heroin and Codein Syrup or other patent cough palliatives like Syr. Zephiol (M. & B.) Syr. Cocillina (P. D. & Co.) Syr. Glyr. T. Vasaka (Alembic) have failed. During war years due to scarcity of these proprietory placebos the writer had occasion to try Chloroform et. Morphinae Co., Chlorodyne, Camphorodyne, in cases of obstinate cough with encouraging results. One

undoubtedly has to be very cautious about the dosage of these drugs in little children as all contain morphia or its derivatives as an active ingredient. A minim of any of these per month age of the infant three or four times a day in little syrup is a safe dose up to the age of six months. For tickling cough Codein. grs. 1½ Acid citric grs.5 Syr. Tolu dr. 4 Syr. Pruni virgin dr. 4 is a useful linctus. Codein and papaverine each gr. ¼ in sugar of milk gr. 15 divided into four powders is very soothing preparation in young children. In chronic nasal discharge in children which in eight cases out of ten is due to either some nasal abnormality or enlarged tonsils and adenoids predisposing the child to frequent attacks of cough and cold, a few drops of Liq. adrenaline (1 in 1000) Argyrol grs. 5. Aqua 1 oz. in each nostril morning and evening are very helpful. General health of such children, should be built up by open air life. Ultra Violet treatment, vitamins A and D and low carbohydrate diet, Iodine and Calcium are well indicated in such cases and calcidin tablets (Abbot) are quite handy for the purpose. Many of the nasal and throat sprays containing sulfa-drugs and penicillin lozenges are the new advents in the field but the author is unable to speak with sufficient experience in respect of these.

Cough caused by bronchits, broncho-pneumonia, will be relieved by appropriate treatment of these primary diseases which clearly is out of scope of the present article. The advent of sulfa-drugs and now penicillin has revolutionized the prognosis and treatment of these diseases which used to be the bugbear of infancy and childhood. Both the duration and severity of the attack is shortened and mitigated by early exhibition of these useful potent weapons of warfare in the medical armamentorium and many of the complications and sequelae that used to be the common features before could be nipped in the bud by effective and moderate dosage.

Cough caused by gastro-intestinal disturbances would be relieved by a mild aperient, regulation of diet and simple alkaline digestive mixture; whooping cough still presents a formidable problem and is the bane of infancy and childhood. Some of the proprietary preparations like whoopax, pertussol, tussanal, syr. ephedronate are worth a trial to mitigate the severity of the paroxysms. Any concommitant catarrhal conditions can be controlled with sulfa-drugs like Sulfamerazine and Sulfadiazine. Pertussis Vaccine started early in the disease has given encouraging results in controlling both the severity and duration of the malady and safeguarding against consequent sequlae.

Nervous cough would yield to sedative line of treatment with pot. bromide, phenobarbitone etc. coupled with fortifying the general health of the child with tonics like syr. ferri iodide, cod liver oil, vitamins B. & C. etc.

Asthma in children which in large number of cases, is of the bronchial spasmodic type, will yield to anti-spasmodics like Tr. belladonna, Tr. ephedra-vulgaris, adrenaline etc. If stomach is overloaded which is not unoften the case in children, an aperient emetic will cut short the attacks. Any reflex irritation from the nose, adenoids, tonsils, tight prepuce responsible for repetition of the attacks should be removed.

Recent Advances in the Treatment of Rheumatic Fever.

BY EDWARD F. ROSENBERG, CAPT., M.C., A.U.S., and PHILIP S. HENCH, M.D *from* ("*The Medical Clinics of North America*," *May, 1946,*)

Rheumatic fever, a high-ranking cause of death, still constitutes a serious medical problem. Although the cause of this disease has not yet been discovered, definite advances in its treatment have been achieved, especially as regards the prevention of recurrences.

Sulphonamides in the treatment and prevention of Rheumatic Fever.

Considerable evidence suggests that acute attacks of rheumatic fever may be provoked by haemolytic streptococcal infections. Because of this relationship between haemolytic streptococcal infections and rheumatic fever, it was hoped, when sulphonamides were first used, that rheumatic fever (at least the acute attacks) might be amenable to sulphonamide therapy. But such was not the case: in the treatment of acute attacks sulphonamides proved of no value; indeed, sulphonamides may aggravate the acute attacks.

However, in contrast to their ineffectiveness in the treatment of acute attacks, sulphonamides appear to be definitely effective in the prevention of acute (recurring) attacks, a matter of very great importance.

The effects of sulphonamide prophylaxis have been observed for more than 900 "patient-seasons" at nine separate institutions and in several different sections of the nation. The results among the patients "protected" by sulphanilamide were compared with the outcome among an almost equal number of patients to whom no sulphonamides were given. The comparison is striking.

Among the rheumatic patients protected by sulphonamides over 1,037 seasons, only 22 acute rheumatic exacerbations occurred, an incidence of 2.2 per cent., and only three patients died from rheumatic fever. But among the rheumatic patients who received no sulphonamide during 1,340 seasons, there were 183 acute attacks (an incidence of 13 7 per cent) and five deaths from rheumatic fever. In other words, among the rheumatic patients not given sulphonamides there were six times as many acute recurrences and almost twice as many deaths (to date) as among those who received sulphonamide prophylaxis.

Because sulphonamides sometimes accentuate the symptoms of an acute attack, most investigators refrain from starting sulphonamide prophylaxis until four to six weeks after all signs of activity of the latest rheumatic attack have disappeared. Other physicians, caring for patients hospitalized during attacks, prefer to start the prophylactic doses of sulphonamide before the patient leaves the hospital, even though the disease is still slightly active.

To date practically all patients of the reported series have been treated only during the winter months. On the other hand, it is possibly a better plan to administer sulphonamides throughout the year in order, not only to minimize drug sensitivity, but to provide more complete year-'round protection.

The drug used in most cases to date has been sulphonamide, while sulphathiazole and sulphadiazine have been used in a few. Sulphamerazine, however,

is now regarded as potentially the sulphonamide of choice. Since sulphamerazine is excreted slowly by the kidneys, it should be possible to maintain an effective blood level by giving one small daily dose. The daily dose in general has been, for children, about 0.5 to 1.0 Gm. of the sulphonamide (generally sulphanilamide); for adults, 1.0 to 2.0 Gm. To maintain an even saturation of the tissues the drugs are given at regularly spaced intervals, either three doses daily, each at eight-hour intervals, or two doses daily, each 12 hours apart.

The blood level which most workers have attempted to maintain has been 1 to 3 mg. per 100 cc. of serum.

Toxic reactions from sulphonamide prophylaxis have not been excessive either in number or in severity. Most of the reactions consisted of rashes, drug fever, leukopenia or mild haemolytic anaemia. They cleared up promptly when administration of the drug was stopped.

This new and promising method for controlling rheumatic exacerbations appears to represent a really important medical advance. The arguments in favour of this procedure appear to be much stronger than those so far advanced against it. The patient may be put to some expense and trouble and there is a slight risk of toxicity. These disadvantages, however, appear to be quite justified in the expectation of reducing materially the chances for acute exacerbations, for prolonged invalidism or even for an early death from rheumatic carditis or from subacute bacterial endocarditis.

When sulphamerazine and other improved sulphonamides become widely available, the chances of significant toxicity, already small, should be materially reduced.

Vaccine Prophylaxis of Rheumatic Attacks.

During the past 20 years, attempts have been made to reduce the incidence of rheumatic attacks by vaccination against streptococci, but the results were not convincing. Since 1933 Wasson and Brown have studied the use of a crude haemolytic streptococcus toxin. Their latest report concerned 42 patients immunized thus during 1941: none had rheumatic relapses, whereas, in a control series of 33 patients, 11 suffered from attacks and three died. Among 38 patients treated during 1942, only one suffered from a possible rheumatic recrudescence, while six rheumatic attacks occurred among 49 untreated control patients. These results are impressive, but until this work receives independent confirmation, no final opinion of its value can be formed.

Use of Salicylate to Prevent Recurring Attacks.

A programme of salicylate prophylaxis was recommended in 1938 by Schlesinger, who gave acetylsalicylic acid to rheumatic children as soon as an infection of the upper part of the respiratory tract developed and continued its administration until three or four weeks after the infection had subsided. He expressed the belief that the number of relapses and the mortality rate were definitely reduced. A somewhat similar plan has been advocated recently by Coburn and Moore. Four to six gm. of sodium salicylate were administered daily, depending on the size of the patient. Administration of the drug was started as soon as acute pharyngitis appeared. Of 47 rheumatic patients having haemolytic streptococcal pharyngitis so treated, only one (2 per cent.) developed rheumatic fever. Among 139 untreated controls, 57 (41 per cent.) developed rheumatic fever. The number of patients treated in this manner is small. The work must be extended before it can be properly evaluated.

Prevention of Attacks by Diet.

Although rheumatic fever affects the underprivileged, the poorly fed and the poverty-stricken somewhat more often than those in better circumstances, repeated attempts have failed to prove that rheumatic fever is directly related to vitamin deficiency or to some other form of malnutrition. But after studying the dietary habits of rheumatic and non rheumatic children, Coburn and Moore recently concluded that some correlation exists between the incidence of rheumatic attacks and the daily intake of protein. The patients susceptible to rheumatic attacks usually omitted from their diet eggs, rich in so many essential factors. To the daily diet of a group of susceptible rheumatic children, Coburn and Moore added two eggs, boiled five minutes, and two frozen egg yolks. Following the addition of this dietary supplements, none of the 24 children with quiescent rheumatism who contracted infections of the respiratory tract with haemolytic streptococci developed acute rheumatic attacks. This work must also be confirmed before the suggested plan can be properly evaluated.

Prophylaxis of Rheumatic attacks by Climate

Physicians are often asked their opinion as to the advisability of a change of climate for patients who have rheumatic fever. To answer this question intelligently one must appraise available information concerning the incidence of rheumatic fever in various parts of the country and the effect of transporting rheumatic patients to supposedly safer climates.

There appears to be no merit in any particular "climate" *per se*; it is a question of whether or not, or to what extent, haemolytic streptococcal infections are prevalent.

Treatment by Intravenous Administration of Salicylates

During the past 40 years, certain physicians have recommended that salicylates be given by vein rather than by mouth for the treatment of acute rheumatic fever. Advantages claimed for the intravenous route have been either that the drug acts more promptly than when it is given by mouth or that endocardial involvement is prevented.

In our opinion, salicylates should be administered orally to patients who have rheumatic fever, except to those who cannot take the drug thus because of gastro-intestinal intolerance. In such cases, one may administer the drug intravenously or rectally. To be fully effective, salicylates generally have to be given in amounts large enough to induce the early symptoms of toxicity, mild ringing in the ears. Administration of such amounts should be continued until fever and articular inflammation have disappeared. If fever or arthritis recurs following withdrawal of salicylates, the drug should be given again until its withdrawal is not followed by such recurrence.

The Haemorrhagic Effect of Salicylates

Sodium salicylate administered in amounts comparable to the doses used in the treatment of rheumatic fevers lowers the prothrombin content of the blood, but only slightly. Hence the danger of haemorrhage from this effect is probably insignificant and the occasional haemorrhagic phenomena observed during acute rheumatic fever are probably symptoms of the disease rather than effects of salicylates. The risk from haemorrhage during ordinary salicylate therapy need not be seriously considered unless a surgical procedure is necessary during salicylate treatment. Patients requiring surgical treatment can be protected from undue risk of haemorrhage by the administration of vitamin K before and after the surgical operation.

Treatment of Acute Rheumatic Fever with Penicillin

Penicillin is ineffective in the treatment of acute rheumatic fever, but may be very useful in the treatment of acute streptococcoccal complications. (Sulphonamides should not be used under such circumstances, as they may aggravate the rheumatic fever)

The Need for Conservatism in Employing Rest in Treatment

There is a growing appreciation of the fact that the heart of the victim of rheumatic fever is damaged, not particularly by ordinary physical activity but by the progressive inflammation of the rheumatic process itself, aggravated from time to time by provocative infections. In the past, patients who had rheumatic fever have too often been overly protected from physical activity : too much rest has often produced mental and physical invalidism. To avoid this needless complication in rheumatic soldiers, the War Department warned medical officers not to overdo in the matter of resting convalescent patients, but to encourage them to resume graduated physical activity as soon as possible when evidences af active disease have subsided. (*Courtesy* : *G. P. Australia*)

Medical Aspects of Malignant Lesions of the Anus, Rectum and Colon (*From the Proceedings of the Mayo Clinic April, 1947*).

E. G. Wakefield, M. D., Division of Medicine: Diagnoses of malignant lesions of the anus, rectum and colon are made by the proctologist. the roentgenologist or the general surgeon at the time of surgical exploration. These diagnoses are confirmed by study of the tissue by the pathologist. A diagnosis of a malignant lesion should not be recorded on the history without a pathologic report which would substantiate such a diagnosis.

The treatment of uncomplicated malignant processes of the anus, rectum and colon is prescribed by the surgeon. In a few cases the treatment is then executed by the proctologist, but generally, however, by the surgeon. As an adjunct to treatment or solely as a palliative measure, irradiation with radium or roentgen rays may be employed. Malignant lesions of anus, rectum and colon may be complicated by the existence of other diseases in various regions or systems of the body, or they may have complications as results of themselves—that is. extension or metastasis.

The complicating diseases which may prove hazardous to the patient while the surgeon is carrying out his procedures commonly are the results of acute or chronic infections of the respiratory system, disease of the heart or kidneys, diabetes, hyperthyroidism, gout or any other diseases characterized by chronicity with a tendency to relapse or recur after operation A great number of patients in the age groups in which malignant lesions of the anus, rectum and colon occur have hearts, blood vessels or kidneys which are not capable of full functional activities. Generally, however, no special preoperative preparation is made for these patients unless there is some objective manifestation of decreased functional activity in these organs. If there is evidence of decreased functional activity in these organs, it is well to observe the patient long enough to be able to evaluate the limitations of function, and perhaps to administer appropriate amounts of digitalis, insulin, antibiotic agents or to carry out other appropriate supportive measures such as the intravenous administration of fluids if dehydration or hyperazotemia is present. Phlebitis or thrombophlebitis is a common occurrence. In such cases rest and bandaging and elevation of the part until the acute phase of the process has subsided are indicated.

The complication of the malignant process itself which is of prime importance is metastasis, and in by far the greater number of cases, metastais from malignant lesions of the rectum and colon occurs in the liver. It should always be kept in mind, however, that an enlarged liver does not necessarily indicate that metastasis has occurred. If there are no evidences of metastasis other than a slightly enlarged liver, it is generally well to proceed with surgical exploration.

In lesions of the colon, and especially of the right half of the colon, which have been present for a long time without symptoms, a constant loss of blood may be followed by rather severe hypochromic anemia, Such a type of anemia is related to the chronic loss of blood, rather than to any sort of toxin produced in the colon. Anemia of this type is amenable to blood supplied by transfusioa.

All paients before operation are hospitalized for a few days to a week for preparation for surgical operation. This preparation consists in the administration of a saline laxative agent, such as a saturated solution of sodium acid phosphate, which is administered once or twice a day. It is not necessary to administer enough of the saline laxative to make the patient too uncomfortable. The whole aim of the saline laxative is to produce a liquid or semiliquid stool which can be readily removed by colonic irrigation. Colonic irrigation is carried out twice a day during the preoperative period. It is usually continued until the return flow is clear. In the hospital these patients receive a high carbohydrate diet. This diet is not adequate and should not be prolonged if for any reason surgical treatment is postponed.

In cases in which the malignant process itself has produced local complications, such as small degrees of intestinal obstruction or low grade perforations, very little change is made in the routine preparation of the patient. Where the malignant lesion is so situated, or is of a configuration such as to produce intestinal obstruction, then alterations in preparation of the

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patient for surgical operation are necessary. In such cases, nasal suction is instituted and hot abdominal stupes are applied. In some cases the administration of a saline laxative agent through the nasal tube will help to relieve the obstruction. Of course, the tube should be clamped after introduction of the laxative. The colon is again irrigated twice a day. Sometimes, beneficial result may be obtained by carrying out the irrigation while the patient is in a knee-chest position. It is essential to administer fluids intravenously every day that the nasal suction tube is in operation. Every attempt should be made to replace, by intravenous administration, the volume of fluids that is removed through the nasal tube. It must be realized, however, that the intravenous administration of fluids will not replace all the electrolytes that are lost through nasal suction. Prolonged nasal suction is undesirable, and as soon as it is clear that the intestinal obstruction is not going to be relieved by the so-called conservative methods, surgical treatment should be resorted to immediately. The surgeon is not pleased by having to operate on a patient who has obstruction of the rectum or colon which has not been relieved by medical means, because operations in such cases usually are only palliative, and although they may be live-saving, the patient in the end is subjected to an extra operation.

Inflammatory Diseases of the Bowel. (*From the Proceedings of the Mayo Clinic, April, 1947.*)

Philip W. Brown, M. D., M.S., in Medicine, Division of Medicine; Inflammatory diseases of the bowel may be thought of as specific and nonspecific, on the basis of present knowledge of their etiology.

In the specific group, those more commonly encountered in our work are due to organisms of the genera Salmonella, Shigella and Staphylococcus and to the parasite, Endamoeba histolytica. A scrap basket diagnosis of "intestinal flu" embraces a large group of conditions, and such a term is one of those curious phrases that creeps into our daily speech. It would be well always to be concerned about something other than "intestinal flu" if the symptoms persist for more than two or three days, for in a recent small epidemic, Dr. Lucian Smith found that the disease in question was not so-called intestinal flu but infection with Shigella dysenteriae. Most of us hold that sulfadiazine is the drug of choice for treatment of bacillary dysentery, although the question of shortening the duration of the disease is not so striking as is the fact of the more rapid eradication of the organisms from the stool. Consequently, the latter action minimizes both spread of the infection and the possible danger of chronicity.

We have been told of the many cases in which amebiasis developed in military personnel. It is well to recall Dr. Logan's teaching of years ago of the prompt institution of two courses of emetine hydrochloride combined with two to three courses of an arsenical drug. The most effective arsenical is treparsol, but since it has not yet returned to the market, carbarsone is used. Especially in the presence of such serious complications as amebic damage to the liver, it is best to start immediately the regime of both emetine hydrochloride and arsenic. It is my impression that at least some failures are caused by lack of a systematic course of treatment.

In the group of nonspecific diseases, the two most commonly encountered are chronic ulcerative colitis and regional enteritis. The patients constitute a challenge to our knowledge, or perhaps lack of knowledge. Articles on the etiology and treatment of these two conditions fill volumes. From the huge mass of comments, there stand out at least three definite factors that so often precipitate the disease or cause a relapse. These factors are (1) emotional and mental stress, (2) intolerance to one or more ordinarily excellent food items, and (3) acute intercurrent infections such as the common diseases of the upper part of the respiratory tract or acute diarrhea. It is more than presumptive to hold that nervousness causes ulcerative colitis or that intolerance to orange juice produces regional enteritis. However, as in the case of peptic ulcer, these are the intangible yet definite factors which one must not overlook. There is no drug or antibiotic agent that has more than an assistive value.

It is a curious fact that most patients who have tuberculosis will accept and carry out the advice of sanatorium care and reasonable restrictions thereafter, whereas it is much more of a problem to persuade patients with colitis and enteritis to accept a prolonged period of care. Those patients—and there are many—who have dominated their disease have done so largely because of their splendid ability to conquer the emotional components and to work out an excellent dietary which is well tolerated.

Although surgery is successful for approximately two thirds of the patients who have regional enteritis and is the best single measure for direct attack, it is actually no more of a cure than is gastroenterostomy for duodenal ulcer And even less is surgical treatment to be urged for patients who have ulcerative colitis, although the value and need of surgical treatment in certain of the complications are recognized.

Obviously, there is much to be done, and we welcome suggestions for research and study in this group of intestinal diseases which it is so difficult to treat successfully.

Sudden Nerve Deafness: Treatment By The Intravenous Administration of Histamine: *From the Proceedings of the Mayo Clinic, April, 1947.*

Olav E. Hallberg, M.D., M. S., in Otolaryngology and Rhinology, Section on Otolaryngology and Rhinology and Bayard T. Horton, M. D., M. S., in Medicine, Division of Medicine: The sudden loss of hearing in an apparently normal person is an alarming symptom which causes him to seek medical attention. Most instances of sudden deafness which occur in middle and old age are caused by hemorrhage into the labyrinth, by thrombosis of the auditory artery, or, as Lillie has pointed out, by involvement of the hearing centers in the brain stem or temporal lobe. In a large proportion of cases of sudden deafness, the distressing symptoms of vertigo, nausea and vomiting occur and may persist for days, The deafness in these cases usually is total and permanent.



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Since one of us (Horton), with associates, introduced histamine as an agent effective in the treatment of Meniere's disease, more than 500 patients have been treated with this drug. Some improvement in hearing has been noted in approximately 50 per cent of the patients. In our earlier work with histamine therapy we were primarily concerned with the relief of vertigo. We did not focus our attention on the problem of nerve deafness until 1945.

Report of Cases

Case 1.—In March of 1945 a man forty-five years old came to the Clinic because of sudden and complete deafness in the right ear of twenty-four hours' duration. With the sudden onset of deafness he had noticed a buzzing and ringing sensation in the right ear, but this was not associated with nausea, vomiting or vertigo. A general physical examination gave negative, results except for the loss of hearing in the right ear. A noise apparatus was used in testing the hearing; there was complete deafness in the right ear, whereas the left ear remained normal. Just twenty-four hours after the occurrence of the deafness the patient received histamine intravenously. The injection of histamine was continued daily, except on Sundays, for twelve consecutive days. For the first four treatments histamine in an 0.8 per cent solution of potassium chloride was injected, and then histamine in isotonic solution of sodium chloride was injected. The tinnitus had gradually disappeared within the first few days of the onset. At the end of the seventh treatment the patient's hearing had not improved, and a dismissal was considered. However, the histamine regime was continued. The first subjective improvement in hearing was noted on the ninth day after the start of treatment. An audiogram made at that time showed a hearing loss of about 25 per cent; that is, an improvement of 75 per cent in the hearing of the right ear. Two days later the patient noticed further improvement, and the hearing was retested with an audiometer. At that time the loss of hearing throughout the scale was about 15 per cent, which is well within conversational range. By the twelfth day his hearing was within normal limits. Audiograms made on the fifteenth, twentieth and thirty-fifth days after the onset of the deafness demonstrated normal hearing in the right ear. Three months later the patient was again examined and was found to be perfectly well in very respect.

Six months after this examination the patient was examined beeause of pain in his stomach. A roentgenogram revealed the recurrence of a duodenal ulcer. The last such symptoms had occurred about one and a half years prior to this. Hematologic procedures including determination of the content of hemoglobin, the leukocyte count and the flocculation test of the serum for syphilis, gave negative results. The roentgenologic appearance of the thorox was normal. The urine was normal except for a few pus cells. The hearing at that time was also normal, and at the time of this report had remained normal for more than eighteen months. We had never noted spontaneous recovery of hearing in a case of this type.

Case 2.—A man fifty-two years old had noticed the sudden onset of deafness in the left ear four weeks prior to his admission to the Clinic. An audiogram made at that time had shown a marked nerve type of deafness in the left ear. Histamine was administered intravenously daily. An audiogram made after approximately one month of treatment demonstrated only slight improvement. However, he was, after this month of treatment, able to hear conversation over the telephone.

Case 3.—A man thirty-four years old had noted the sudden onset of deafness, particularly in the right ear, about six months before his admission to the Clinic. The left ear was also moderately affected Examination revealed complete loss of hearing in the right ear and moderate nerve deafness in the left. Tretment by the daily intravenous injection of histamine was begun. After the patient had been treated for about one month, there was remarkable improvement in hearing. The hearing in the left ear returned to almost normal, and the hearing in the right ear improved so that he could hear loud talk, at least, directed at the concha. The patient went home, and returned in about four months. There had been no change in hearing in this period, during which he had not been treated. Treatment was resumed in an effort to improve his hearing however, this treatment, carried out for a month, did not result in any significant change in the audiograms.

Case 4.—A woman forty-five years old had experienced sudden loss of hearing in the right ear about nine months prior to her admission to the Clinic. She had been almost completely deaf, but in about ten days there was slight, spontaneous improvement in hearing. The audiogram on this patient's admission revealed a marked nerve deafness on the right (60 per cent loss throughout the scale), particularly involving the low tones. Tubal inflations were unsuccessful in changing the condition. There was no improvement in hearing after thirty two intravneous injection of histamine. We assumed that the deafness in this patient had lasted too long for any treatment to be of benefit, and that irreversible changes had taken place in the cochlea.

This patient had had a complete general examination. Examination of the blood revealed the content of hemoglobin to be 13.3 gm. per 100 c.c. of blood and leukocytes to number 13,600 per cubic millimeter of blood. The result of the flocculation test for syphillis was negative. Urine was entirely normal. Roentgenograms of the sinus revealed slightly thickened membranes of both antra, with no significant evidence of sinus desease. Roentgenograms of the stomach and thorax disclosed nothing abnormal.

Comment

These results of histamine therapy are both interesting and instructive. They open an entirely new train of thought in respect to sudden losses of hearing of this type, which ordinarily would be classified as "labyrinthine apoplexies." Most of the instances of sudden deafness which occur in older people are caused by hemorrhage into the labyrinth. Such deafness generally is total and permanent.

In an interesting report by Bing' the loss of hearing must have been caused by edema of the labyrinth rather than by hemorrhage. He reported a case in which complete deafness and tinnitus developed in the right ear of a woman forty-seven years old after she had been exposed to a draft. The left year was less affected. Return of hearing occurred in the right ear within eight days after the internal administration of the iodide of potassium and the application of vesicants to the mastoid region.

Our four patients most probably belong in the same category with the patient reported on by Bing. The static labyrinth apparently was not involved, since our patients never had complained of dizziness, nausea or vomiting. A caloric test was not done; however, we are inclined to believe that the response to such a test would have been normal. We have to assume that the primary pathologic process in this type of disease is edema of the cochlear portion of the labyrinth, and that this edema causes deafness by pressure on the organ of Corti or by some interference with the fluid metabolism of the labyrinth. The fact that the patient's hearing was restored to normal or was markedly improved after the intravenous administration of histamine makes this theory probable. It seems obvious that we are dealing with a phase of Meniere's disease in which only the cochlear portion of the labyrinth is involved.

It is evident from these cases that the sooner treatment is carried out after the onset of deafness, the better the prognosis will be. Nerve deafness has always been one of the most discouraging conditions to attempt to treat in the field of otolaryngology. We believe that histamine therapy will be of help to many of the unfortunate persons thus afflicted.

CASE NOTE

Sulphanilamide in Anthrax

BY

DR. N. K. ROY, SHAMSHERNAGAR.

Anthrax is an acute specific infective disease caused by bacillus anthracis. The infection occurs through an abrasion in the skin generally of face, arm, chest, and abdomen. Itching is first noticed on the skin and a small red papule then appears at the site of the itching, which quickly becomes angry looking. The papule is seen encircled by whitish vescicles and in a day or so become black. Slough forms in the centre. The neighbouring glands enlarge. The temperature may rise as high as 104°F or it may be as low as 99°F.

The appearance of the pustule is very suggestive of anthrax. To be sure, it is advisable to examine serum from the vescicle microscopically in all cases.

I had to treat 7 cases of anthrax during the last 4 years and all the cases were treated with Sulphanilamide. Out of these 7 cases, 6 came from a class of people who generally take meat of almost all dead animals. The other case, a boy of about 8, came from a house which was very close to the former and the boy used to mix with them freely.

Site of infection :—Cheek (1), Chest (2), Arm (2) Fore-arm (1) and abdomen (1),

The serum from the vescicles of 5 of my cases were examined microscopically and 4 were possitive and the other was doubtful. The remaining two cases were not examined. The source of infection in all the cases seemed to be from flesh or hide of dead animals. (cattle)

All the cases recovered spontaneously with sulphanilamide treatment except one female child of about 2 years old. This child was brought to the hospital on the 4th day of her infection with a gangrenous pustule on her chest. The temp was 102. 2°F, pulse 118 and respiration 36. The patient looked toxic and seriously ill. Her spleen, liver, lungs etc., were normal. The adjoining auxilliary glands were enlarged. She was treated with sulphanilamide 0.5 gm. every 4 hours, 4 times a day and glucose by mouth- But the girl died on the 6th day of her infection.

The treatment I adopted in all the cases was cauterisation of the pustule with acid carbolic. For adults I gave 3 gms. per day, gradually diminishing the dose, till 16 gm. was reached at the end of the 7th day of treatment. Alkaline mixture and glucose by mouth was also given. Locally the pustule was only covered with plain gauze and as soon as the black scab came off the ulcer was dressed with 5 per cent sulphanilamide ointment.

The result of this treatment was very satisfactory both from point of view of control of toxaemia and local destruction of tissue.

LETTERS TO THE EDITIOR

Temporary Insanity due to Mepacrine.

Ref. the article "Temporary Insanity due to mapacrine hydrochloride" by Dr. Kardeley of Amraoti, Berar, in *I.M.J.* May 1947 Issue, I intend to relate my experience of mepacrine.

Out of 4 years of my war service I spent more than two years in a place in Eastern Front which was considered to be the worst place for malaria and I had the opportunity of treating a great number of malaria cases with mepacrine.

Suppressive Treatment:—The Army instructions were 1 tablet of mepacrine every day after dinner, keeps away malaria from troops.

Blanket Treatment: — During the attack of malaria quinine sulph grs. 10 t.d. for 2 days. Then 1 tab. mepacrine t.d. for 7 days. Rest 2 days. Then 1 tab. pama quine t.d. for 5 days. This is supposed to be a full course and the people are not supposed to be attacked unless freshly infected.

Later when there was acute dearth of quinine, we were directed to use mepacrine more extensively even during the active period of the disease 3 tab. t.d. 1st day, 2 tab. t.d. 2nd day, 1 tab. t.d, 5 days. 30 tablets comprise a full course.

I had some mental cases amongst the men who were under mepacrine treatment at the time. Immediately I was sent on duty to the Base Mental Hospital to discuss the matter with the Psychiatrist. Capt. Ahmed, who was the specialist in charge of the hospital, clarified the whole position by graphs and other experimental records that mepacrine is in no way responsible for it. He told me that the habit of

taking intoxicating drugs and sexual starvation play an important role so far the mental cases are concerned. I found this to be true on verification of my cases.

In the tea-estate where I am now working the mode of administration of mepacrine is 2 tab. a day, consecutively for 2 days in a week. I have been watching the result very minutely under the guidance of Dr. Smith, the M. O. of the district, and so far I have not had a single case of malaria within last 2½ months amongst the men who were actually regular with mepacrine. At the same time I have not also seen any mental case out of the 300 men who are under treatment. Assam tea-estates are notoriously malarious.

I am of the view that mepacrine is quite a good thing specially as a prophylactic measure. Only draw-backs in its use are: (1) it gives a yellow tinge on the skin and eyes. (2) Sometimes it gives rise to vomiting in weak persons, if taken in empty stomach and sometimes giddiness. (3) At the same time it has been noticed that in a very small number of cases, mepacrine fails to put a halt to the activity of the disease, unless a few grains of quinine is given along with it during the active stage. In chronic cases mepacrine with ferri-et-ammon. cit. g. 30 t.d. gives very good results.

Chapuatta Post,
Nowgong, Assam.

K. CHATTERJEE,
M. O., Jaijuri Tea-Estate.

Insanity in the case observed by Dr. Kardeley and published in *I. M. J.* in May 47 issue was in my opinion definitely due to mepacrine. I had noted a number of such cases when I had an opportunity to treat number of cases of malaria with this particular drug during the last famine in Bengal. This trouble rarely occurs or is totally avoided if the patient is advised to drink copious amount of fluids and alkaline mixture (containing sodii-bicarb) administered with each dose of mepacrine. And secondly it should never be given on an empty stomach. Slightest degree of headache, giddiness, abdominal pain, itching or restlessness should be regarded as a signal for more fluid drinks and if any of these symptoms persist, the drug should be stopped and more fluids allowed along with an immediate intravenous injection of 50 c. c. of 10 per cent glucose solution in normal saline. This will avoid the complication of insanity which is no doubt temporary, but a bad reflexion on the practitioner and the valuable antimalarial drug.

I noted a case who remained insane for about 25 days. It is to be remembered that mepacrine has got a high cumulative property.

K. S. LILLY, CAPTAIN,
Mirpur Mathelo, Sind. *Medical Officer.*

Paludrine

As everyone now knows, much work was done during the recent war searching for new and better remedies for malaria. "Paludrine" was one of the results. When I visited India at the beginning of 1946 I was able to give the Indian scientists a first-hand account of the work that had been done on this new drug in England and Australia.

Everyone was agreed that the new drug was of tremendous potential value and all were anxious to try it under their own local conditions. In collaboration with the Malaria Institute of India arrangements were made for experiments to be done in places as far apart as Assam, Baluchistan, the United Provinces, Bengal, Bombay and Madras. I came on this second visit to India to collect the results. During the last six weeks I have spoken to almost everybody who has used "Paludrine" and all are enthusiastic about it.

The treatment and control of rural malaria which is, after all, the major health problem in India, has been revolutionised. Taken once a week, or better still twice a week, "Paludrine" prevents malaria developing, or it can be used to treat an acute attack of the disease by merely giving a single dose.

Briefly, it is simple to use, not unpleasant to take, remarkably free from undesirable side-effects and cheap to buy.

I am confident, therefore, that it will not be long before the public health authorities in India will have the co-operation of the people in the fight to control malaria, and then, of course, the battle will be half won.

D. G. DAVEY,
Research Worker,
14-5-'47. *Imperial Chemical Industries Ltd.,*

Note.—*The Imperial Chemical Industries have issued the following recommendations regarding the optimum dosage of Paludrine.*

The undernoted dosage recommendations are made as a result of the clinical trials which have been carried out in India during last year, 1946-47. These definite recommendations supersede the suggestions made in leaflet reference-"TIL-Printed in England No. 240620-1/25/946".

Treatment of Malaria with "Paludrine":—Clinical cures of all types of malaria can be obtained by single doses of 'Paludrine'. It is recommended that a "single-dose" treatment of 0.3 gm. (three tablets) should be given to achieve clinical cure.

To obtain a radical cure of malignant tertian malaria 0.1 gm. (one tablet) three times a day for ten days should be given, This treatment can be shortened if so desired, by giving larger doses over a correspondingly shorter period.

The radical cure of benign tertian malaria is still being investigated. Present knowledge indicates, however, that if the co-operation of the patient can be obtained the acute attack should be controlled and then 0.1 gm. (one tablet) should be given twice weekly at spaced intervals for six months.

Protection Against Malaria through "Paludrine":—One tablet (0.1 gm. twice weekly at spaced intervals (e.g., Wednesdays and Sundays) will give complete causal prophylaxis against malignant tertian malaria. 'Paludrine' is the only drug which will achieve this effect in easily tolerated doses. This treatment also gives effective clinical prophylaxis against benign tertian malaria.

If for any reason twice weekly dosage is not possible, a very good degree of protection can still be expected from one tablet (0.1 gm.) given only once per week. Should, however, hyperendemic malarial conditions prevail, and the once weekly routine is preferred, the dose must be increased to three tablets (0.3 gm.) each week.

Children's Dosage:—It is recommended that, both for treatments and protection, children above 10 years should be treated as adults. In the case of children under 10 the dose should be individualised according to age and size, but no child need be given less than 0·25 gm. (¼ tablet.)

"Diabetic Cures"

I have read with great interest the paper of Dr. P. H. Sant on "Treatment of the Diabetic Patient" in Feb. issue of the *I. M. J.*, and I have found his remarks about therapy and education of the patient very lucid and apposite. His warning against proprietary drugs and herbal cures must be warmly supported by all interested in the welfare of their diabetic patients. Such cures have been (and probably still are), widely advertised in Europe in daily papers as effective against diabetes "without diet and injections." It has been suggested that the lowering of the percentage of urinary sugar occasionally seen is brought on by increased output of urine and consequently by dilution of its contents. The drugs must be therefore regarded as diuretics. That the total output of sugar remains unchanged is obvious.

Being very much interested in history of Diabetes I would like to know if the claim that Indian Medicine has been familiar with the disease long before the ancient Greeks described it (Aretaios) could be rightly maintained. Perhaps one of my Indian colleagues is able to give some detailed information on this point by means of your *Journal* which I read diligently.

J. SAIDE, M. D., Ph. D.,
Medical Superintendent, Rothschild Hospital, Haifa, Palestine.

Sex-Education

I have realised that a great majority of medical practitioners pay little heed to the patients suffering from various diseases concerning "SEX" with the result that they fall prey to the medical quacks who give them false hopes just to empty their pockets.

Thus their valuable health is ruined and they become permanent invalids.

It is pity that the subject of "SEX EDUCATION" is made so much of by the medical quacks and their literature and little attention paid to it by the regular physicians. It is also surprising when a renowned clinician laughs at such patient and sends him home with insignificant and useless prescription.

Although some of the practitioners have made enviable reputation in genito-urinary work, yet they have neglected this portion of speciality.

In fact the practitioner lacks in sympathy and does not create confidence in the patient which the latter gets in plenty from the quack.

A patient of heart or other disease gets full attention from the specialist, but a patient of sex trouble is simply ignored.

I do not wish to be inferred, however, that I underrate the value of the work of practitioners. It is far from it. Sometimes a patient visits our clinics with divergent symptoms of nervous, cardiac, pulmonary, and gastro-intestinal system, but on detailed examination, we detect some disease in connection with SEX. In fact the specialists are engrossed with major surgical work that they do not care to bother with tedious work of treating such cases.

I have, therefore, decided to contribute a few articles on "sex education" to enlighten your readers and to learn from their criticism.

The present civilisation, change of mode of living, poverty, non-availability of essential food and strain of life have changed the sexual cycle to such an extent that public in general also needs enlightenment on the subject.

I, therefore, request you to kindly publish this letter in your *journal* for the information of your readers so that they may know that they will continuously get some material to read in your *journal* on the subject of "SEX EDUCATION" which will continue well over a year.

Sant Nagar
Lahore

RAJA RAM NAYAR,
M. R. C. S. (ENG.) L.R.C.P.
(London)

BOOK REVIEWS

Physicians' Hand Book: By John Workentin and Jack D. Lange—4th Edition. Published by University Medical Publishers, P O.B, No. 5067, Chicago, Illinois.

The purpose of this hand-book is to summarise tersely, clearly and comprehensively diagnostic procedures and factual data useful for many types of medical and dental practice. We have no doubt that it will excellently serve the purpose which the authors have in mind. The book is divided into two parts—part one deals with laboratory diagnosis and part two with clinical procedures and facts. It is unsurpassed for completeness of information and clarity of description, and so far as we know it is the only hand-book which we have come across dealing so exhaustively with all known diagnostic procedures—laboratory and clinical. It would be highly useful to the medical students and practitioners alike and we heartily recommend it to them.

Students' Hand-Book of Surgical Operations: By Sir Frederick Treves. Eigth Edition and revised. Price 15-net. Published by Cassell & Co, Ltd., London.

Treves Hand-book of surgical operations has been popular with medical students in India and we are sure they would welcome this revised edition. The book has been brought up-to-date and 50 new illustrations hav been added, The description of operative procedures is quite clear and to the point. We have no hesitation to recommend this book to the medical students of our country. We think it would be no less useful to the surgeons also for quick revision before they do their operations;

Food and Nutrition in India:—By an Indian Dietarian. First edition 1947. Published by Dr. D. N. Chatterjee, 3/2, College Street, Calcutta. Price Rs. 6/.

We do not know why the author has not divulged his name but prefers to call himself as an Indian Dietarian. Perhaps, he is too humble and does not desire any kind of publicity for himself. This apologia would not satisfy his readers, and there is nothing wrong in open authorship. We hope that in the next edition he would not cover himself with pious anonymity.

This is the first comprehensive contribution on food and nutrition in India and the author deals with the subject in a practical manner. The first part of the book gives an account of fundamentals of physiology in relation to food and nutrition and the second part deals with the subject proper. The book cantains three appendices giving tables of composition of food-stuffs. Hindusthani and Bengal equivalents of common food-stuffs and a list of some common food-stuff's rich in calcium and iron.

One striking feature of the book is its clarity and comprehensiveness, Secondly it is written in so simple an English that even a high school boy can read and understand it, Thirdly, the author is not a faddist and does not foist on his readers his pet theories as some nutrition experts have been doing in recent times and in recent publications. It is full of useful information to the medical practitioners. We are also of the view that it will serve as a useful text-book to school students, health visitors, nurses, and mid-wives. We hope the publishers would give wide publicity to the book so that it may reach the largest number.

ABSTRACTS

Injection of Furuncles with Penicillin.—It has been demonstrated by Rose and Hurwitz (*New England J. Med.* 234: 291, 1946) that the injection of penicillin locally, i. e., well outside the centre of local infections, is of definite value in limiting and overcoming local infections. They did not recommend the injection of penicillin into the " core " of boils (furuncle with cellulitis) and carbuncles. Concentrations of 10,000 to 60,000 units per cubic centimetre were used and the injections ware made once a day for one to seven days. It should be emphasized that the injections are made outside the centre of infection,—*J, A.M.A.*

Sprue.—Ramon M. Suarez, in *Bull. of New England Med. Centre, Dec.*, 1946) presents a summary of experience on the study and the treatment ot over 400 sprue cases, and the results obtained with the oral administration of folic acid in 50 sprue patients.

Although sprue can be diagnosed clinically in the tropics, it can easily be mistaken for several other conditions, among which are simple achlorhydric anaemia, chronic colitis and enteritis, intestinal and peritoneal tuberculosis, Hodgkin's disease of the mesenteric glands, Addison's disease etc.,

The sprue patient is usually a white individual of any age beyond early childhood, who complains of generalized weakness and diarrhoea of a few months' to a few years' duration. On physical examination there is evident loss of weight, with signs of premature aging and some abdominal distention, and pronounced anaemia. The patient may complain of cramps in the legs, but only 2 per cent. will show neurological signs and symptoms of combined system disease. The presence of a macrocytic hypercromic anaemia, and a megaloblastic bone marrow has been found in 100 per cent. of the cases, These are, in our experience, the most constant laboratory findings.

Gastric analysis shows either hypochlorhydria or histamine resistant achlorhydria (20 to 30 per cent). In 70 per cent of the cases, roentgen investigation of the small intestine reveals the so-called "deficiency pattern" in its various degrees, ranging from coarsening of the mucosa with the disappearance of the normal feathery herring-bone picture of the valvulae conniventes, to definite segmentation or "moulage sign."

There is often steatorrhoea with predominance of fatty acids and soaps. Several authors have reported that the presence of steatorrhoea is a *sine qua non* for the diagnosis of sprue. Our recent studies by Suarez on the determination of the fat content of the stools in sprue performed by Dr. Asenjo (Dec., 1946) shows the presence of definite steatorrhoea in only 20 to 30 per cent, of the cases.

Although several investigators have reported that coeliac disease, idiopathic steatorrhoea, non-tropical and tropical sprue are one and the same disease, Suarez doubts very much whether the first two mentioned conditions can be so considered.

It is a well known fact that sprue cases respond clinically and haematologically to parenteral liver therapy, especially in the presence of a diet which is high in proteins and low in fats and carbohydrates. The response to concentrated liver extract has been as good as that obtained by crude liver extract.

More recently Suarez has used oral folic acid in its treatment. A daily dosage of 10 to 20 mg. was found to be as effective as parenteral liver therapy. Cases responded better to 10 mg. of folic acid daily together with a high protein, low fat and carbohydrate diet, than to larger daily doses of folic acid in the presence of an inadequate diet. Furthermore, 10 to 20 mg. daily were found to be more effective than a single large so-called depot dose (200-500 mg.)

The maintenance dose of folic acid is still under investigation. The maintenance dose of folic acid is a variable one with 2.5 to 5 mg. daily an adequate maintenance dose in most cases. (*From G. P. Australia.*)

Amino Acids in Therapy of Disease (Madden, et al, in *Surgery, Gynaecology and Obstetrics*, Feb., 1946).—of the two general routes for supplying the exogenous protein needs in disease therapy, the oral route is preferable. When oral intake is impossible or inadvisable, the parenteral routes are capable of providing the protein nitrogen requirements over long periods of time without serious toxicity.

Proper mixtures prepared of the crystalline amino acids threonine, valine, leucine isoleucine, lysine, tryptophane, phenylalanine, methionine, histidine, arginine and glycine are adequate for nitrogen needs and marked weight gain over long periods. Certain protein digests are also capable of supplying protein needs, These may be given intravenously, or subcutaneously. The digests are of less-known composition, more difficult of reduplication, more inflexible in composition, and currently less tolerable on rapid injection than the synthetic mixtures of amino acids. On the other hand, they are inexpensive to produce. Evidence favours the better utilization of the amino acid mixtures,

Indications for the use of amino acids for nutritional purposes exist only when natural protein cannot be effectively used. For the feeding of patients who cannot or should not be given protein by mouth, their value parenterally is great. There are also indications for their use orally. In the treatment of peptic ulcer their buffering value may be as important as their nutritive value. Used to fortify the diets of protein depleted individuals, they should have considerable value. Such patients must have reduced capacity to secrete the intestinal enzymes, which are proteins. Pre-digested protein should, therefore, be better handled.

These crystalline amino acid mixtures are well tolerated subcutaneously as well as intravenously even in more than 12 per cent. concentration in aqueous solution. It appears that further improvement in tolerance can be made. Phenylalanine has been shown to be a limiting factor in tolerance.

In our study, marked clinical improvement occurred in a patient with chronic ulcerative colitis fed certain amino acid mixtures parenterally, together with carbohydrate, fat, and accessories orally. No improvement occurred when the amino acids were also given orally

Plasma protein levels in the range commonly regarded as "low normal" may be found in patients showing virtually complete exhaustion of body protein reserves. A high protein intake actually measured and given to such a protein depleted patient with a chronically unhealed wound brought about complete healing after all other treatment had failed. (*From G. P. Australia*)

Recognition and Clinical Significance of Auricular Heart Sounds (Sidney Scherlis, *Ann. Int. Med.*, Feb,. 1946)—A first heart sound preceded by an auricular sound must be differentiated from a split first heart sound. Auricular sounds are usually faint, low-pitched. dull, and of short duration. They may be noted in lesser degrees of heart block, hypertension, sickle cell anaemia, and Bennier. Bocck-Schaumann disease in the absence of valvular deformity or cardiac failure. Both components of a split first heart sound are usually fairly high-pitched, of almost equal intensity and duration, and are recorded after the beginning of the QRS complex of the electrocardiogram.

A late diastolic crescendo murmur is occasionally found in patients with syphilitic aortic insufficiency. It may be high-pitched, louder and of longer duration at the pulmonic area than at the apex.

Presystolic murmurs are heard most often in rheumatic mitral stenosis, although they are not always heard in that condition, only a systolic murmur being heard in some cases. In mitral stenosis the first sound may be accentuated when the beginning of the first sound is added to the termination of the auricular sound, or it may be diminished after a long diastole. In mitral stenosis with A-V dissociation there may be a low-pitched murmur when the auricle contracts during ventricle, diastole.

In auricular fibrillation the only ausculatory sign of mitral stenosis may be a middiastolic apical murmur; howeveer, during tachycardia there may be a crescendo character to the terminal part of the diastolic murmur. In mitral stenosis with normal sinus rythm a mid-diastolic apical murmur with an accentuated auricular sound may be heard.

In cardiac failure the incompletely emptied ventricle may be filled early in diastole. If this serves to approximate the valve leaflets and distend the ventricular walls early in diastole, a protodiastolic gallop may result. A presystolic gallop sound may be produced by systole of the dilated auricle later in diastole (*From G. P. Australia*)

Safety of Anaesthetics.—Statistical studies comparing the safety of the various anaesthetic agents have never been entirely satisfactory. The argument regarding the comparative safety of ether and chloroform continued until the end of the nineteenth century. Its settlement, if it may be considered settled at present, was not made on the basis of statistics but rather as a result of experimental studies on laboratory animals. Reasons for the unsatisfactory nature of statistical evaluation of the anaesthetic drugs are numerous. One of the most important is the influence of the manner of administration. The dose of agents, the techniques used and the early recognition and treatment of undesirable side effects have more to do with safety than does the choice of agent.

To compare ether, ethylene and pentothal sodium is unsatisfactory because they are useful for different purposes. Ethylene, for instance, is distinctly less potent than ether and would therefore be used for less extensive and severe operations on patients often in better physical condition.

N. A, Gillspie has reported statistical studies dealing with deaths during anaesthesia (*Anaesthesiology* 5 : 113 (March) 1944 ; *Brit J. Anaesth.* 19 : 1 (Jan. 1944). In a general hospital over a ten-year period he reported deaths in the operating room as follows :

	Number of Cases	*Deaths During Anaesthesia*	*Per Cent*
Ether	9,741	12	0.123
Pentothal	1,568	2	0.1275
Ethylene	1,172	0	

In the same hospital over a 4-year period he found deaths to have occurred during residence in the hospital as follows :—

	Number of Cases	*Deaths in the Hospital*	*Per Cent.*
Ether	5,203	123	2,3
Pentothal	1,382	24	1.7
Ethylene	224	3	1,34

According to these figures ethylene appears to be the safest agent, and yet careful reading of Gillespie's papers convinces one that no such conclusion can be drawn.

New Treatment for Postoperative Pulmonary Collapse.—If pulmonary atelectasis or collapse develops, the patient should be placed on the unaffected side in a moderate Trendelenburg position, He should be instructed to cough, with someone holding his abdomen. Striking the patient on the back over the affected lung, while encouraging him to cough, will often help to dislodge the mucous plug. A new treatment, consisting in cocainizing the throat with 5 to 10 per cent cocaine solution has been used in a number of cases, with almost instant cure. The cocaine solution in a cotton ball held in a curved applicator is placed far back in the throat and into the pyriform sinuses as if in preparation for a bronchoscopy. This procedure apparently relaxes the musculature of the bronchial tree enough so that, within a few minutes, the patient will cough up a large plug of mucus, Use of a small amount of epinephrine in the same cotton pledget will help stimulate the cough reflex. During the next twenty-four hours or more, use of intermittent inhalation of oxygen and carbon dioxide is continued to keep respirations deep and to attempt to re-expand all bronchioles. Chemotherapy with sulphathiazole or sulphadiazine is begun and continued for twenty-four hours or longer to prevent pneumonia in the congested and airless area. The patient is rolled from one side to another frequently and made to continue to cough and take deep breaths. Cocainization of the throat has cured pulmonary collapse and has avoided the necessity of bronchoscopy.—*Archives of Surgery*, Nov.-Dec., 1945. (*From G. P. Australia.*)

Folic Acid.—The introduction of folic acid constitutes one of the most important therapeutic advances of the past year. This substance is the latest addition to the growing family of the vitamin B-complex group and, because of the many conditions in which it has already been found to be of value, it seems probable that it may become more widely used than any of its close relatives.

Indications.—It has been shown that folic acid is very closely allied to, if not identical with, the red cell maturation factor long known to have been present in liver extract and yeast. It has been found to be highly effective when given either orally or parenterally in inducing remissions in sprue, celiac disease, pernicious anaemia and other macrocytic anaemias.

Whether or not folic acid will supplant liver extract as the primary therapeutic weapon in pernicious anaemia is not known as yet. It has been determined that remissions characterized by a reticulocyte response and an increase in red and white blood counts, platelets, and haematocrit values occur regularly following the daily oral administration of a few milligrams of folic acid to patients with pernicious anaemia in relapse Whether or not complete remissions can be maintained indefinitely by continuing this therapy or whether or not the neurological disturbances often associated with pernicious anaemia oan be satisfactorilly controlled by folic acid therapy awaits futrher study. For the presents it would seem best to combine parenteral liver extract with folic acid theeapy in all cases of pernicious anaemia associated with postero-lateral sclerosis.

In sprue and coeliac disease the daily oral or parenteral administration of foli acidc is attended by a rapid improvement in appetite, by a decrease in the number and bulk of the stools, and by a return of the blood picture to normal. The results are superior to those obtained by the use of liver extracts and special diets. It is important, however, that an adequate diet be given. Small does of folic acid given daily probably are necessary to prevent recurrances in these patients.

In the macrocytic anaemias associated with nutritional diseases (pellagra), pregnancy, liver disease (cirrhosis) and those which may follow gastric resection, folic acid has been shown to be highly effective, the results being better than those following liver extract therapy. Best results are obtained in these cases when the drug is given intravenously.

Dosage.—The final word on ideal dosage of folic acid cannot be stated at this time. In treating pernicions anaemia, 10 to 20 mg. given daily in divided doses by mouth seem sufficient to induce remissions in nearly all cases. Following return of the blood to normal 5 mg. daily is probably a large enough dose to prevent relapse. Similar doses are indicated in sprue and celiac disease. When parenteral therapy is indicated, 1-5 mg. are given intravenously or intramuscularly once or twice daily.

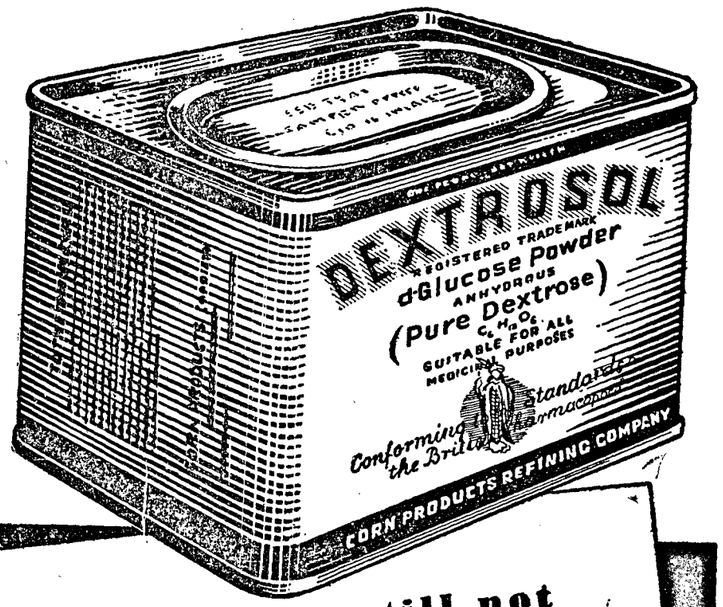
Toxic Effects.—Unpleasant side effects are encountered rarely when the doses mentioned are given. Gastrointestinal upsets may occur, but usually are controlled by a reduction in dosage. When the drug is given intravenously the usual precautions of such procedures must be observed.—*Bulletin of the New England Medical Centre.* (*From* G. P. *Australia*)

The effect of sodium thiosulphate on the blood: Linn J. Boyd, Louts Greenwald and Joseph Litwins : *Department of Medicine, Flower and fifth Avenue Hospitals.* For more than a decade this chemical has been advised for the prevention of postoperative thrombosis and other disturbances of clotting. Adequate examinations of its effect on the blood have never been conducted. In vitro and in vivo experiments have been performed by the writers on more than two hundred patients during the past year. The influence of the chemical on blood morphology, chemistry and clotting was examined. Studies were also conducted on more than one hundred patients before and after operation.

Sodium thiosulphate does influence clotting, but the solutions must be much more concentrated and the doses much larger than those employed by most clinicians. None of the untoward effects associated with heparin and dicoumarin are observed. The chemical is practically devoid of toxic effects. Observations were also made on the question of single and multiple injections.

No changes in the blood morphology occurred when enormous doses were given and the patients followed for months. There are also no significant changes in blood chemistry. There is a variable latent period before the effect appears which bears very definitely on its therapeutic application, A possible mode of action is suggested. (*Bulletin N. Y. Academy of Medicine September 1946.*)

A Rapid Pregnancy Test (Two to Six Hours) U. J. Salmon S. H. Geist C. S. Poole and A. A. Salmon, B. S. The test is based on the observation that following the injection of pregnancy urine into immature female rats a vasodilatation of the ovarian vessels occurs as early as two hours after the injection.



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OAM/11

This reaction is visible to the naked eye—the ovaries being engorged, bright red in appearance and enlarged in contrast to control ovaries which are pale pink in color. In approximately 5 per cent of rats the vasodilatation is only slight at 2 hours and becomes maximal between 3 and 6 hours after the injection ; 2 cc. of urine is injected under the dorsal skin of each of four immature albino rats, weight 35-45 grams. Two animals are autopsied at the end of two hours and if the results are negative or questionable the remaining two animals are autopsied four hours later. The accuracy of this reaction as a test for pregnancy was determined in a series of over seven hundred unknown specimens of urine comprising normal pregnancies, incomplete abortions, ectopic pregnancies, hydatidiform mole, chorioepithelioma, functional amenorrhea, menopause (natural, surgical and radiotherapy), uterine fibroids, menorrhagia, metrorrhagia and functional dysmenorrhea. The accuracy of readings at 2, 4 and 6 hours were compared. Readings of the control urine specimens from normal non-pregnant women were 100 per cent accurate. Correct positive readings were made in 96.3 per cent of the pregnancy cases at 2 hours ; in 97.2 per cent at 4 hours and in 98 per cent of the cases at 6 hours.

This test has the practical advantages of rapidilty, simplicity of reading, inexpensivneess and ease of obtaining the test animals. The latter two are particularly important at present because of the growing scarcity and increasing cost of rabbits.—(*Bulletin, N. Y. Academy of Medicine Sept.* 1946)

Traumatic Shock Magnus I. Gregerson Professor of Physiology, College of Physicians and Surgeons, Columbia University.

The present report constitutes a brief statement of the more important conclusions that my collaborators and I have reached during the past year and a half from our studies on experimental and clinical shock.

Blood pressurs is not a reliable index of the severity of injury nor of the degree of shock.

Reduction in blood volume is the initial and determining factor in the train of events preceding shock from hemorrhage or trauma. In both dog and man a reduction of more than 35 per cent leads to shock.

Contrary to the view which has been widely proclaimed, hemoconcentration is not a criterion of shock, and the gradual failure of the circulation and appearance of symptoms cannot be ascribed to a progressive decrease in blood volume. The reduction in volume occurs at the time of injury. Thereafter not only the blood volume but the hematocrit and plasma protein level remain essentially unchanged. Accurate measurements of the changes in volume of the traumatized limbs (dogs) show that the "local fliud loss" equals or exceeds the loss in blood volume. These facts together with other experimental evidence disprove the theory of general increase in capillary permeability. Capillary leakage is limited to the injured region. Elsewhere fluid is absorbed from and not lost into ths tissues.

Gradual failure of the circulation after hemorrhage or trauma is related to a progressive cardiac decrease output (Fickmethod) which may fall to 10 per cent of the normal, to reduction in oxygen consumption (50 per cent of normal), and to increased A-V oxygen difference (from normal of 4 vols. per cent to 15-20). Complete analyses of the blood have revealed extreme changes in arterial CO_2, yCO_2 yH, lactate, phosphate, and pyruvate. The serum potassium remains unchanged until the terminal stages are reached. During the last hour before death it may rise to two to three times the normal level. The alteration in the blood are characteristic of the metabolic disturbances produced by severe anoxia. They are not peculiar to traumatic shock. (*Bulletin*, N. Y. Academy of Medicine, Sept. 1946.)

Biliary and Renal Colic—T. L. Hardy; *Pract.*; 158: 37: 1947: Treatment of Biliary Colic.

(1) *During attack*: As soon as the diagnosis of biliary colic has been established, morphine in full dose (gr. $\frac{1}{4}$ to $\frac{1}{2}$) should be given; and repeated if necessary. The value of atropine is doubtful. Nitroglycerin (gr. 1/100) sublingually and aminophylline (theophylline with ethylene diamine), 0·24 gm. in 10 c. c. of sterile water, intravenously are effective in overcoming spasm of Oddi's sphincter. Local heat is also recommended.

(2) *After-treatment*: The patient with biliary colic should remain in bed until all pain, local tenderness and jaundice, if present, have gone. This takes about a week. The diet should be light, chiefly carbohydrate in easily assimilable form. All fats should be avoided. When all symptoms of acute inflammation have subsided, fat in the form of milk and olive oil may be employed with advantage. Cholagogues have their place at this stage, the most effective is decholin and decholin sodium, 4 to 8 gr., two or three times daily with meals. There is no sound reason in withholding such foods as eggs, brains, sweetbreads, liver, cream, suet and others which contain cholesterol.

(3) *The place of surgery*: In the acute inflammatory stage operation should be avoided, except in cases of perforation or empyema of the gall-bladder, which makes operation imperative. Factors which determine the necessity of subsequent operations are the persistence of attacks of colic or cholecystitis with dyspepsia, the age and general condition of the patient. Gallstones and chronic cholecystitis are not in themselves necessary indications for surgery ; they may yield to careful and prolonged medical management. Elderly patients with gallbladder disease usually stand operation well.

Treatment of Renal Colic

(1) *During attack*: As soon as a diagnosis of renal colic has been made, a full dose of morphine (gr. $\frac{1}{4}$ to $\frac{1}{2}$), with or without atropine sulphate (gr. 1/100), is indicated. The nitrites and aminophylline will give partial relief or reinforce the action of morphine (as recommended in the treatment of biliary colic). Local heat is useful.

(2) *After-treatment*: The patient is kept in bed until the attack has completely subsided and hematuria has disappeared. The urine should be examined daily for pus and blood. A copious fluid intake (water, barley water, imperial drink or one of the natural mineral waters), upto at least five pints in twenty-four hours should be assured. If the urine is acid with abnormal concentration of urates, uric or oxalates, potassium citrate (gr. 20 to 30, thrice daily) should be given. Over-alkalinization of the urine should be avoided, as there is some risk of a deposit of alkaline phosphates. If pain persists, tincture of belladonna (min. 10) or tincture of hyoscyamus (min. 10) can be added with advantage with the potassium citrate. The combination of a copious fluid intake with an antispasmodic (such as belladonna) may assist in the expulsion of small stones. If the urine is alkaline, small doses of acid sodium phosphate (gr. 10, four-hourly) should be given to control the reaction and prevent further deposit of phosphates. When the acute stage has passed off, the cause of the attack should be investigated by bacterial culture of the urine, X-ray examination of the entire renal tract, pyelograms, intravenous and retrograde, and catheterization of the ureters).

Diet: An adequate supply of vitamin-A is necessary. An abundant fluid intake must be ensured. If uric acid or urates stones have passed, the amount of animal protein should be cut down, and foods and drinks containing nucleoprotein (such as kidney, liver, sweetbreads and brains, tea and coffee) should be reduced to a minimum. A liberal amount of fruit and vegetables are recommended. If urine contains an excessive concentration of phosphates calcium-rich foods (such as milk, eggs and vegetables) should, be avoided and a corresponding increase in the amount of meat, cereals and potatoes advocated.

Individuals with oxaluria should avoid foods containing oxalates (such as rhubarb, tomatoes, spinach and asparagus).

ANNOUNCEMENT

An Association of Dermatologists and Venereologists was inaugurated at Bombay on 1st. July 1947 by the Home Minister Sri. Morarji M. Desai.

This is at present a provincial organisation confined to the province of Bombay, but its organisers, Drs. S. C. Desai & U. B. Narayan Rao, would soon make it a nucleus for an all-India Organisation. With this end in view they are calling for an All-India Conference of Dermatologists and Venereologists at Bombay where the conferences of Specialist's Associations, and of the All-India Medical Licentiate's Association, and the Indian Medical Association will be held during this year's X'mas week.

The membership is open to all registered Medical practitioners who are practising this speciality. Annual subscription is Rs. 25 per annum. Those who desire to become members may write to Dr. U. B. Narayan Rao, Secretary, Association of Dermatologists and Venereologists, 1. Nagindas Mansion, Girgaum, Bombay 4

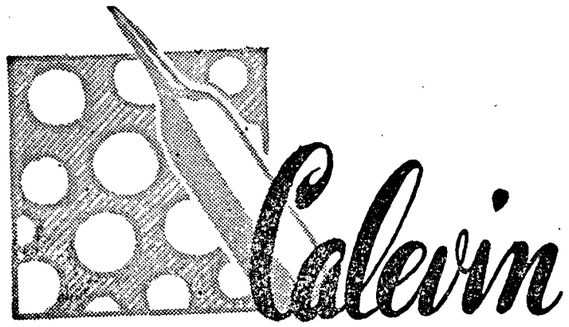
CORRIGENDA

In the article on "Acute Diarrhoea among Infants" published in the May, 1947 issue please read as follows :—

P. 85. Line 8: For Calomel gr. $\frac{1}{2}$, read Calomel gr. $\frac{1}{12}$

P. 87. Line 5: For Coramine 5 c. c. read, '5 c. c.

P. 87. Line 24: For Dol read Dab.



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* Wakeley, C.P.G. (1942) *The Practitioner*, 149, 50.

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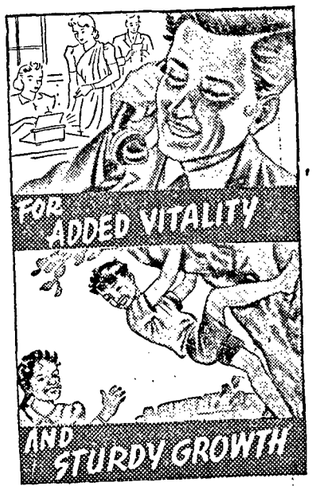
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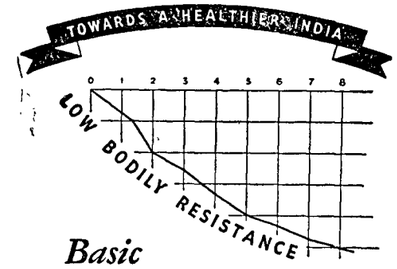


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TO

THE INDIAN MEDICAL JOURNAL

Vol. 5] MADRAS, August, 1947 [No. 1

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LEADING ARTICLES

Resurgam

We began to publish a medico-political supplement to the *Journal* from January 1939 with a view to acquaint our readers with general trend of developments in organisations of medical relief, medical education, medical practice, medical statutes and kindred subjects in various countries of the world, and to stimulate the members of the profession in our country to evolve and to formulate the lines of our own organisation in the light of experience and study in and outside our country. Our supplements were much appreciated by the profession in general and we were receiving a number of letters appreciating the service which the supplement rendered to the practitioners and asking us not to discontinue its publication. But circumstances were such that we were forced to discontinue it from January 1943. War was then going on and we were not able to obtain suitable contributions as a good number of medical men joined the army. Even this could have been surmounted but for the sudden shrinkage of paper supply and mounting restrictions in paper consumption. The rigours of paper control were so acute, till lately, that we were not able at one time to publish more than 12 pages in contrast to our usual average of 80 pages. We had therefore to discontinue the issue of our medico-political supplement.

We have now received a number of requests from both the leaders and the rank and file of the profession to resume the publication of the supplement at any cost in view of the impending political changes in our country. We have therefore decided to issue our monthly supplement and to use its columns for the discussion of various medico-political subjects.

These problems have assumed a new importance to us at this juncture. Our readers may remember that in one of the issues of the *Journal** we defined medical politics as

*Vol. 41, No. 4. April, 1947.

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References: A. Jannings, W. H. Patterson (Lancet. 1942 Vol. 11, No. XI).—W. Macartney, Luxton & Ramsay (Lancet 1942, 30th May, P. 639).—B. A. Peters, M. L. Easby, (Brit. Med. Jour. 1943, 4311 p. 230).—O. Acklin (Practice No. 44, 1944).—K. Meier (Swiss Med. Weekly, No. 50, 1945).—W. Junet (Swiss Med. Weekly No. 3, 1946).



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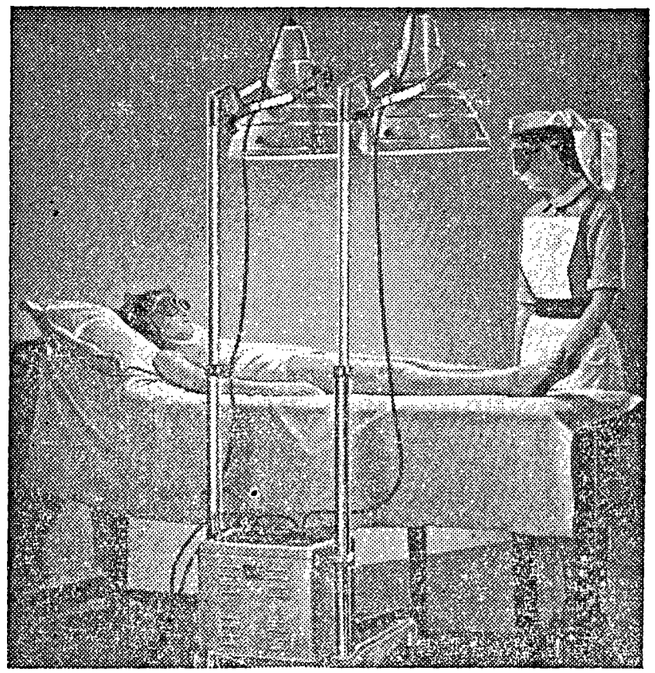
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"dealings of the organised profession with the Government of the country in respect of its policies related to medical education, medical relief, public health measures and medical research." Now the British Government is being replaced by self-government and the policies, therefore, which the latter may pursue may be entirely different in perspective and application. It is therefore necessary on the part of the profession to be vigilant and to play a dominant part in the evolution of medical and public health practice and reform in our country. As we wrote in the Editorial referred to above, the success of medical politics depend on the strength, influence and representative character of the medical associations, and this, in turn, depends on the collective goodwill and co-operation of the profession. The supplement would ardently endeavonr to make its contribution to this cherished goal.

Our readers are aware that owing to political exigencies the dear country of ours has been divided into Pakistan and Indian Union, areas having Muslim and Hindu majority respectively. We hope it is only a temporary partition and the medical men in these two areas would continue to have the same cordial relations and meet in the annual conferences to exchange notes and work together in the building up of a common medical front. This supplement to the *Journal* would willingly play its role in the task of good neighbourly relations and ultimate re-union.

Modes of Direct Action by Medical Personnel in Service

Medical Associations, all the world over, have refused to become trade unions or to get affiliated to them. The individual members of the profession have also no desire to join a trade union for the purpose of ameliorating their position in the Service in which they are employed. In recent times, the British Ministry of Health has been compelling the medical men joining service to become members of a trade union, but the British Medical Association has advised them not to do so and to refuse such appointments where there is such compulsion. So far very few British doctors have obliged their Ministry of Health in this respect, and they preferred to lose their jobs rather than joining the trade union. This is indeed a highly ethical attitude which the profession has developed and the medical associations earnestly foster. The reason is they believe in co-operative work and they do not want to be trammelled by conditions that go against their duties and obligations as medical men. No wonder the question of "direct action" never arose among the medical service personnel; and if they had any grievances their medical association would negotiate with the Government for a reasonable settlement.

Medical men and medical associations in our country have always consistently taken the same view and followed the path of settlement by negotiations. Striking work as a mode of direct action was never thought of, because our medical men in service had a high sense of duty towards the public whom they serve though paid by the Government, Local Bodies or industrial firms.

We direct the attention of our readers to the statement issued by the Standing Committee of the All-India Medical Licentiates' Association which met at Nagpur during last June. This is a review of the deteriorating, at any rate of the stagnant, position of the medical licentiates in service, concluding at the end that all the negotiations of the Association with the various employees of the licentiates, particularly the Government who employ the largest number, have produced no tangible results. The Branches and the individual members of the Association have been asking the Central Body to devise a mode of direct action which would produce proper results. Our readers may also be aware of many letters published in our correspondence column urging "direct action" by the method of collective striking of work. Aware of such keen discontent and desirous of doing its duty towards its constituents in the manner desired by them, the Standing Committee of the Association has set up a Central Sub-committee charged with the duty of evolving a plan or a mode of direct action in keeping with the nobility of the profession and its obligations to the people of the country.

The question of "strike" in the ordinary sense of the word may not arise, because, the All-India Medical Licentiates' Association does not desire to put the public to any inconvenience. The only mode of direct action in their choice is to ask the medical licentiates in service, first to give notice of resignation giving reasons why they do so, and then to ask them to resign finally if the Association fails to get proper response from the authorities.

The demands of the Association are quite simple and well known. They are:

(1) No licentiate should be started on an initial pay of less than Rs. 200 a month. There should be a time scale of increments leading to a maximum of Rs. 500 per month.

(2) Their qualification should be recognised by the Indian Medical Council.

(3) Abolition of subordinate medical service and institution of one composite provincial medical service to which selection should be made from registered medical practitioners by a competitive examination. The Association does not mind if the medical graduates are given a slightly higher initial salary, say, Rs. 250, but the rest of the conditions of service should be the same for both licentiates and graduates.

The present position is beyond forbearance. The initial pay is, on an average, not more than Rs. 75 per month—a pay which the ordinary post-man is getting now-a-days. The maximum is about Rs. 175 which is less than the average initial salary of medical graduates. There is no opportunity to raise by merit, because all the doors of advancement are closed for them.

The Central sub-committee of the A. I. M. L. A., would issue its directives very soon. The medical licentiates in service should make themselves ready to follow them with grim determination. They should refuse to be in a service where there is no fair treatment at all. Private practice will make them more prosperous, and certainly more useful to the public.

OTHER ARTICLES

Practice of Modern Medicine in the Province of Madras.

BY

DR. G. V. HANUMANTHA RAO,

Member, Madras Medical Council.

In India one can practice medicine without any restriction of age or qualification. The same is the case in this Province also, though one cannot assume any medical title as one pleases. According to Madras Medical Registration Act of 1914 a person assuming title falsely can be prosecuted by the Government. At the instance of Madras Medical Council the Government have sanctioned some such prosecution occasionally. The Homeo qualifications such as H. M. D., and so on are all illegal for one to affix them to one's name and those who do so are liable for prosecution by the Government. No qualification other than the one granted by the Government Medical Institution or a University is legal and valid. The Homeo Medical Institutions as are advertised in the press issue certificates of qualification even through postal study. Indian Medical Degrees Act of 1916 does not include in its purview, Homeopathy, Ayurveda and Unani. The Act applies entirely to the practice of Western Medicine only. It is not obligatory on the part of the Provincial Governments to accord recognition to Homeo and Ayurvedic diplomas. So far it has been recognising only practitioners as registered with the Madras Medical Council to be eligible and competent to issue medical certificates to members of the public as required under law. The Madras Medical Council in its turn can only register the qualifications in western medicine granted by the Government and the Universities of the Province or other Provinces in India. This has been the definite policy laid down by the Government. But in 1924 the Government started the School of Indian Medicine to grant diplomas with the title of L.I.M. This Institution has been existing independent of any University or the Surgeon General, who is the head of the Provincial Medical Department. In 1933, the government constituted a Board of Indian Medicine and opened a register with two sections A and B. Under A all L.I.Ms the products of the school and under B all village un-schooled hereditary Vaidyas and others in the Province to the extent of many thousands have been registered. Soon after, these people have begun to style themselves as Registered Medical Practitioners to the utter confusion of the duly qualified members of the profession and the public. There has been much agitation in the press from all sides. Sometime about 1939 or 1940, Government have issued orders that those registered with the Board of Indian Medicine should style themselves as Practitioners of Indian Medicine and certificates granted by them to the members of the public are not valid under law and further have directed that a Registered Medical Practitioner issuing a certificate should give therein his Medical Registration number as registered with the Madras Medical Council for reference and verification.

It all shows that the B class Practitioners can practice only the system of Indian Medicine in which they claim an hereditary proficiency and as such they cannot dabble in surgery or midwifery and gynaecology etc. But The L.I.Ms can practise not only indigenous medicine, but also western medicine. He is said and declared by the Board of Indian Medicine to have acquired a working knowledge in modern medicine in the course of his four years' training. Both L.I.Ms and unschooled Vaidyas are being employed in the service of the Local Bodies, but they have been given no place so far in the Government Medical Service which is purely based on the practice of Western Medicine under the administrative control of the Surgeon General with the Government of Madras. The practitioners of Indian Medicine employed in the Local Bodies are under the administrative control of the Principal of the School of Indian Medicine, besides the heads of the Local Bodies. Therefore in this Province we see that two medical departments are existing independenty of each other. It has been found by impartial and competent medical authorities that the alumni of the Government School of Indian Medicine after a study of four years do possess only a smattering knowledge in medicine and such inadequate and imperfect knowledge is injurious to public health. Consequently it has been decided that a period of five years is necessary to study both the indigenous and the western systems of medicine to get one, qualified to practise medicine safely.

Under the circumstances, the School of Indian Medicine has been lately abolished and in its place a College of Indian Medicine is established. It has also been announced by the Government that a research institute of Indian Medicine would be attached to the said College of Indian Medicine.

It remains to be seen how the traditional fuel and fire used in the preparation of Ayurvedic medicines can be replaced by methods using electricity, yet maintaining the essential qualities and potencies of their medicines.

Madras Medical Council.—I believe that you are all aware that Government is trying to alter the provisions of the Madras Medical Registration Act, so as to include the practitioners of Indian Medicine in its fold. This move on the part of the Government is the outcome of the agitation that has been made by the alumni of the School of Indian Medicine. By which step the L.I.M feels that his status is raised and he will become eligible for service in the Government as well. At the same time the 'B' class Vaidyas are moving earth and heaven to get the difference between 'A' and 'B' classes abolished and thus to get themselves elevated in status equal to L.I.Ms.

Now, time has arrived that our medical associations in the province should seriously consider the vital question whether it is healthy for us to alter the Madras Medical Registration Act enabling the L.I.Ms to get in? Or should we resolve that the alumni of the School of Indian Medicine, Madras not having a full course of modern medicine and therefore without a basic qualification as per the Madras Medical Registration Act of 1914 and also as required in all progressive lands for the practice of medicine, should not find a place in the register of the Madras Medical Council?

I leave the question to you to decide in one way or the other. I hope you will much appreciate if I give you a brief account of studies at the School of Indian Medicine, Madras. In it there are three sections, viz., Ayurveda, Siddha and Unani. It means that virtually there are three schools working in that institution each separate from the other. The protogonists of Indian Medicine have so far failed to bring about fusion and synthesis of the three systems into one unified science of Indian Medicine. In fact each system claims superiority over the other. When it is so it passes one's comprehension how their fusion with modern medicine can be effected and the students reading for a basic qualification of L.I.M., be made to understand a comparative study of them all? As a matter of fact any comparative study and particularly that of Western and Indigenous Medicine can be usefully made in the post-graduate course only. It is with this in view that we have been agitating to get attached a post-graduate chair in Indigenous Medicine to each existing medical college, and also that Government should pass penal laws prohibiting persons who have no basic qualification in modern medicine from practising any system of medicine as it is the case in progressive countries. It is not right that we should link up indigenous medicine with our national cause and thereby feel a sense of false prestige. In a vital matter like that of medicine we should adopt rational methods by advocating the cause of modern medicine only. Nowadays we see that vaidyas do carry stethoscopes with them, besides injection apparatus dabbling in Western Medicines. To our utter amazement we often find them displaying these things in their person and all the time criticising the Western Medicine. Just please imagine how these hybrid medical men are decieving the world. All that I have said is only from my first hand knowledge of the state of affairs at the institution and outside it, since I have had a two year post-graduate course in Indian Medicine in the same government school. Let us for a moment hear what has been said by Mahatma Gandhi regarding vaidyas whom he styles as quacks in his article "Why Doctors" published in "*Young India*" June 11, 1925.

"The vaidyas do not possess the knowledge of human body as doctors do. My quarrel with the professors of Ayurvadic system is that many of them, if not vast majority of them are mere quacks pretending to know much more than they actually do arrogating to themselves an infallibility and ability to cure all diseases. These gentlemen have no humility in them. They will not study the Ayurvedic system and wrest from it the secrets which appear at present to be completely hidden from the world. They impute to ayurveda an omnipotence which it does not possess, and in so doing they have made it a stagnant system instead of a gloriously progressive science. I know of a not a single discovery of invention of any importance on the part of Ayurvedic physicians as against a brilliant array of discoveries and inventions which western physicians and surgeons boast. In fact Ayurvedic physicians' diagnosis as a rule consists in feeling the pulse which I have known many to claim, enables them to know even whether the patient is suffering from appendicitis. Whether the science of pulse ever enabled ancient physicians to diagnose every known disease, no one can tell. But it is certain that the claim cannot be sustained at the present moment. The only thing, Ayurvedic physicians can safely claim is a knowledge of some vegetable and metallic drugs of great potency which some of them succeed in administering for diseases they only guess."

Now, please permit me to conclude my talk to you this evening with an earnest appeal to all of you to give this matter your most anxious consideration. I may assure you that it has received my utmost attention for some years and as such, I cannot for a moment reconcile myself willingly to allow people without a full course of scientific study of medicine being admitted as members of the qualified medical profession and much less finding a place in the Register of the Madras Medical Council. I need not remind you that we are painfully aware how jealously The British Medical Profession has been maintaining their position by not recognising the Andhra Medical Degrees till recently for the simple reason that the equipment is inadequate. How much more reason have we, therefore, to demand that unless the same high proficiency as we claim to possess is also possessed by the vaidyas or alumni of the school of the Indian Medicine, before they can seek admission into the portals of the register of the Madras Medical Council. The Board of Indian Medicine is a parallel body to the Madras Medical Council, and it is having the principal of the Indian Medical School as its ex-officio president. The 'B' Class non L.I.M. Vaidyas form the majority among the members of the Board! The Madras Medical Council cannot do anything against any one registered with the Board of Indian Medicine, when found committing breach of medical ethics such as advertising in the press and by handbills for getting medical practice. The Board of Indian Medicine apparently remain indifferent as if it is bent upon encouraging the vaidyas to do so against the interests of the medical practitioners qualified in modern medicine.

You will please remember that the practise of medicine is an art and not a trade and commercial business. There is sanctity in its very foundation. The structure of the medical practice is built upon this foundation. Hence as members of the noble profession, we have to be kind and humane, and give our patients the best we can. We should also cultivate such a measure of equanimity as will enable us to bear success with humility and restraint.

A paper read at the Guntur Branch of the A.I.M.L.A. during May 1947.

The Art of Healing.

BY

H. N. SHIVAPURI, M.B.B.S., CAPT. I.M.S. (RETD.)

Lucknow.

The art of healing is the oldest art in the world. It is much older than any other science. The art was born almost along with the arrival of the first man.

The lid of Pandora's box opened very soon after Adam and Eve reached Mother Earth, resulting in various diseases to the original couple and their progeny. This necessitated the man's hunt for treatment of various ailments that started worrying him and his children. This art was, therefore, learnt by man even before he started star-gazing or cooking and long before he tried turning everything into gold.

In the conditions of life prevalent at the time, it was natural that the man, newly born as he was, was overawed by nature and therefore turned to natural phenomena for the cure of his troubles also. This resulted in various worships, sorcery, necromancy and miracles as first aids to treatment. Various deities began to be worshipped in the different ancient countries like Greece, Sumeria, Egypt, India and China and their help was invoked by complicated prayers and incantations. Some of these ancient deities from various lands have been unearthed and their pictures have been published from time to time. This was the first stage in the history of the art of healing.

The second stage began when ancient Hindu philosophers started a regular science of treatment and started giving herbs and various other potations led by our great masters of the art—Charaka and Susruta. This was the beginning of the ancient Indian Ayurvedic science. They even dissected human bodies, discovered the circulation of blood and invented a number of instruments as aids in their surgical and gynaecological work.

This age was followed by invasion of Alexander the Great and later embassy of Magasthenes sent by Selucus to the court of Pataliputra. It is on record that Magasthenes praised the old Indian masters of Ayurvedic science and he deputed come capable vaidyas of that time to the court of Greece. These ancient ambassadors of our land were among the pioneers of the art in Greece, where Hippocrates had been born almost about that time. The combination led to the Grecian system of medicine or "Yunani" as it is called even to-day—"Yunan" is the Arabic name for Greece.

Time passed and fall came to Greece as it came to India. The masters of the art from Greece spread to East and to West. The migrations to the East lead them to Arabia, where during the course of time it became Hikmat. In Arabic the science is still called Yunani. The Hikmat returned to our ancient land along with various Mohammedan migrations to this country. In the meantime our ancient Ayurveda had become static instead of being a progressive science due to decline in our society and other causes resulting in stoppage of all progress. When the Mohammedan empires in their turn also declined, the Hikmat also ceased to make any progress and we thus arrive at the present condition of our ancient science.

The second branch of migration of this art from Greece led them first to Rome and then to other European countries. As the European countries came out of their dark and middle ages and started advancing, the science and art of healing also started making rapid strides on the road to progress. The first great step was the independent rediscovery of the circulation of blood by Harvey. It was a forerunner of great advances almost completely transforming the ancient art of healing into the modern science of medicine, where we even think of reviving the heart after it has stopped.

This revitalised science from the West has also come back to this ancient land with our British rulers and modern India on the eve of its re-emergence again as a great and powerful nation is seeing to-day an amalgam of the ancient and the modern.

I have traced this history of science and art of medicine in order to show that the science of healing is one and cannot be divided into water tight compartments like ancient and modern or Hikmat, Vedic and occidental.

Taking again in another way, no science can be divided into either ancient and modern or occidental and oriental. We do not hear of such divisions in either chemistry, physics, astronomy or any other science. Why should then these rumblings be heard in the most noble and most ancient of these sciences —the Art of Healing? Science is one and science is progressive. It cannot be either stationery or static. It will die, if that were to happen. All sciences started in the hoary past and have progressed as man advanced. Similarly, medicine has progressed from magic to Ayurveda, from Ayurveda to Yunani and from Yunani to modern scientific medicine, Experimentation is the essence of this science, as it is of others, and with each experiment the science of medicine progressed till it has reached the present condition, and we are making rapid advances every day. Millions of lives are being saved now, which could not have been done only a few years ago.

Why then this rivalry and opposition? It is all due to misapprehension and misunderstanding. Any ancient or modern science does not belong exclusively either to West or to the East. It belongs to all humanity wherever it may be. It is a cosmopolitan commodity—there are in it no distinctions of colour, caste or creed. The modern medical science, therefore, welcomes good wherever it may be and is prepared to take into its fold any medicine which can be proved by experimentation to be efficacious. But that is the test. Experiments must prove its value.

I would, therefore, suggest that there should be only one type of medical colleges, the modern ones—teaching all basic sciences according to modern syllabus. Ayurvedic and Unani have both lost other departments, and now depend mainly on their materia medica. Therefore, the difference, whatever it may be, only exists in the department of medicine. I would suggest that each medical college should have also a department of Ayurveda and a department of Yunani under the ablest vaidya and hakim that can be found and should have separate wards also for treatment by these methods.

A patient when he is admitted from the medical out-patients department should be asked as to the nature of treatment he wants and should be sent to the ward he desires. On admission to such ward the treatment should be carried out in that particular way with the proviso that diagnosis will be confirmed by modern methods, as also the cure of the case and regular case notes of treatment will be kept properly.

When a case is cured and discharged as such after treatment, the case notes will be handed over to the department of pharmacology of the college for research on the drugs used in the treatment. In this way in the course of a few years all known drugs, which are not already in the modern pharmacopoeia, will also be adopted and we shall have at an early date an Indian Pharmacopoeia which will include all that is best in the East or the West. We will thus be enriching the modern science of medicine and also unifying the system into one, which is overdue.

Therefore, my submission is that separate Modern, Ayurvedic and Hikmat Colleges are a waste of time, money and energy and have fissiparous tendency which should be discouraged.

Turkey, Iraq, Persia, Siam and China have all unified the science and allow only one variety of medical degrees and one variety of medical practitioners and I do not see any reason why India should not follow the same policy as our neighbouring countries of the Orient. In considering this question, I request for fair thought free from all prejudices of every variety. There must be only one test—the good of masses of this poor land of ours. If this test is applied, one can come to only one conclusion and that conclusion will be the one that I have placed before you. In the interest of our country I hope this conclusion will be given effect to at an early date by all concerned.*

Australian Commonwealth Control of Hospitals

The Commonwealth Government intends to take over control and direction of State-maintained hospitals in Australia.

The Minister for Health and Social Services, Senator McKenna, said in the Senate recently that State Ministers of Health, at a conference in Melbourne, had agreed that the Commonwealth should take power to control and direct all hospitals throughout Australia. At present, all hospitals are under State control.

Senator McKenna said the Commonwealth also desired to see uniform pay and conditions for nurses instituted throughout Australia.

It is stated that the Commonwealth will frame a policy covering the administration of all types of hospitals-public, private, and denominational, to be implemented by the State Governments. It was emphasised that the new Commonwealth direction would not interfere in any way with the existing ownership of hospitals, but was designed to effect uniform control in hospital standards.

The Commonwealth has power, through the social services question in the referendum last year, to bring hospitals and health under Commonwealth control.

Under the provisions of the arrangement entered into at the conference in Melbourne to cover the post-war period, it is stated that it would be necessary first for State Governments to endorse the decisions, for the Commonwealth to legislate for the control of hospitals, and then delegate administrative authority to the States.

Nurses from Britain and Europe

To relieve the acute shortage of nursing staff in Australian hospitals, the British Government has agreed to send 200 trained nurses to Australia within the next few months, to be followed by a further batch of 115.

Announcing this, the Minister for Health and Social Services, Senator McKenna, said this was a splendid gesture, considering that Britain had a shortage of 30,000 nurses. The British Government, he added, would also release to Australia 100 trained medical orderlies among Polish displaced persons in the United Kingdom.

Senator McKenna added that the Minister for Information and Immigration, Mr. Calwell, when abroad, would enquire into the possibility of securing medical staff from among 80,000 displaced persons in the Baltic countries. Mr. Calwell was now enquiring into the release of trained medical personnel from among displaced persons in the British zone in Europe. They would be desirable immigrants, and many would be able to relieve trained nurses in tuberculosis and mental hospitals, where a high percentage of trained nurses was not required.

The Conference of State Health Ministers in Melbourne, he said, had favoured a suggestion that displaced men and women in the British zone in Europe, including Balts, Yugo-slavs, and Estonians, who had completed or partly completed training in the nursing field, should be brought to Australia under certificates of exemption from the immigration laws, on condition that they worked for two years in hospitals or institutions nominated by the Government.

Senator McKenna said that there was a shortage of between 5,000 and 6,000 nurses in Australia.

Health Research Achievements

Announcing a Cabinet grant to the National Health and medical Research Council of Rs. 5,35,5000 for each of the next three financial years, to 1940—50, the Prime Minister, Mr. Chifley, outlined the Council's activities.

*From the Journal I. M. A. February, 1947 with due acknowledgments.

The Council, during the past ten years, he said, had acted for the improvement of knowledge in medicine, dentistry and the related sciences by research within Australia; the improvement and stimulation of medical teaching in Australia by ensuring that this should be carried out in universities and clinical schools where there was a tradition and practice of research; to ensure that there was at all times a sufficiency of competent investigators and facilities to deal effectively with any problem of immediate medical importance which might arise in peace or war.

The Minister for Health and Social Services, Senator McKenna, reported to Cabinet that the record of achievements of research workers in Australia during recent years had been surpassed only in the United States of America;

He said that the record included:

(1) The recognition of the very important damage to the unborn child that might be caused by German measles in the mother—the most important epidemiological discovery in the last 25 years.

(2) The elucidation of "Q" fever—a desease now known to be of world-wide extent, and one that was responsible for serious outbreaks of disease in British, New Zealand and American troops in Italy during the War.

(3) The final development of methods of preventing malaria by atebrin prophylaxis, in the Army Medical Unit at Cairns, Queensland.

(4) The discovery of the methods of growing influenza virus now universally used in the preparation of influenza vaccines.

(5) The development of penicillin from a laboratory curiosity to the most potent curative agent in the history of medicine. (This was done in England by an Australian).

Senator McKenna said the Council had been associated with the first four of these discoveries either by direct grants to workers or in the original training in research of men who susebquently played a part in the investigations.

The wisdom of the Council's policy had become evident with the advent of war. Some of the results of investigation had been:

Tuberculosis:—The development of the technique of miniature radiography, making possible the X-ray examination of the chests of the first troops to go abroad. The detection of the tuberculosis bacillus by cultural methods, thereby reducing the time of bacteriological diagnosis of this disease by 75 per cent.

Biochemistry:—The designing and production of equipment which detected minute quantities of carbon monoxide in blood and air. This was vitally important to the design of tanks and aircraft. The discovery and production of the non-toxic forms in acridine and anti-septics, which played a great part of the treatment of wounded. The drying of human sera for transfusion purposes in the treatment of shock.

Nutrition:—The estimation of the vitamin content of Australian flours, showing that they needed no reinforcement by vitamins as was necessary in some other countries.

Drugs:—Hyoscine, Hyocyamine, morphine, digitalis and ergot were produced only after exhaustive investigations into methods of plant growth and extraction in Australia. Hyoscine was used to prevent sickness in air-borne troops, and Australia was the main world supplier of this drug towards the end of the war.

Physiology:—The production of the cotton aerodynamic suit for the prevention of "blackout" in fighter pilots which contributed greatly to the fighting efficiency of pilots in both British and U.S. air forces. The devolopment of Acoustic Research Laboratory investigations in relation to noise fatigue and its prevention, and inter-communication equipment in tanks and aircraft received world-wide recognition.

Dentistry:—The Materials Research Laboratory made possible the production of various alloys, cements, teeth and plasters which were almost impossible of import during the war years.

New Drugs for T. B. and Typhus.

Miss Nancy Atkinson, a bacteriologist of the Institute of Medical and Veterinary Science, Adelaide (South Australia) has extracted from mushrooms and toadstools new drugs that may prove effective in the fight against tuberculosis and typhus.

For some years Miss Atkinson has been looking for antibacterial substances in Australian trees and flowers. She has examined 450 flowering plants and more than 200 kinds of mushrooms and toadstools. She found anti-bacterial activity in about 40 plants.

She made what appear to be her most promising discoveries when she examined an edible variety of mushroom (Psalliota) and a toadstool (Cortinarius rotundisporus). In both of these she found anti-bacterial activity against a wide range of bacteria, including the one that causes typhus. In Psalliota (the common edible mushroom found over most of the world), she found a substance which killed tuberculosis bacteria in a test tube and attacked a wider range of bacteria than penicillin. (Penicillin does not harm the tubercle bacillus).

Encouraged by the laboratory results, Miss Atkinson plans to inject tuberculosis bacteria into guinea pigs and then to attempt to cure the animals with the mushroom extract. If these tests are successful, tubercular patients will be asked to volunteer for injections.

So far, Miss Atkinson has not been able to get enough mushrooms for this work but she is hoping to have two or three tons next September.

"Five pounds of mushrooms produce less than one pound of dried extract," says Miss Atkinson. "We get this by grinding the mushrooms, straining the thick brown fluid through muslin, and drying it by freezing in a vacum at a temperature of 20 degrees below zero. From 50 lb. of dried extract we hope to isolate about half an ounce of this new antiseptic.

"Thus, we need about 250 lb. of mushrooms to get half an ounce of this new antiseptic, which may prove to be an entirely new chemical compound. We could use tons of them, and we will be appealing to the public for help."

Ingenious Calling System For Australian Hospital

The engineer in Canberra who fitted the plumbers and electricians of Australia's national capital with radio to keep them in touch with their headquarters —the Department of the Interior—has now perfected a new system of inter-room communication for Canberra's free Community Hospital.

He is Mr, R. G. Fowler, a Federal employee. His device has already been installed in the recently-completed isolation ward of the hospital, and it will soon be operating throughout the building.

Each patient in the hospital (which was used during the war by American forces) is in a separate room, and near his bed, sunk flush to the wall, is a small panel, which holds a loudspeaker, a red light and two switches. One switch controls the speaker, and allows the patient to choose between two radio programmes, with the extra choice of whether he will have them at full or medium strength. The other switch enables him to call the nurse on duty.

If he presses the second switch down, the radio programme is cut off the monitor speaker in the nurse's room, and she can hear, instead, anything the patient says. At the same time, a small red light glows over a number on her master-panel, telling her which patient is calling. If the patient is needing the nurse urgently, he presses his switch upwards, and a buzzer also sounds, attracting her attention.

When the patient calls the nurse, he also causes a light to glow outside his room, so that, should she be in the corridor, she will know that she is being called.

On the panel in the nurse's room, are controls to give a choice of 8 radio programmes from several States. Two are made available at any one time for the patients' sets. By a room selector, the nurse may adjust her microphone to the patient she wishes to answer.

When the nurse is in a position to hear any patient, the small light on the patient's own panel glows, showing him that he can be overheard.

The nurse also has a paging system. By putting a switch over to "Paging". she cuts off all radio and connects her microphone to all the speakers under her control. She can thus get into instant touch with a doctor, or anyone else who is visiting the rooms.

A remarkable point about the installation is its small cost. Although the existing unit covers a ward of eighteen separate rooms, with twelve lines to each, and a great amount of wiring, it costs only Rs. 3,625 and Mr. Fowler thinks that when the whole hospital is fitted, the average cost will be even less.

LETTERS TO THE EDITOR

Wake up, Licentiates!

I have been following the trend of events in your esteemed journal connected with improvements in regard to the status and emoluments of licentiates in service during the last 3½ years. One was eagerly waiting for the much-boosted Pay Commission's Report. The mountain has been in labour and has brought forth a mole. As far as the medical licenciates are concerned, they are disappointed and thoroughly disgusted to find their case treated in a step-motherly attitude and their rights overlooked and privileges totally neglected.

As far as is published and known the licentiates are recommended the scale of Rs. 100-8-170 E.B., 10-230, whereas the graduates are recommended the scale of Rs. 260-15-400-20-500 with the provision of becoming gazetted officers as per seniority. This inequality in the scales of pay is against the Commission's expressed opinion that professionally there is very little difference between a S. A. S. and an A. S. One fails therefore to understand on what basis and data the Pay Commission founded their preposterous recommendations. The provincial heads of departments had recommended (1) 150-15-400 for licentiates (2) 200-15-400 for graduates.

Now you have been one of those who were loud in proclaiming the benefits that would accrue from the licentiates' joining the war service in large numbers. But many, like me, were very sceptic about the bonafides of the assurances given by the then central government. Nothing was concretely formulated and announced by the powers that be for our benefit during the war; but there were several benefits implied in the inauguration of I. A. M. C. and the recruitment of licentiates to it. The authorities have turned a deaf ear and the licentiates after holding efficiently privileged positions in the army have returned to their original posts with "the menial pay and insignificant status." All that has been awarded is some so-called 'concessions' for the M.B., B.S, course.

As regards the remedy you have suggested for this stalemate and injustice one is further disillussioned. Your suggestion that those who do not like the pay and conditions of service must come out and start practice, will only mean that after a few years of service, when the family burdens have increased considerably and when a person has developed a mentality for State service, will have to come out to compete with their brother practitioners who are fairly crowded and will shortly be more overcrowded with the complete release of army personnel and increased rate of production from schools and colleges. It will only mean one undeserved but crushing defeat for us. This will add one more chapter to the humiliations and privations of the S. A. S. class and will afford a further chance to give room to more of their favoured graduate friends, taking for granted that fresh licentiates fail to step into the shoes of the resigned licentiates.

The remedy does not lie in mass resignation. It lies in a STRIKE of unprecedented magnitude and intensity. Organise from your influential and enviable position, for a complete and general STRIKE of the licentiates all over India. Prepare a memorandum in the form of an ultimatum showing the Government our legitimate and overdue demands and rights. Give the Government reasonable time to agree, say about three months. If within that s pecificperiod our grievances are not redressed call out a STRIKE. Everyone of the licentiates is smarting under humiliation and embarassing situations heaped upon him; and as far as I can judge there will be no licentiate in service worth his salt who will oppose this idea. Everyone is waiting for a lead and signal. But a STRIKE to be effective and successful must be simultaneous and countrywide.

Sir, we have too long been requesting, cajoling and begging the Government for a concession here and a concession there. We do not want any more concessions now. What we want is our legitimate privileges and rights. One cannot understand how if a doctor is good enough for graduate's work in military duty he would suddenly deteriorate and becomes fit only for menial pay and status in Civil Service.

Sir, one more point I would like to draw your attention to. The medical press has been clamouring for concessions for the licentiates to qualify for M.B.,B.S. We want nothing of the kind now or in the future. Don't you realise the practical difficulties of our class to undergo the full training after one has given up the study habits during years of faithful service; don't you further realise that the family encumbrances have increased without much of a saving in the Bank for the family to draw upon during the course of study, apart from his own expenses during the years of study for two years? Here again the step-motherly attitude is self evident. The study leave with half pay is denied to the licentiate. Taking the other aspect, in the great majority of cases the licentiates are not attached to the teaching institutions. The doctor may be quite efficient and popular and equal to a graduate where his treatment to the patient is concerned. But to ask him to undergo a prolonged course and to appear for the examination is a mere waste and stark absurdity. With so much of theory and unwanted details from practice point of view the revision study of the graduate course is an uphill task, and one should not be surprised if many an aspirant is disappointed in the attainment of his object. A graduate also is not an exception here. Even he after years of service will not be able to stand an examination and come out successful. The abolition of the Medical Schools may be a move in the right direction, but it will not heal the bleeding wound of the licentiates. What we should ask for is the recognition of our status as we are, the licentiates, as such. Never cringe and clamour for concessions for this much-boosted M.B.B.S. Stick to our rights. The recognition by I.M.C. will follow.

I would have written much about the appalling conditions of service of the licentiates. But you know them sufficiently well to require mention in a letter like this.

Wake up licentiates! Organise a solid STRIKE. Strike with unfaltering solidarity and we are bound to succeed and our overdue and legitimate demands will be granted. I am sure and confident every licentiate will rise to the occasion and join the STRIKE voluntarily and whole-heartedly. If the public approves of the wrong attitude of the Government, we do not mind, after the STRIKE, to go out and start practice and compete with the graduates in the open field.

I am a licentiate in State Railway Service. It is only after joining the service one's eyes are opened to the diplorable conditions of service of the licentiate compared to that of a graduate. To put it briefly a licentiate is a jack of all trades with the responsibilities and work of a full fledged officer but with the remuneration and rank of a compounder and at times worse. I can prove to the entire satisfaction of anybody that in Railway Service at least the compounders are better placed than the licentiates.

I know several heads of medical departments and Provincial Administrative Officers felt the genuineness of our grievances and tried to ameliorate our status and the emoluments. But the powers are adamant and would not budge. Even those Administrative Officers feel that nothing will be granted unless and until we open the eyes of the Government and public by a bold and solid STRIKE.

A Licentiate in B.B. & C.I. Railway Medical Service.

Proceedings of the Meeting of the Standing Committee of the All-India Medical Licentiates' Association held in Nagpur on the 25th and 26th June, 1947

The meeting of the Standing Committee of the All-India Medical Licentiates' Association was held in Nagpur at Dr. G. K. Kulkarni's residence on the 25th and 26th June 1947.

R. S. Dr. Manohar Lal Kapur of Lahore, the President of the Association, was in the chair.

Following members were present at the meeting:—

(1) R. S. Dr. M. L. Kapur (2) Dr. V. D. Sathaye (3) Dr. R. A. Bhagwat (4) Dr. M. D. Pustake (5) Dr, Y. B. Mate (6) Dr. A. N. Roy (7) Dr. J. Mozumdar (8) Dr. A, Vishwanathan (9) Dr. A. D. Mastakar (10) Dr. U. B. Narayan Rao (11) Dr. Tembhekar (12) Dr. L. V. Bhaten (13) Dr, B. G. Modak (14) Dr. P. H. Sant (15) Dr. N. Bahttacharjee (16) Dr. V. G. Paranjape (17) Dr. S. N. Kelkar (18) Dr. D. V. Venkappa (19) Dr. C. Nathamuni Naidu (20) Dr. P. B. Annangarachari (21) Dr. G. K. Kulkarni (22) Dr. R. S. D. Ch. Hardeo Singh (23) Dr. K. C. Wohra.

Capt. B. Bagchee, Drs. D. M. Theregaonkar and S. R. Sahu attended the meeting as representatives of the Service Cadre.

In all there were three sittings of the Standing Committee. On the first day Dr. M. L. Kapur, in his presidential address, thanked all the members present for having taken so much troubles and gone through so many difficulties to attend the meeting of the

Standing Committee. He then reviewed the activities of the Association since the Poona Conference and drew the attention of the members to the fact that the main demand of the licentiates in the country is still not satisfied. He therefore exhorted all the members to make a united effort to achieve the desired goal.

Dr. V. D. Sathaye, the General Secretary, then gave a detailed report of the deputation which waited upon the Hon'ble Member for Health, New Delhi, on the 12th May 1947. The meeting approved of the report and it was decided to put it on the record.

It was also unanimously agreed that the present monogram prepared by the General Secretary be accepted as the official seal of the Association.

The meeting gave its thoughtful consideration to the recommendations of the Central Pay Commission regarding the licentiates in the Railway Medical Services. The meeting in the first place took note of the fact that many branches of the Association communicated their strong disapproval and resentment of the said recommendations. But many members urged on the Committee that the question should not be confined to the licentiates serving in the Indian Railways alone. They argued that since the injustice is being meted out to the licentiates in all types of medical services, it is high time that the Association should take some drastic steps to set right the grievances of the licentiates. With that end in view it was thought necessary to aquaint the public as well as the authorities concerned with the general position of the licentiates and the nature of injustice and inequities from which they are suffering. A Sub-Committee consisting of the President, the General Secretary, Dr. A. Vishwanathan. Dr. J. Mozumdar and Dr G. K. Kulkarni was formed to prepare a draft statement to be released to the Press Conference which was specially convened on the 26th June morning at Dr. Kulkarni's residence.

Secondly the committee thought it necessary that before resorting to "direct action" for setting right the grievances of the licentiates, it should ascertain the opinion of all the licentiates as to what action they consider the Association should take in order to redress their grievances. For that purpose a special Sub-Committee consisting of (1) the President (2) the General Secretary (3) the Managing Editor and (4) all the Provincial Secretaries was formed which was asked to ascertain the views of the licentiates in the services and to report the matter within the next three months.

On the next day, *i.e.* on the 26th June 1947. the Committee met at 7 A. M. to consider the draft statement prepared by the Sub-Committee. Dr. A. Vishwanathan read out the statement and the meeting unanimously approved and decided to release it to the Press Conference.

After the Press Conference was over, the Committee again met at 11 A.M. and the following resolutions were adopted:

RESOLUTION No. 1.
Condolence.

This meeting of the Standing Committee of the Association records with deep regret the sad demise of Dr. R. H. Golwalkar of Ahmedabad and sends its heartfelt condolence and sympathy to the members of his bereaved family.

RESOLUTION No. 2.
Recommendations of the Central Pay Commission.

Much was expected from the Central Pay Commission and the Association hoped that it will recommend one unitary type of medical service on equitable pay. But although the Commission observed that there is very little difference in the professional education between the licentiates and the graduates and that there is no justification for the continuance of the existing disproportionate scales of pay, while making the recommendation they maintained the same disproportion which they themselves have condemned. Following extracts of the relevant portion of the report would support our contention.:

". . . .The case of the Sub Assistant Surgeons has caused us more concern. Their qualifications are little inferior to those of Assistant Surgeons ; but the disparity of pay between them is very marked. This will be reduced if they are classed as Assistant Surgeons grade II, and the scales we suggest are adopted :— Assistant Surgeons grade II—Rs. 100—8-140-10-170-E.B.-10-230. Assistant Surgeons grade I—Rs. 260-15-440-20-500.

The ratio of disproportion and disparity in the suggested scales of pay is apparently more than in the previous scales of pay.

The licentiates employed in the Railways have communicated to the Association their strong resentment of the proposed scales of pay. This meeting of the Standing Committee also resolves to disapprove of the scales of pay recommended by the Commission as against its own expressed views of nearly equal merit and efficiency of the licentiates and the graduates. This meeting considers that there should be only one grade of medical service not as grade I & II of Assistant Surgeons, and only one scale of pay, in which the medical graduates may be given an initial increase as in the case of Emergency I.A.M.C.

RESOLUTION No. 3.
Basic Doctors.

This meeting of the Standing Committee emphatically protests against the suggestions in the Bhore Committee's report that the medical licentiates should be made to obtain the M.B.B.S. degree to be raised to the level of Basic Doctors, and further resolves that the existing licentiates should be considered as Basic Doctors in the full implication of the term.

RESOLUTION No. 4.
Recruitment to Army Medical Service.

In regard to the eligibility of the licentiates, to regular commission in the Army Medical Service, it appears that the Government of India have passed orders to the effect that if the licentiates are selected they should subsequently qualify themselves for the M.B.B.S. There was no such condition when the Association volunteered its co-operation in the formation and working of the I.A.M.C. It is strange that if the licentiates during the last war could be given commission and when it is within the knowledge of the Government of India that the licentiates commissioned officers have discharged their duties creditably, the Government should now say that the licentiates should acquire the M.B.B.S. qualification to become army medical officers. This is obviously invidious on the very face of it and a breach of trust on the part of the Government.

The Standing Committee therefore urges on the Government to make no difference in the selection to regular commission in the Army Medical Service between medical licentiates and graduates either in numbers or otherwise.

RESOLUTION No. 5.
Grievances of the I.A.M.C.

This meeting of the Standing Committee authorises the President and the General Secretary to take necessary steps to rectify the grievances of the I.A.M.C. officers and cognate matters.

RESOLUTION No. 6
Appointment of A central Sub-Committee to devise means of suitable action for setting right the grievances of the licentiates in the services.

The Standing Committee directs the General Secretary to ascertain, in consultation with the Provincial Secretaries, the views of the licentiates in Services and in practice as to what action they suggest the Association should take in the matter of setting right their grievances; further resolved that with a view to take necessary steps a Central Sub-Committee be formed consisting of (1) President (2/ General Secretary (3) Managing Editor and (4) all the Provincial Secretaries and make its report within the next three months.

RESOLUTION No. 7
Madras Medical Conference (Official)

Referring to the proposed conference of official and non official medical men to be held on the 27th and 28th instant by the Minister of Health, Madras, for evolving a workable policy of medical relief, medical education, public health work etc., this meeting of the Standing Committee authorises Dr. D. V. Venkappa, Provincial Secretary, Madras who has been invited to attend this conference, to represent the views of the Association.

RESOLUTION No. 8
Venue of the Next Conference

This meeting of the Standing Committee resolves to accept the invitation of Bombay to hold the next conference of the Association in next December 1947.

RESOLUTION No. 9
Sanction of the Expenditure of S. C. Meeting

This meeting of the Standing Committee sanctions the actual expenditure for the lodging and boarding of the members of the Committee incurred by Dr. G. K. Kulkarni not exceeding Rs. 600

The Press Statement and the Presidents' speech are published below.

Review of the position of Medical Licentiates in service and in the profession (By the Standing Committee, A.I.M.L.A.)

1. The All-India Medical Licentiates' Association was the first organised medical association founded in 1906 with the chief objects of (a) helping the Provincial and Central Governments in the matter of medical relief and public health work in this country (b) unifying the profession on the basis of one unitary type of medical registration without any castes and and compartments and (c) consolidating the position of the licentiates with a view to achieve the above objectives.

2. Historically speaking, the medical licentiates were the initial medical personnel, educated and employed by the East India Company. Later on graduate medical education was organised under the auspices of the Indian Universities as and when they were formed. In the early stages of medical relief most of such work was done by the licentiates only. In the later stages, the graduates were employed particularly in the larger hospitals in the country. Even so, the actual extent of medical relief and public health work in charge of medical licentiates is, today, by far greater than that of the medical graduates for at least one simple reason, namely, the existence of a larger number of licentiates. Even in the matter of medical and public health research there have been licentiates who have been intimately connected with and played a prominent part in it. So far as medical eduction is concerned, both that of the licentiates and graduates was improved *pari passu*, so much that as far as professional education is concerned there is practically no difference to justify the perpetuation of different cadres of medical service with vastly differing scales of pay which are disproportionate in every respect.

3. Yet what is the position of the licentiates today ? The object with which not only the Licentiates' Association but the whole profession is in sympathy, namely, that there should be no castes and compartments in medical service and registration has not been appreciated by the Government, Central as well as Provincial, much less acted upon. The All-India Medical Licentiates' Association has gone even to the extent of working successfully, as it proved to be, for the abolition of medical schools in the hope of helping the cause of attainment of unitary type of medical education and in helping the authorities to establish one unitary type of medical service on the basis of a competitive examination open to all registered medical practitioner. But the pity of it is that the Government have not only not abolished the subordinate medical and public health service and instituted one unitary type of medical service absorbing the existing medical licentiates in service, but they have worsened the position by being a party to the passing of the Indian Medical Council Act in 1933 without bringing the licentiates within its purview despite the recommendations of the organised profession as a whole and of the statutory provincial medical councils. Thirdly, even granting that the licentiate medical qualification is slightly inferior to the graduate medical qualification, the Government have made no sufficient provision for post-graduate medical education of the licentiates which they should have done if they believed in the inferiority of the licentiate medical qualification. The Association therefore regrets to note the irresponsive attitude of the Government in these matters which cannot be justified either by the logic of events or by canons of fair play. The result is that the licentiates are permanently debarred from improving their position and prospects in service and thus doomed always to be in subordinate service. This denial of reasonable opportunities to the licentiates

of improving their medical qualifications and their position in the service is obviously unjust and contrary to common rules of any state service.

4. It may also be noted that the All-India Medical Licentiates' Association has been serving not only the Government but many public causes with equal devotion. During the last Behar earthquake the Bengal Provincial Branch of the Association organised medical squads for medical relief work and continued to do so till that emergency was over. Again in the year 1942 the Association directed some of its members to join the Congress Medical Mission to Manipur (Assam) which was wholly composed of the medical licentiates and to send medical squads to relieve the distres caused by political disturbances in August 1942 and the subsequent cyclone havoc which overtook the district of Midnapore. It also joined the Medical Mission sent by the Indian National Congress to Burma and Malaya in 1946. When the last war broke out the Association urged on the Central Government to offer commissioned ranks to the medical licentiates, and when this was conceded, it organised medical recruitment drive just to enable the Indian Army to have sufficient medical men for the medical succour to our soldiers in our country and abroad. It is also well known to the authorities that the larger part of epidemic relief, really the more difficult part of it, was done by the medical licentiates. These are indeed services worth recognition by the Government in a concrete manner.

6. Much was expected from the Central Pay Commission and the Association hoped that it will recommend an unitary type of medical service on equitable pay. But, although, the commission observed that there is very little difference in the professional education between the licentiates and the graduates and that there is no justification for the continuance of the existing disproportionate scales of pay, yet, while making the recommendation they maintained the same disproportion and disparity which they themselves condemned. Following extracts of the relevant portion of the report would support our contention.

> ". . . . The case of Sub-Assistant Surgeons has caused us more concern. Their qualifications are little inferior to those of Assistant Surgeons ; but the disparity of pay between the two grades is very marked. This will be reduced if they are classed as Assistant Surgeons grade II, and the scales we suggest are adopted :
>
> Assistant Surgeons grade II-Rs. 100-8-140-10 170-E.B.10-230
>
> Assistant Surgeons grade I-Rs. 260-15-440 20-500."

The ratio of disproportion and disparity in the suggested scales of pay is apparently more than in the previous scales of pay,

The licentiates employed in the Railways have communicated to the Association their strong resentment of the proposed scales of pay. The Association also disapproves of the scales of pay fixed by the Commission as against its own expressed views of nearly equal merit and efficiency of the licentiates and the graduates.

7. With regard to the recommendation of the Bhore Committee designed to raise the existing licentiates to the level of "Basic Doctors", the Association cannot accept the view that the existing licentiates should get the M.B.B.S-, degree to become basic doctors for the purpose of work in primary and secondary centres under their plan. This means, in other words, the existing licentiates would not be eligible for employment as basic doctors although they have been doing the same kind of work till now which the basic doctor is expected to do and although they are numerically large. Besides, the Bhore Committee seems to have ignored that a large number of existing graduates such as those who hold L.M.S. and M.B. degree granted prior to about 1916, had only four years course. The Committee should have recommended for them also the same what they have done in the case of the licentiates if their argument could be taken as sound. Our Association therefore considers that this is a biassed recommendation and and that it does not expect the Bhore Committee plan of primary centres could be worked out successfully on a large scale without the co-operation of the licentiates.

8. Even in regard to the eligibility of the licentiates to regular commission in the Army medical service, it appears that the Government of India have passed orders to the effect that if the licentiates are selected for the Commission they should subsequently qualify themselves for the M.B.B.S. There was no such condition when the Association volunteered its co-operation in the formation and working of the I.A.M.C. It is strange that if the licentiates during the last war could be given commission and when it is within the knowledge of the Government of India that the licentiate commissioned officers have discharged their duties creditably, the Government should now say that the licentiates should acquire the M.B.B.S., qualification to become army medical officers. This is obviously invidious on the very face of it and a breach of trust on the part of the Government.

9. Another sorest point on which the Association would emphasise and bring it to the attention of the Government and public is that of non-recognition of the licentiate qualification by the Indian Medical Council despite the fact that every provincial medical council in this country has been recognising the licentiate qualification. Their exclusion from the Indian Medical Council was on the sole ground that if they are recognised, foreign reciprocity of medical graduates would be jeopardised. But what is the exact position today with regard to reciprocity even after fourteen years of exclusion of the licentiates from within the purview of the I.M.C.? No country accepted their reciprocity directly with the Indian Medical Council except a few small countries like New Zealand, Burma etc. Negotiations for reciprocity are meaningless and statutorily incompatible if the registered medical practitioners of a country are not taken as a whole. The Association therefore hopes that when a new Central Legislature comes into being under a new constitution the Indian Medical Council Act would be so amended as would be put on right lines and as existing in other countries.

10. The cumulative effect of the various types of injustice meted out to the licentiates is that they are growing desperate and are urging the Association to devise some method of direct action which would rectify the present anomalies.

The Standing Committee of the Association has taken stock of the present situation and would devise suitable methods to achieve the desired results.

Address by Dr. M. L. Kapur, President, A.I.M.L.A. at the Standing Committee Meeting held on 25th June, 1947 at 9 p.m. in Nagpur (C.P.)

DEAR COLLEAGUES,

I am glad, in spite of lot of difficulties and risks in long and tiring journeys in over-crowded trains in these days, you have so kindly attended this function and given me an opportunity of having your valuable advice in solving our complicated and delicate problems that are confronting us today as in the past, and I must thank you for this courtesy. I pray to the Creator of the Universe to grant us strength, energy and forbearance to solve our difficult problems in the best interests of the Public.

I may assure you that due to honest and sincere professional services of Medical Licentiates in the past we have established a record in the profession, in the presence of which no one can justly oppose our demands for securing the rightful place in the profession provided we assert our rights rightly and in time.

Let me gentlemen review the part we have played in services during the last many decades. Before proceeding, let me remind you the main objectives of our Association, namely, the service to the humanity and the service to the Medical Licentiates of this country. From the review of our past activities, one will realise that we did our best successfully in carrying out our first objective i.e. the service to the humanity. The instances of which are :—

1. We are running today 75 per cent special institutions such as Pathological Laboratories, X Ray Institutions, Eye and Surgical Clinics and 95 per cent outdoor dispensaries throughout India.

2. We have produced Eye Surgeons of all-India repute though the fruit of our labour is being enjoyed by others.

3. We decided 15 years back to commit suicide i e, to remove our existence by compelling the Provincial Government to close down all Medical Schools in India with a view to have one unified medical qualification and service in this country, as the present division in the profession is responsible for creating hatred and contempt among workers of the noble cause which is suffering in that atmosphere.

4. During the last war our organisation came forward as a recruiting agency to help the recruitment of Medical Licentiates to the Military Medical Service with a view to see that our soldiers fighting against the enemy, may be served properly and with a view to prove to the authorities that the Medical Licentiates if given an opportunity, are equal to I.M S., and Medical graduates in the discharge of their duties both professional and administrative.

Let me admit frankly gentlemen we have failed in our second objective namely service to the Medical Licentiates in this country though we have today succeeded in tracing out the causes of our failure *i.e.*,

(*a*) The power of control and administration is in the hands of those who have nothing in common with us and who due to professional jealousy are ever ready to sacrifice our very existence.

(*b*) Absence of our representation in such arrangements.

(*c*) Lack of interest by the Public in the profession.

Under these arrangements the Medical Licentiates of India, who are today responsible to look after the health of 90 per cent population of India and who are successfully doing their duties as physicians and surgeons, are undergoing untold and unbearable miseries in the profession and are leading a life of humiliation. Few have cared to study our case and therefore few are in a position to share these sentiments but I as your General Secretary in the year 1939, when the second world wide war broke out, felt it seriously and resolved to play a part, the honesty and sincerity of which may compel our critics to do us justice in future. We succeeded in playing our part successfully as said by General Sir James Bencent Hence :

"Mr. President", referring to Dr. Menohar Lal Kapur he said "I thank you for your insoluable services, I greatly appreciate your loyalty and devotion to your work. Your industry has been exemplary and has always evoked my appreciation. I sincerely trust that in the post war development of Health in the country, your services will be available and you may be connected with it in some capacity or other. There is no doubt in my mind that your services in that connection will be beneficial in every way. I need only add that the success of the recruitment drive in India was largely due to you and your colleagues of the Standing Committee."

I do feel our critics hold the same views about us which they had been cherishing 50 years back and this is our misfortune.

To give practical shape to my views, I persuaded all the leaders of the Association to help in the cause of the recruitment of Medical Licentiates to the Military Medical Services. My thanks are due to the leaders and the office bearers of the Association and late Hon'ble Sir Joginder singh, Member Incharge Education, Health and Land, Government of India, Sir Gordon Jolly and Sir James Bennet without whose support and co-operation the Association could not undertake this duty.

Thanks to the Creator of the Universe, the authorities have recognised the best services of Medical Licentiates in the army as a token of which honest work the Surgeons General, Inspectors General and Directors of Public Health of all Provinces under the presidentship of the Director General Indian Medical Service unanimously resolved in a meeting held in November 1945 in New Delhi that the rank of S.A.S. and the subordinate Medical Service be abolished and all medical men to start with, should be paid ranging from Rs. 150 per mensem to Rs. 450 per mensem but it is a surprise to us that these recommendations

are not being allowed to see the light of day. The questions that naturally arise :—

(a) Are the lives of civilians in the country less important than the lives of the soldiers of the last war?

(b) Has the Government of India forgotten its communique which was issued in the year 1940 when the S.A.S. rank was replaced by A.S. rank?

"The old name of Sub Assistant Surgeon was originally given to Hospital Assistant who at the time required for less in the way of educational and other qualifications than the Medical Licentiates who serve as Sub Assistant Surgeons in the Indian Medical Department today. The present day Sub Assistant Surgeon is well educated and qualified man and is felt that there is no reason to retain the title which suggests that he holds the same subordinate status as his original predecessor."

Gentlemen, after the war was over the Association immediately sent a memorandum to all Provincial Governments bringing to their notice the serious grievances of our class and the disappointment prevailing among them and with the same object in view, deputations consisting of leaders of the Association waited in person on all Provincial Authorities, the Director General Indian Medical Service and the Hon'ble Health Member Government of India. In spite of verbal assurances that our grievances will soon be redressed by one, and all, we actually find that our position in service in all Provinces is as bad as 50 years back. Gentlemen the Association has left no stone unturned to serve the Public and the Government with the full belief that by its honest and sincere service, the class would be able to win the rightful place in the profession but I must say our efforts have gone in vain so far. It is now for you, as custodian of the interests of the Association, to see how to win our goal.

I must thank you all once again for your patient hearing and your sincere co-operation with me as your President.

Copy of a letter from the Secretary of the Mewar Medical Association to the Public Health Minister, Mewar Government, Udaipur, dated 8th July, 1947.

As a consequence to our demand of 4th July 1946, an announcement was made by the C.M.O. on 18-2-47 in the Annual meeting of the Mewar Medical Association, that the Government has sanctioned the Grade of Rs. 75-5-150, M.B.—10-200 (Limited for 8 persons only.)

As this revision was quite unsatisfactory, we submitted a petition to His Highness the Maharana Sahib Bahadur on 21-2-47 to kindly sanction for us, our original demand of Rs. 100-10-250 P.M. on the basis of length of service and without any bar. We felt satisfied after an assurance given by His Highness that our case will be favourably considered.

It is now over many months that we have patiently awaited Government's decision with regard to our petition. It had never been our intention to embarass the Government in any way, but at the same time we did not expect that our case will be treated indifferently. There is a limit to wait, watch and see. We regret very much, we are being driven now to the unpleasant course of stressing our demand with the necessary sanction at its back. We trust that wiser counsel would prevail and justisce will be done to our case.

We reiterate our original demand of the grade of Rs. 100-10-250 P.M. with effect from October 1946 and on the basis of length of service and without any bar. After a solemn resolve thoughtfully weighing the *pros and cons* of the whole question we want to impress on the Government that our demand should be accepted in toto.

It is requested that the Government's decision be communicated to us by the 10th August, 1947, the latest. In case the Government's decision is unfavourable, we shall be forced to take to the universal method of strike in order to get our grievances redressed. May God forbid such an unpleasant situation to arise, but in case it does, responsibility will lay with the Government and not with us.

35th CONFERENCE
OF
The All-India Medical Licentiates' Association.

Circular No. 11.

To all the Branch and Provincial Secretaries and Office Bearers :

The above Conference will be held in Bombay during the X-mas week, this year. Dr. A. D. Mastakar has been elected as the Chairman of the Reception Committee and Dr A. D. Patel as its Secretary. The fee for membership of the Reception Committee is Rs. 25. All the Bombay Licentiates are requested to join the Reception Committee.

Attention is drawn to the following rules regarding the election of the President and the delegates.

According to Rule No. 253 every Primary Branch should nominate the name for the Presidentship of the Annual Conference and send the Nomination Paper to the Provincial Secretaries concerned within a fortnight of the receipt of this circular (before 15th August, 1947.)

Under Rule No. 254 the Provincial Secretaries should within a week of receiving the Nomination Papers from the Primary Branches select two candidates who have got the largest numbers of votes from the Branches and forward the same to the General Secretary together with the Nomination Papers for his scrutiny (before 25th August, 1947.)

Attention is also drawn to Rule No. 68 regarding the election of the delegates for the Annual Conference.

Every Primary Branch of twelve months standing should elect delegates according to the following table :

upto 25 members	...	1 delegate.
upto 50 members	...	2 delegates.
upto 75 members	...	3 delegates.
upto 100 members	...	4 delegates.

No Branch is allowed to send more than 4 delegates.

The delegates should be members of not less than one year's standing elected at least one month before the date of the Conference at the General Body Meeting of the Primary Branch and the names sent immediately to this office.

Rule No. 69 enjoins every Primary Branch to furnish the delegates with certificates of delegation.

A copy of the delegation certificate should also be sent to the General Secretary at least one month before the date of the Conference.

All the Branch and Provincial Secretaries are hereby requested to expedite the primary election of the President and the election of the delegates to the Bombay Conference.

Dr. V. D. SATHAYE,
General Secretary.

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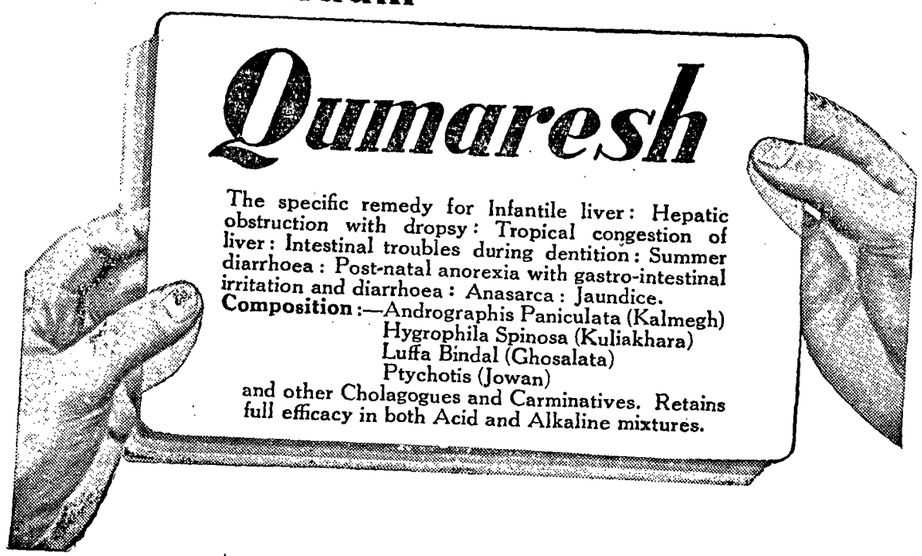
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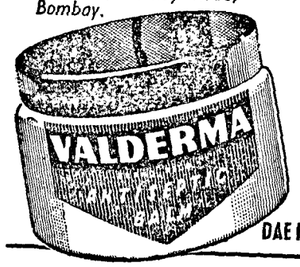
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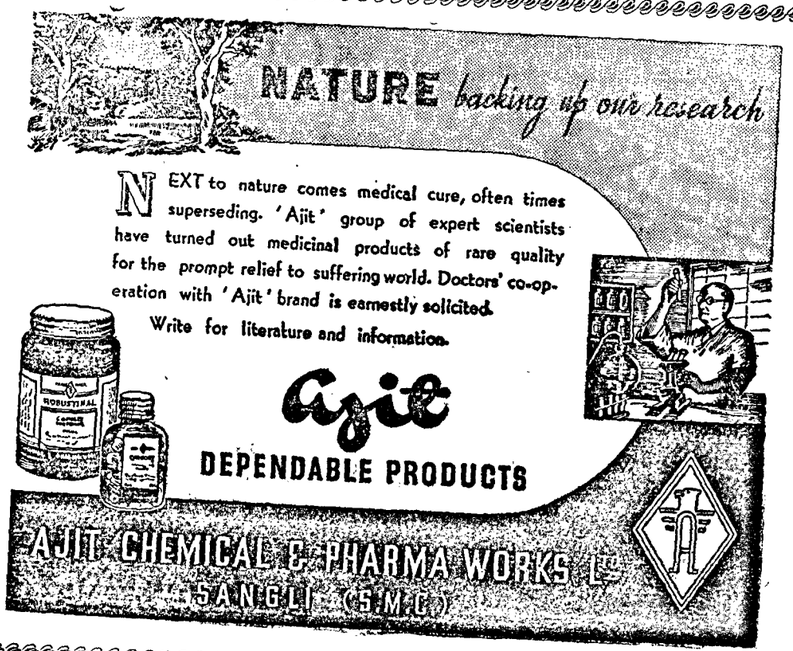


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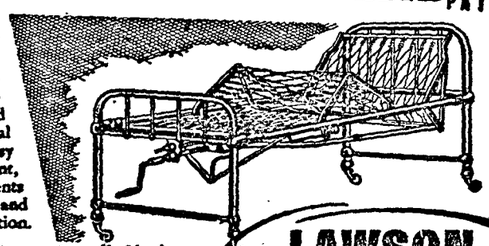


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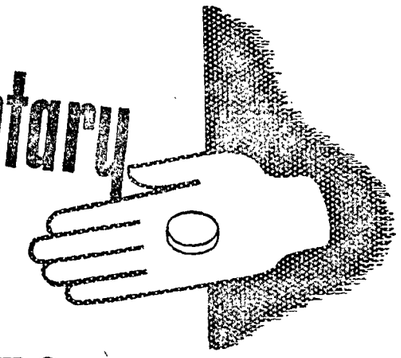
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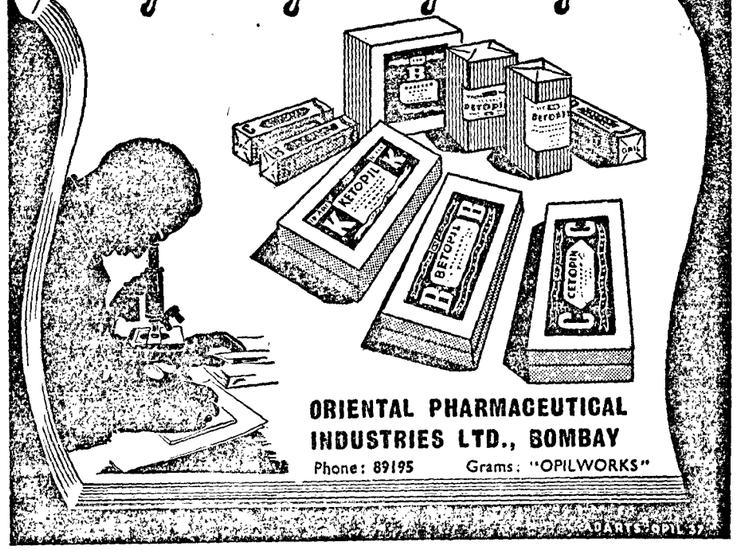
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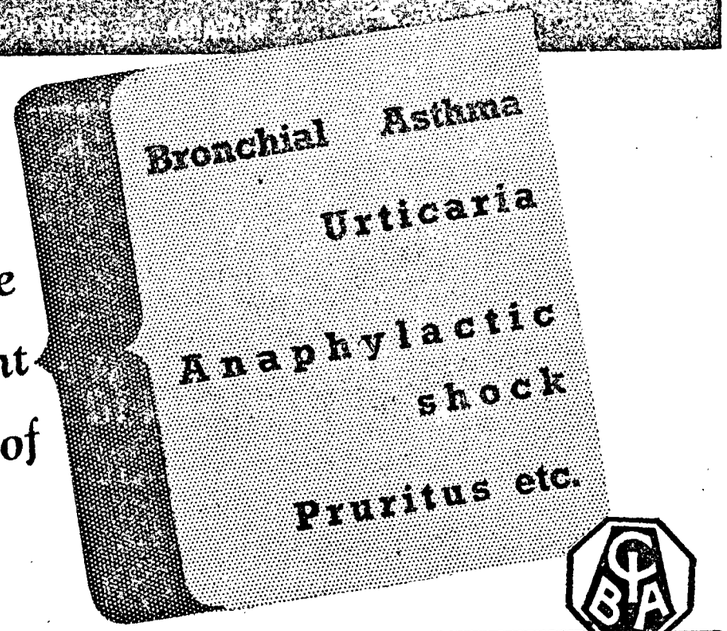
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INDIAN MEDICAL JOURNAL

Journal of the All-India Medical Licentiates' Association with which the Agra Medical Club Journal is incorporated
(WITH MEDICO-POLITICAL SUPPLEMENT)

Vol. 41, No. 9 | September 15, 1947 | Editorial and Publishing Office, 32, Sullivans Garden St., Mylapore, Madras | Annual Subscription: Members Rs. 4-0, Non-Members " 6-0, Foreign " 7-8

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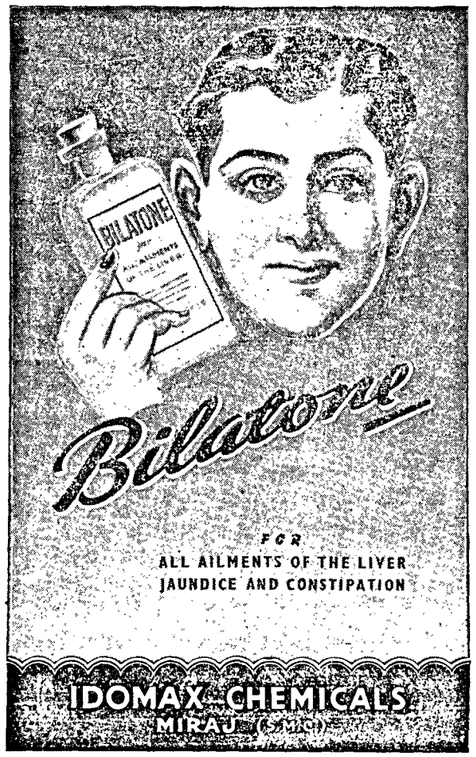
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BELVITA is a concentrated yeast extract, free from meat or animal fat, and rich in Proteins and Vitamins of the "B" complex—strongly recommended as an invigourating tonic and remedy for Anaemia, Anorexia, Beri Beri, Constipation, Dispepsia, Scabies, Ulcers, etc. etc.

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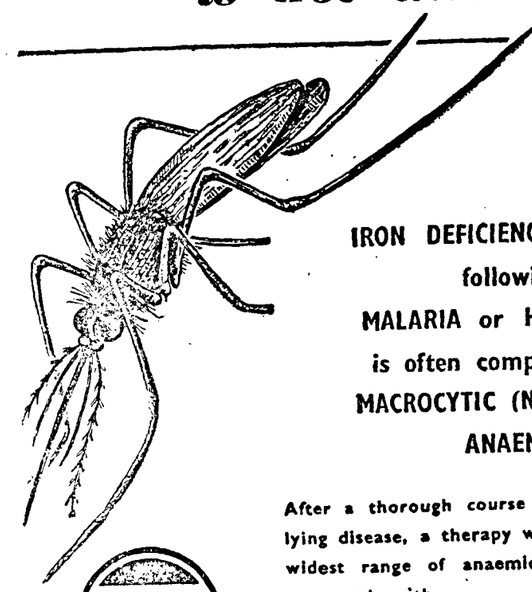
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* Santon Gilmour. (1937) *Tubercle, vol. 19, p. 105.*

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Reference: W. Haubensak (Practice No. 18, 1943).



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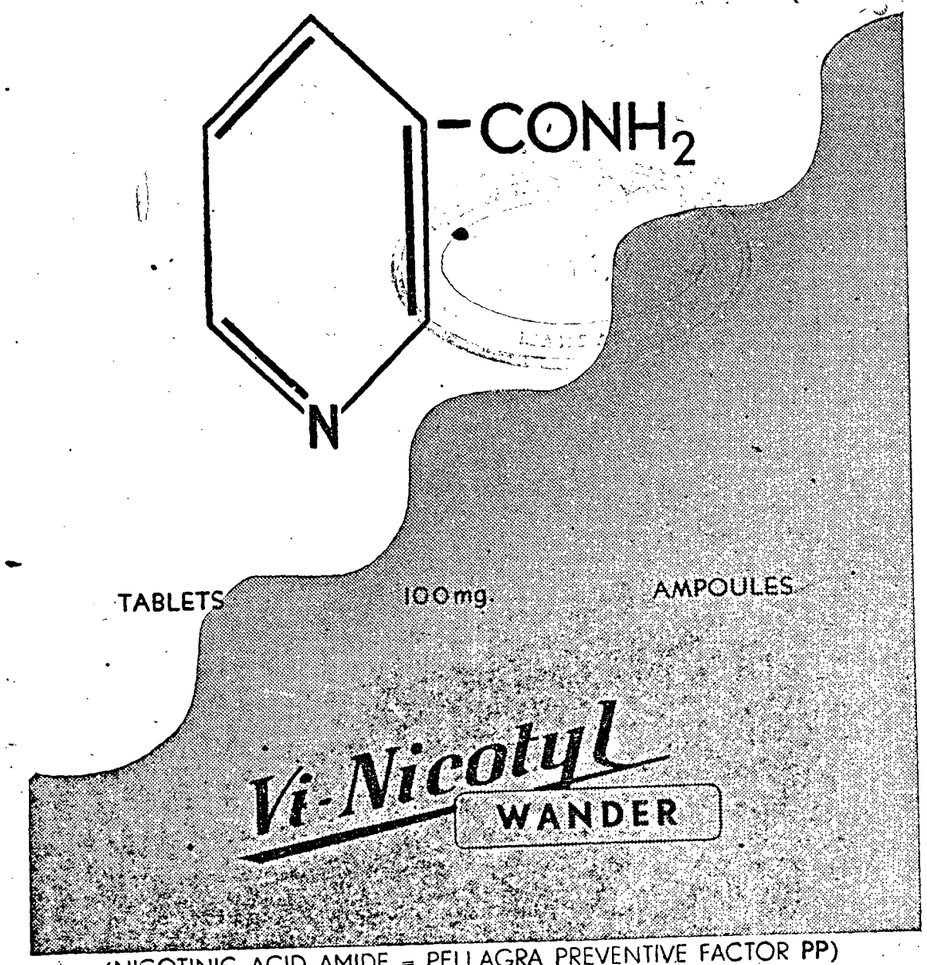
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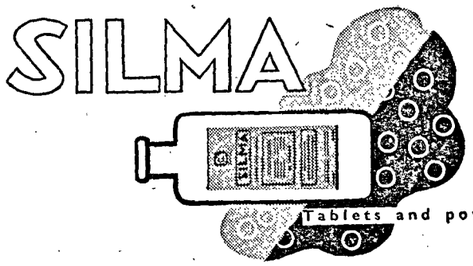
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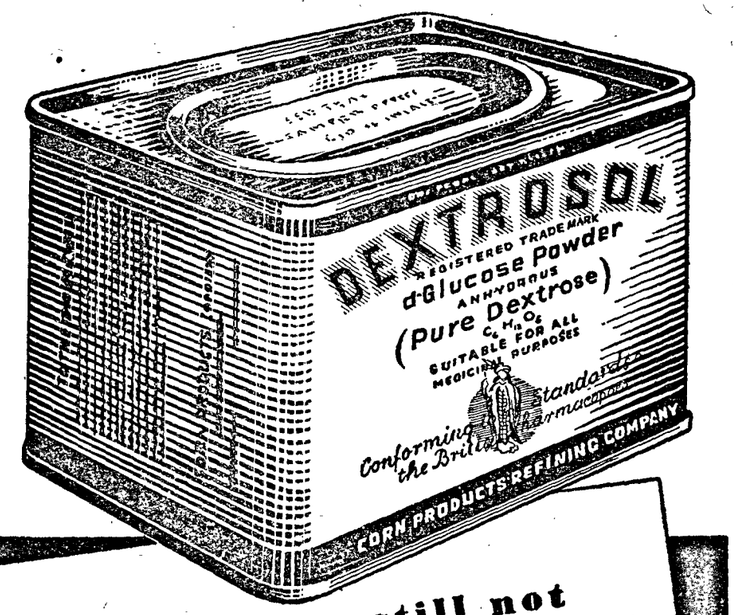
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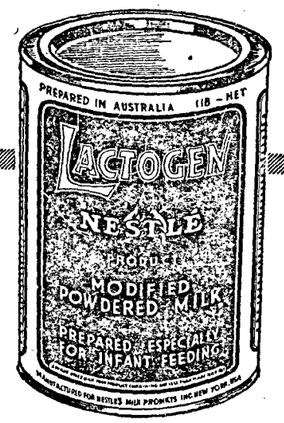
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'Paludrine' is a colourless drug, and is entirely free from unpleasant effects over a wide range of dosage.

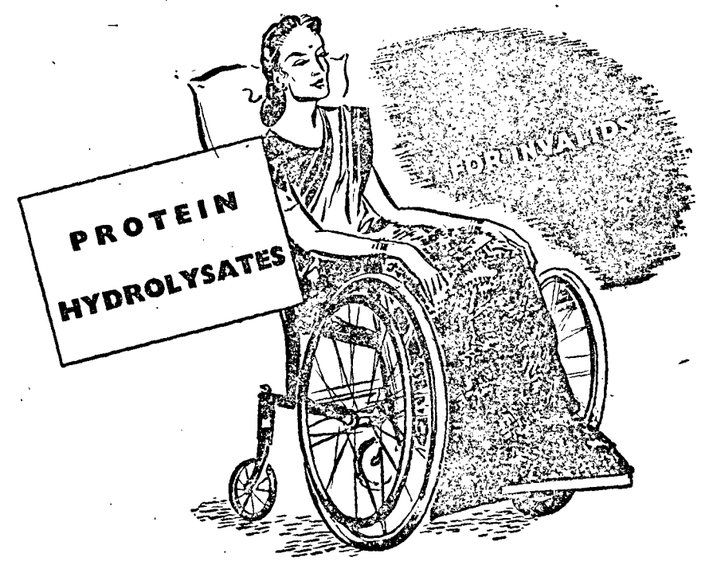
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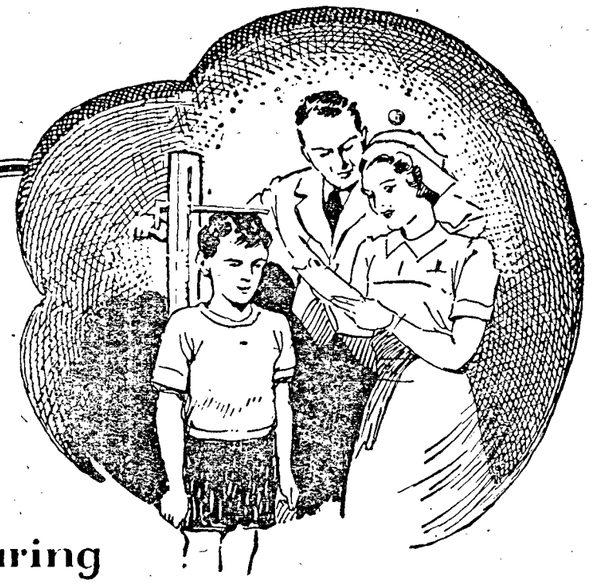
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WITH
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WITH
IRON AND LIVER

COMPOSITION

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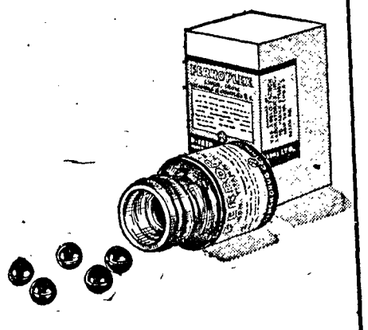
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PACK

Bottles of 25, 50, 250 and 1000 Capsules.



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"BELVITA"

(Yeast Extract)

Some reports from users:—

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POLYNEURITIS: "Male patient, aged 54 years, was put on a teaspoonful of BELVITA thrice daily for 9 days. Neuritis had completely disappeared. Gained 1 lb. in weight."

BELVITA is a concentrated yeast extract, free from meat or animal fat, and rich in Proteins and Vitamins of the "B" complex—strongly recommended as an invigourating tonic and remedy for Anaemia, Anorexia, Beri Beri, Constipation, Dispepsia, Scabies, Ulcers, etc. etc.

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Indian Medical Journal

(Journal of the All-India Medical Licentiates' Association

Vol. 41. Madras: September 15, 1947. No. 9

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OUR MONTHLY SURVEY

Exit I. M. S.:—With the declaration of India's Independence on August 15, '47, the Indian Medical Service, along with other imperial services, has been liquidated. Those who choose to remain under the new political dispensation will be allowed to continue, and those who do not will be given reasonable compensation or pension. So far as our information goes, most of the Provincial Governments are not willing to retain even those I.M.S., Officers who are desirous to continue in Indian Service. Thus, for example, Madras and West Bengal have informed the Central Government that they do not propose to have any I.M.S., Officer at all in their service. We sympathise with the plight of these officers. We feel that no provincial government should show such extremes of intolerant attitude, particularly in view of the fact that a good bulk of them have chosen to retire and only a very few to remain. Those who remain do not demand any key positions in preference to the sons of the soil, and their only desire is to serve our country to the best of their opportunities. Let us not forget that we owe very much to the British Officers of the Indian Medical Service in the organisation and development of modern medicine, not to mention their epoch making discoveries in some of the tropical diseases rampant in our country. The least we can do is to retain those who wish to continue in service under the new political dispensation. We believe it was in this spirit that our leaders negotiated for the termination of these imperial services and it would be but fair if the Provincial Governments also show and act in the same commendable manner. Certainly we hold no brief for the I.M.S., and its liquidation is inevitable. We only plead for a generous attitude towards those who choose to remain.

A New Nursing School at Madras:—Lady Nye opened the new buildings for the Nursing School in this city during last month and while doing so deplored that the province of Madras lagged much behind other provinces in the matter of training and out-put of nurses. We are not sure how far she is correct in this observation of hers, because our impression is that while every province is in default in this respect, Madras is slightly better. This is not however of much consequence since the need for more nurses in Madras Province is very great. It is obvious that a single school of nursing is absolutely insufficient. Even in this school there is provision for only 52 students. The Vellore Medical College has undertaken to admit 18 students for preparing them for B.Sc., in nursing with a four years' course. Both these training centres give us only an annual admission of 70 nursing students as compared to nearly 400 students admitted for studies in the six medical colleges in our province. This is a topsy turvy arrangement, since, normally speaking, there should be more nurses than doctors. We wrote last year commenting thus on the opening of the new medical colleges*:—

> "Rather we would advocate more nursing colleges as our need for nurses is far more urgent than the need for more doctors. It is ridiculous that our country has got only about 5000 qualified nurses, 9 times less than the number of available doctors. This should be the other way round in a normal development of health personnel. Till this normal ratio between health personnel is achieved, it would not be appropriate to start more number of medical than nursing colleges for reasons which are self-evident."

* Ind. Med. Jr. March, 1946, p. 59.

Treatment of the Advanced Stage:—Same as for the earlier stage. Intravenous glucose with calcium gluconate may be necessary in many cases. Administration of vitamin C, orally or parenterally, will be highly helpful. Fluid diet is recommended.

Treatment of the Late Stage:—Since anaemia is pronounced in this stage, liver extract injections also should be given. Coramine or digitalis is indicated if there is myocardial weakness. Marmite extract should also be given. All those are in addition to the specific treatment with antimony.

It is necessary before commencing treatment to record our observations on the following:

(1) Blood Pressure.

(2) Condition of the heart and lungs.

(3) Any haemorrhage-epistaxis, haematemesis or malaena,

(4) Any jaundice.

(5) Any oedema.

(6) Any urticaria.

These require preliminary treatment to make the patient fit for specific treatment.

Dangers of Antimony Injection.—Even small doses of antimony reduces the force and the frequency of cardiac beats which tend to become intermittent, large doses depress the heart and accelerate the pulse rate. The blood pressure also may fall considerably, partly due to the relaxed state of the arterioles caused by the depression of some portion of the vosomoter system. It also inhibits the glycogenic function of the liver.

As antimony is excreted through mammary glands, care should be taken to see that the child is weaned from the breast when the mother is under antimony treatment, as otherwise the child is likely to show aymptoms of antimony poisoning.

Illustrative Case:—A female patient, 4 months after delivery, was treated by me for Kala-azar by urea-stibamine injections. After two injections she complained that her child was having loose motions. On enquiry I found the child was breast-fed. At the time, I did not think it was due to antimony injection given to the mother. So I gave the child 2 ampoules of Bacteriophage daily. This gave no improvement. Suddenly, it struck me it may be due to antimony treatment of the mother and this idea of mine was confirmed by reference to Dr. Gosh's materia medica wherein it is stated that antimony salts are excreted by the mammary glands. I did not stop the treatment of the mother, but asked her not to feed her child on breast milk. This she did, and the child was free from any trouble afterwards.

It is necessary to see that ampoules of Antimony preparations should be carefully examined for cracks and if there is any sign of deterioration such ampoules should not be used.

Syringes and needles should be well sterilised in distilled water. Alkalies should be totally avoided as they are incompatible with antimony.

Management of Surgical Haemorrhage by the General Practitioners

BY

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In the following few lines, I shall discuss about surgical haemorrhage and its management, by the general practitioners, particularly by the doctors of mofussil areas, where efficient hospitals and necessary equipments are not available so easily. The surgical haemorrhage whether mild or severe is a thing which each and every doctor will face daily, particularly in these days of communal disturbances.

There are three varieties of surgical haemorrhage:

(1) **Primary:**—*i.e.*, bleeding from the vessels just after the injury or after any surgical operation.

(2) **Intermediary or Reactionary:**—*i.e.*, bleeding which occurs within 24 hours from the stoppage of primary one. It is always due to re-establishment of blood-pressure, when the patient has recovered from the shock. This always happens in the severe degree of injury or after any operation performed by general anaesthesia.

(3) **Secondary:**—This may occur at any time, after 72 hours, from the stoppage of primary haemorrhage. This is always due to sepsis. The vasa vasorum which gives nutrition to the vessel walls are lost and the vessels degenerated, thereby bleeding occurs. Before this bleeding, slight oozing of blood is seen which is called "warning haemorrhage". If this is not detected and managed in time, it becomes very troublesome to combat in the later stage when the bleeding becomes very profuse.

Essential Equipments for Management:—Every medical practitioner should possess the following:

(1) One Rubber Touriniquet. (3 feet length.)
(2) Six artery forceps. (Straight and curved.)
(3) One scissors.
(4) One Dissecting forceps.
(5) One Scalpel.
(6) Needles—
  (*i*) curved cutting (each at least two in numbers and of medium size.)
  (*ii*) curved round.
  (*iii*) straight one.
(7) Silk-worm-gut few strings.
(8) Catgut—
  (*i*) Tubes—at least two (No. '0' and No. "1" sizes)
  (*ii*) Loose pieces may be preserved for further use. If all the contents of the tube are not used in one operation.
(9) Gauze, cotton, and bandages—each few packs.

(10) Ether, methylated spirit, Tr. iodine—each few ounces and sterile sulphathiazole powder (at least one phial)

Sterilisation of the above equipment:—No. "2" to No. "7" items may be sterilised by boiling for 30 minutes. Catgut (both tubes and loose) should always be dipped in absolute alcohol and they are washed with sterile water i.e. boiled and cooled water) just before use. No. "9" item is available in the market in sterilised condition, but if required, gauze and cotton only (for the first layer of dressing) can be boiled before use.

Management:—Patience, Pressure, and Position (P^3) are the only "Triad", which can give first aid to any haemorrhage whether surgical, obstetrical, gynaecological or medical. Not only speaking of first aid, it is essential for everybody to follow this in the treatment of all varieties, otherwise there is chance of failure.

(1) **Primary Haemorrhage:**—

I. Local:—Patiently, keeping the injured part in proper position (*i.e.* if in the limb it is propped up) apply pressure by

(*i*) Tourniquet—*i.e.* proximal pressure.
(*ii*) Pressure locally — by gauze or by the fingers wrapped with gauze.
(*iii*) Forcipressure–Find out the bleeding points and hold them with haemostatic forceps (artery forceps) and ligature with catgut. Then stitch wide apart, with silk worm gut and touch the sutures with Tr. Iodine. Don't stitch too closely if the wound is a contaminated one.

Some advocate dusting of sterile sulphathiazole powder and then suturing of the skin as prophylaxis against sepsis. On the 3rd or 4th day the wound should be looked into for any sign of inflammation (*i.e.* angry looking, hot etc.) and if so, few stitches should be removed

II. General:—If the shock is profound, morphine and atrophine (¼ and 1/100) should at once be given and the patient to be covered well and the foot of the bed slightly raised. No pillow should be given. Replacement of fluid by saline should not be done during the period of bleeding as it causes much more loss of R. B. C. from the system. Glucose 50 c.c. (25%) I. V. may be given, if pulse is very feeble. Later glucose, calcium and preferably blood transfusion if required. A. T. S. 1500 units and A. G. S. 4000 units I. M. to be pushed as soon as possible as a prophylactic measure.

(2) **Reactionary Haemorrhage:**—If there is only slight soaking of the dressing, apply a pressure bandage again on the previous dressing. If not checked the dressing should be removed, actual bleeding points sought for and ligated. The wound is properly dressed again with proper aseptic care.

(3) **Secondary Haemorrhage:**—

I. Local:—If this is slight it can be managed with local pressure by plugging or by tying the bleeding points, but it should not be neglected as it is the warning of severe seconary haemorrhage.

If severe, it is very difficult to manage, particularly if the position or situation of the wound is bad. *e.g.*, in gluteal region, anal region, illiac region etc. Here except tight plugging and proper position of the patient no local management is possible. Of course the bleeding points should be sought for and ligatured if the bleeding places are very deep and friable. But if bleeding cannot be checked or if gangrene starts amputation may be the only chance to save the life of the patient.

If the bleeding is controlled the wound should be dressed cleanly with sulphathiazole dressing powder.

II General:—Combat the shock if present by morphine and atrophine injection (dose according to age), cover the body well, raise the foot end of the bed for better circulation of the vital organs and place him in electric cradle (which is usually not available) to maintain body temperature.

Glucose (25 per cent) 50 c.c , calcium (10 per cent) 5 c.c. and Redoxon. 5. 5 c.c. I. V. immediately pushed and to be repeated according to necessity. Intravenous saline transfusion should be done to replace fluid lost. For this, now-a-days blood transfusion is an ideal one: But it is very difficult in mofussil area. Haemostatic serum (Neo-Haemoplastin P. D. Coa-guler (Ciba) to be pushed according to necessity.

Treatment of the sepsis should be started from the very beginning. Penicillin is the best one and if this is unavailable injection of sulpha group of drugs *e.g.* cibazol solution or Thiazamide Sodium should be given. But if the signs or symptoms of sepsis are not so marked oral administration of sulpha tablets is enough.

Treatment of After Effect:—If the patient recovers, his anaemia and general debility are to be treated with tonics containing iron, phosphates, liver extract etc. and if marked anaemia is present injection of liver extract is essential. Diet should be nourishing and easily assimilable.

Continence

BY

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I have taken upon myself to write a few articles on 'Sex Education'. Certainly I should have started with Anatomy and Physiology of sex-organs, but I deem it necessary to begin with 'continence,' since I wish to impress its importance on account of the reason that the public at large mocks at the word, 'continence' and have developed so much idiosyncrasy against it that it considers it an impracticable and insane step. Alas! the modern youth has lost all its charm and is ruining his health by neglecting the advice of saints, clergymen, elders and doctors.

All the religious books and preachers of all over the world emphasize the importance of celibacy on moral principles. Even if the preachers and moralist be very sincere to preach the doctrine of Continence but a word against this teaching by a medical man washes away all the sweet effects engrained in public mind in favour of continence.

We earnestly ask the Provincial Government to consider our suggestion seriously. Already, the Madras Government have opened two new medical colleges before they could open one nursing school! At least each medical college should have a nursing school attached to it, otherwise there is no hope of augmenting effectively the number of qualified nurses in this province. This applies to other provinces also.

Standard of Nurse's Training:—This varies in each province, but what is more to the point is that the standard of training in each province is too far below the minimum required. Recently the Madras and the Delhi Universities have prescribed a curriculum for B.Sc., in Nursing. It is a four years' course with the minimum general qualification of S. S. L. C. or its equivalent. There is no reason why the existing nursing schools should not adopt this standard. Dual types will lead ultimately to many anomalies as in the case of medical education till recently. It is just the time to introduce a uniform minimum standard of nursing education before acute rivalries set in between diplomates and degree holders in nursing. We appeal to the Government of Madras to follow the University standard in the training given to the students in the new nursing school, and prepare them for the B.Sc. in Nursing.

Paucity of Candidates:—Lady Nye and also others, who spoke at the opening ceremony of the new Nursing School in the Madras City, deplored that educated girls from middle and high class families do not seek career in nursing, and appealed to them to give up their ancient shyness and prejudice aud join nursing in increasing numbers. We join this appeal but we refuse to be emotional, for, we know that conditions in nursing service are far from satisfactory. First of all they are poorly paid and they have no superannuation or pension schemes. Secondly they are given no professional status. Even the senior nursing positions are grossly underpaid. Their hours of working are too much for their forbearance—45 to 70 hours a week for day duty and 49 to 90 a week for night duty. Surely these are not favourable, much less attractive conditions which would draw young girls to the nursing career. Let these be rectified before making emotional appeals, and they have to be rectified sooner or later if our country is going to develop an efficient nursing service.

Male Nurses:—The Bhore Committee report observes that "it is a regrettable fact that some excellent schools for male nurses have had to be closed, because those trained in them have found it difficult to obtain posts with a salary of more than Rs. 15 to Rs. 40/-a month." The last Congress Ministry of Madras organised the education of male nurses. The minimum general qualification required was matriculation whereas that which is prescribed for female nursing student is much less; a mere high school standard is considered sufficient. The male nursing students have to undergo a four years' training. Yet they are paid much less than the female nurses, and given no professional status at all. It is no wonder therefore there is no response from our young men for this job. There is a wrong belief that nursing profession is fit only for the gentler sex, and this has damped the enthusiasm of some young men from joining the nursing school and pursuing a career in nursing, apart from invidious distinctions which the Government have unfairly set up between the male and the female nurses which have acted as a further deterrent. There is a definite need for a cadre of male nurses in our country; such a cadre exists in other countries also. This need not be as large as the female nursing cadre but sufficient enough to meet certain hospital needs and also emergencies like epidemics and war. We hope that in future planning of our health service this question will be given due weight and consideration.

Inadequacy of Arrangement for Treating Mental Cases:—At present all the mental hospitals are run by the provincial governments. Admission is strictly, at any rate mostly, limited to violent cases. Even this admission is not easy enough to obtain. Either the case must be admitted by the police on the ground of public safety, or if voluntarily admitted it can be only after a declaration before a first-class magistrate supported by two medical certificates, one of which must be from a civil surgeon. Such a rigorous procedure may be legally necessary but it certainly leaves out a large number of mental cases without medical aid, not to speak of institutional treatment. We think it is absolutely necessary to permit voluntary admissions into mental hospitals, and an out-door clinic to treat cases of moderate severity. We understand that the Government of Madras have programmed to give special training in mental diseases for doctors who are desirous to do so. This is indeed a step in the right direction. But its necessary concomittant is provision for treatment of voluntary cases in the existing mental hospitals, and in course of time establish a mental clinic in each district headquarter hospital.

Regarding the incidence of mental disease in our country we quote below the observations of the Bhore Committee:

> "The provision in India for the institutional care of insane persons is about 130 times less than that existing in England, even if we estimate the rate of incidence of such cases here as about 27·5 per cent less than the rate in that country. As regards the possible number of persons suffering from varying degrees of mental disorder, who may not require hospitalisation and yet should receive treatment, we have no information at all. It *seems however, almost certain that these numbers are likely to run into some millions.*"

It is high time that our Government organise efficient treatment centres for mental cases most of which are curable by early treatment, but which now unfortunately become worse and ultimately incurable in the absence of any treatment.

ADDRESSES AND ARTICLES

Diagnosis and Treatment of Kala-Azar Under Rural Conditions

BY

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Diagnosis:—Only the finding of L. D. Bodies in the blood and spleen puncture can give us 100 per cent assurance in favour of Kala-azar. But this is not possible in rural areas, as such a method of diagnosis is available only in a well equipped hospital with a laboratory. Practically, therefore, we have to begin treatment before this method of diagnosis can be applied.

Then we have various sera tests such as Napier's aldehyde test and Chopra's antimony test. These are helpful, but these tests are rarely positive in early cases. And unless cases are treated early, a rapid cure is not possible.

Thirdly we can have recourse to a blood count. The usual blood picture in K. A. is as follows:

(1) Increase of proportion of white cells to R. B. C, 1: 1500 or near about, normal being 1: 750. Rogers is of the view that the increased ratio of white cells to red cells with leucopenia is a definite diagnostic point.

(2) Relative absence of eosinopheles.

(3) Diminution of polymorphos and increase of lymphocytes.

Actually, however, we have to depend on clinical diagnosis in most of the cases. Points of clinical diagnosis are:

(1) History of long continued fever not responding to quinine.
(2) Patient cheerful and doing his normal work although he may be running a temperature of 102°F or more.
(3) Progressive loss of weight.
(4) Progressive enlargement of spleen.
(5) Visible carotid pulsation.
(6) Good appetite with bad digestion.
(7) Rapid pulse even when there is no rise of temperature.
(8) Occasional bleeding from the nose and gum.
(9) Emaciation is progressive.
(10) Low blood pressure.

Of these the first two are very important and, if besides, there is enlargement of spleen, one can safely diagnose as Kala-azar clinically.

Treatment:—Roughly speaking, the disease has three clinical periods:

(1) The early stage.
(2) The advanced or the wasting stage.
(3) The late or the anaemic stage.

Treatment of the Early Stage:—As a good number of Kala-azar cases in rural areas are also suffering from hook-worm disease, it is good as a routine to treat them for it by giving oleum chenopodium (m 8 in a capsule) one to be taken every 4 hours (3 such doses) followed by a saline purgative one hour after the last dose. In cases where there is low blood pressure and blood sugar, it would be advantageous to give such patient 10 ms. of Adrenaline subcutaneously before beginning specific treatment with antimony. Brahmachari's urea stibamine is the sheet anchor in the treatment of Kala-Azar and if there is no proper or quick response to this drug, other preparations of antimony should be tried, such as solustibol, stibanate, etc. While the specific treatment is being given, the patient may be put on the following mixture.

R/-

Ferri Sulph.	gr. 3
Quinine Sulph.	gr. 2.
Acid Sulphuric dil.	m. 5.
Liq. Arsenicalis.	m. 3.
Sy. Easten	m. 25.
Aqua menthol pip ad.	oz. 1.

F. M. one ounce 2-3 times a day after food.

Here lies the duty of medical men to guide the new generation and lead them to the right path. Our country is degenerate in all respects. Health is at a great stake. It may be due to poverty, semi-starvation and insanitary condition etc., but I, as a medical man, emphasize more upon the sexual indulgence. We neglect this side of the picture and do not explain to the public the baneful consequences entailed from incontinence. I need not stress any further that it is the primary duty of a medical man to acquaint his patients with the benefits of continence.

In my next article I will explain elaborately the physiology of semen when many new points will be discussed and continence will actually be realised as an essential step for nationbuilding.

Semen is partly the production of endocrine glands named testes. During continence, testicular hormone (internal testicular secretion) is produced in abundance which by absorption into blood gives tone to muscles, all internal organs and viscerae and particularly brain and eyes.

Consequently the vigour improves, the digestion is increased, brain sharpened and vision intensified.

In brief the physical, mental and spiritual health improves and man develops a special control on himself which makes him a respectable member of the society. An imbecile is a curse to society. Examples can be multiplied that continent persons rule the world and incontinent persons fill in the asylums.

The religious books lay stress that a male should get married at the age of 25 and female at 18. This is quite a sane rule, because maturity occurs at this age and both the sexes had completed their education and can confidently take the responsibility of married life.

I proceed further not as a moralist, but as a physician. Some of the physicians, particularly the non-Indian, argue, "Every organ of the body, if not in use for a long time, atrophies, muscles loose their power, joints become stiff, the stomach and intestines refuse to secret the proper digestive ferments and brain become rusty. Similarly the genital apparatus becomes useless."

As regards the genital organs, I shall have to differ. The genital organs are constructed upon entirely different principles than most of the other organs of the body. They are constructed for intermittent action and their functions may be suspended indefinitely without harm to either their anatomy or physiology.

Witness the mammary glands. The woman becomes pregnant and gives birth to a child, and immediately the gland, which had remained dormant for years, swells up and secrets milk. After lactation is finished the gland becomes smaller and inactive. She may not become pregnant again for ten or more years, and during all this while the gland is not in use, but even after this long period, should she again become pregnant, it will again swell up and be absolutely useful in spite of the long period of disuse. The same is true of the uterus and also the testes and other male organs.

It is not out of place to mention the experience of the two Great World Wars.

During the First World War I myself was in Mesopotamia for about five years and so were my other frinds and associates and during the II World War, I have come across a number of my associates and all of them found themselves, on return to home, in greater vigour to satisfy their female partner and their progency was also increased.

I know some of my non-Indian associates, whose wives reside in their home countries, live quite a puritan life in India but whenever they happen to go to their homes after a long stay in India, they feel their sexual impulse far stronger than before.

It is, of course, obvious that purer one is brought up and the purer his associates are, the purer his thoughts will be, and the easier it will be for him to remain continent. On the contrary, if the mind is constantly kept excited by the reading of immoral literature, or the presence of lewd associates, it becomes extremely difficult to refrain from sexual intercourse.

The men who are entering the athletic contest are well aware of the effect of sexual intercourse upon their physical and mental condition and coitus is the thing which is rigidly excluded and about which strictest laws are held. I know instance of persons who suffered from frequent seminal losses but were totally cured by regular exercise. I am satisfied by the experience of such persons that there was no weakness by sexual abstinence.

The objection that prolonged abstinence causes impotence is not correct. It could be congenital lack of sexual desire and power. The continence, however, does not consist merely in abstinence from coitus. Should he see a girl frequently and spoon her every night, this continuous spooning brings his sexual centres and organs into the condition of hyperirritability and congestion and finally exhaustion. If they marry, while in this condition, they are apt to suffer from temporary impotence.

It has been argued that continence is contrary to nature after the sexual organs are mature. No, it is not so. As quoted above the function of testes is to produce internal secretion aud external secretion. During continence only internal secretion is being produced which gives vigour and freshness to the body and brain and controls the mind and increases will power which brings you name and popularity. Consequently one can remain continent throughout his life and can live a long life without suffering from any disease.

It has also been argued that coitus is not only for procreation but it is more for recreation.

It is how the people take it now-a-days in this iron age. I wish and pray to Almighty God to end this age of evils and give rebirth to the old age of virtues, goodness and truthfulness. Sexual recreation has so much over-powered the present humanity that Indian nation is dwindling down and the resisting power is so much reduced that present generations are being invaded easily by all kinds of diseases, infectious, contagious and venereals. Once a man losses control of his will-power and becomes lusty, he performs illicit coitus and falls an easy prey to syphilis and gonorrhoea. The sexual recreation thus becomes a permanent menace to the person concerned.

I doubt whether any sane person would partake of a dish, no matter how tempting it appeared, if he knew there was danger of contracting syphilis, gonorrhoea or T.B. etc., thereby.

Undoubtedly the act of eating is merely for the purpose of sustaining life, but we eat far in excess of what we actually need to sustain life. If the object of eating were only to supply our bodies with necessary elements, a few simple articles of diet would suffice. We eat most of the things because we enjoy and likewise we indulge in coitus because we enjoy it.

We heavily suffer by various ailments by these enjoyments.

Civilisation dictates that we restrain our passion within bounds of decency and morality.

As a result of centuries of education, however, civilized man has set up a moral code for himself which dictates that he should satisfy his sexual needs within certain limits of modesty and morality, and not whenever the desire seizes him.

(To be continued)

Few Lines on Thread Worm Infection.*

By

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Post Ghugudanga, Dum Dum.

"Thread Worm Infection" is quite common among children and even adults. The text books of medicine deal with it only cursorily. I have seen children tossing on bed and crying throughout the night due to severe anal itching occassioned by the round worms. Even I have seen adult men suffering from periodic attack of anal itching and women from vaginal itching. So in my opinion the disease should not be neglected or perfunctorily treated. Of course the infection is more or less harmless. Sometimes the patients are also found passing thread worms without any trouble for a long period or throughout life.

Oxyuris Vermicularis is a type of intestinal parasites about 1/8" to 1/5" inch and resembles a mobile piece of white thread when passed through stool.

Mode of Infection and Re-Infection :—No intermediate host. Infection is direct from the contaminated vegetables, fruits etc. Persistent long continued infection is due to re-infection from the contaminated fingers (particularly in cases of children). Because the itching of the rectum is due to eggs laid by the female worms around the anal margin, these eggs are taken by the fingers and they pass unchanged through the stomach to the intestine, where they mature and multiply in numbers.

Seat of Infection :—They freely travel in the lower part of large intestines, particularly in the rectum and their activities are increased in nights.

Symptoms :—Anal itching and irritation, particularly in the night, is the main symptom.

(2) Itching and irritation around the vagina in the case of females.

(3) Diarrhoea in case of children.

(4) Convulsions in cases of weak children may occur.

Complications :—(1) Ulceration and fissure around the anal region due to abrasion produced by the nails during itching. (2) Appendicitis may develop (though rare) as the worm may occupy the lumen of appendix.

Diagnosis :—Very easy by the presence of worms in the stool and characteristic anal itching.

Prognosis :—Always favourable.

Treatment : (A) **Prophylactic** :—The preventive measures are of much importance to avoid the infection. They are :—

(i) Constipation to be avoided.

(ii) Green vegetables should be well cooked.

(iii) The night pyjema or cloth and bed sheet of the affected one should be boiled daily.

(iv) The affected child is preferably isolated from the unaffected children.

(v) Habit of washing of hands with soap before every meal should be formed.

(B) **Curative** : (1) **Prevention of Re-Infection** : This is the only clue of success to cure a patient. For this, every affected person whether adult or child should wash his hands with 5 per cent carbolic soap before taking each meal and after finishing defecation. Children are to be watched, so that they may not put their fingers in the mouth. The nails are to be kept short.

(2) **Medicines** :—Recent authorities claim some drugs to be useful *e. g.*, Gentian violet, Butolan, Phenovis etc, but except gentian violet others are of less practical value due to their too much toxic effect. Gentian violet is now a days being used with effect. I have recently used the following prescription for a child aged six, with very satisfactory result.

Gentian violet—gr. 1/6 (in keratin coated capsule) to be taken 3 times a day, before meal for 8 days. This treatment should preferably be repeated after a week.

(3) **Enema** :—They are effective to some extent as the worms can be washed out during the time of itching, when they are around the rectum. The enema should be with 4 to 8 ounces of hypertonic saline (2 drams to a pint). The enema should be given simultaneously with the Gentian Violet by mouth. Enema with Infusum Quassia or other bitter solution is not so effective.

(4) **Purgatives** :—Should not be used in any form at the time when the patient feels itching around the anal margin regularly for consecutive days. Because the purgatives sometimes do not act well. the worms instead of passing with the motion are driven more towards the anus due to intestinal spasm, thereby producing much more itching around the rectum. The purgatives can only be used in the quiescent stage. Saline purgative is the best one.

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* Read at the monthly meeting of 24 Perganas Branch of the A. I, M. L. A.

(5) **Local application** :—Ung. Hydrargyri B. P. (30 per cent mercury ointment) around the anal margin can be applied for temporary relief of itching. If there is ulceration Sulfanilamide ointment preferably cibazol ointment should be applied.

Indigenous drugs :—I have heard that the juice of "Kalmegh leafs" or "Bhatpata" (found in the jungles of Bengal) 1 teaspoonful in the morning with water for 4 or 5 days cures the round-worm infection. But personally I had no opportunity to try these drugs.

Intraperitoneal Saline in Cholera.

BY

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When an epidemic of cholera breaks out, it is easy to diagnose the disease judging from its epidemic character. But when we get sporadic cases of diarrhoea and vomiting, often resulting in collapse, the diagnosis is not always easy. Without going into the details of differential diagnosis, I may mention a few common diseases where gastro-enteritis is a common feature. It may be caused by any one of the following diseases:

(1) Cholera.
(2) Acute Bacillary Dysentery.
(3) Acute Food-poisoning.
(4) Arsenical poisoning.
(5) Algid type of malaria.
(6) Some protozoal infection of the intestines-giardia, intestinalis being by far commoner.

Whatever may be the cause of collapse resulting from acute purging and vomiting, the treatment is almost the same. Normal saline administration either by intravenous or intraperitoneal rout becomes imperative to maintain the water-balance and to prevent dehydration of tissues. The total amount of saline depends upon the degree of dehydration of the tissues and the increased specific gravity of blood. There can be no hard and fast rule for that. Usually when the specific gravity of blood reaches 1062 intravenous saline is called for, and as much as 4 pints may be given at one sitting if the specific gravity is higher. Along with the loss of fluid the blood pressure also falls considerably in cholera. The thick blood cannot easily pass through the fine glomeruli of the kidneys, and, therefore there is retention of nitrogenous products in the body and uraemia may be ushered. Our first attempt at treatment should be to replace the lost fluid and then to raise the blood pressure. To achieve the latter, pituitary extract or adrenalin chloride may be injected either alone or with saline transfusion.

But intravenous saline transfusion is not always easy. Very often the doctor is called at the dead of night to attend on a case of cholera when the patient is already in the stage of collapse. He finds the whole venous system had collapsed and the direct intravenous transfusion impossible. Venesection is not always a method of choice, especially in Tea Estates owing to possibilities of sepsis. Besides the local labourers are much against venesection as the following incident would show.

"A doctor was called to attend on a case of cholera. He found the patient in a condition of collapse. He decided to open the vein for the purpose of transfusion. He explained the procedure to the relatives of the patient. They agreed. When the doctor opened the vein there was naturally some oozing of blood. The relatives thought that the doctor had cut a vital nerve, and one of them gave the doctor a blow with his stick. The doctor had to flee for his life! And of course the patient died."

Hence there arises the need for a more extensive use of the direct intra-peritoneal method of saline transfusion. In all hopeless cases this is by far the safest and easiest method. I have so far treated 29 cases of collapse by direct intraperitoneal method without any death due to it.

The peritoneum is highly vascular and has got a big area to facilitate absorption. The required amount of saline—from 1 to 4 pints—may be injected safely at one sitting. Absorption takes place within half to one hour. Pulse becomes better. What is more important is that the reaction arising from intravenous saline is not so marked in intraperitoneal transfusion. Usually, the patient complains of heaviness in the abdomen and this lasts only till the saline is absorbed into the system.

The technique of direct intraperitoneal transfusion is quite simple. A short and stout needle should be chosen. The puncture is made one inch either above or below the umbilicus and care must be taken to avoid injury to the bladder. After cleaning the area with rectified spirit or tr. of iodine, the needle is pushed slowly through the abdominal wall into the peritoneal cavity. After the parietal wall is pierced the operator does not encounter any resistance when the needle should be pushed no further. If pushed there is danger of injury to the internal organs. The thickness of the abdominal wall varies with different individuals and this could be guessed in each case. Particularly in children, it is thin, and therefore the needle must be pushed very slowly.

SELECTED ARTICLES

Antimalarial Drugs: J. C. PATEL (*From the Indian Journal of Medical Sciences July 47*)*

In recent years (during World War 1939-1945) a large amount of research work has been done and much has been learned concerning the use of antimalarial drugs. The significant developments that have occurred will be discussed in this review.

Quinine And Other Cinchona Alkaloids.

Cinchona alkaloids have been in use in the treatment of malaria for over 300 years and quinine for 100 years. Nine-tenths of the world's supply of cinchona came from Java where the climate favoured the growth of cinchona trees. Even though there were a few cinchona plantations in Ceylon, India and South America, the production and quality were poor.

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Pharmacology.—As a result of several years experience with sulphonomide drugs, the world has now become very conscious of plasma levels. These estimations have been done after administration of quinine. The plasma concentration of quinine reaches a peak within four hours of oral administration, but falls rapidly. The rates of absorption and excretion of quinidine and cinchonidine have been found to be similar to those of quinine except that those of cinchonidine were slower and less complete. To be effective, quinine has to be administered frequently and continuously. After a routine administration of 30 grs. per day divided in three doses the plasma concentration reaches from 0.3 to 1.0 mg. per 100 c.c. The effective level varies with different hosts and species and strains of parasites; a level of 0.3-0.5 mg. is effective except for *P. falciparum* which requires a level of 1.0 mg. per 100 c.c. The effective level of other alkaloids is of a similar order except that of cinchonine which is effective at a lower level (Sinton, 1929).

Clinical Experience.—The Madras Cinchona Committee in 1867-1868 first reported that the action of the four principal cinchona alkaloids, quinine, quinidine, cinchonidine and cinchonine was equal on malaria. These observations were confirmed by several observers not only in India but also in other countries. Field experiments (Green 1945) also showed that totaquine mixture consisting of about 70 per cent. total crystalline alkaloids of which not less than one-fifth is quinine, was as effective as quinine alone in approximately the same dose. The only disadvantage is that the by-effects (nausea, vomiting and cinchonism) were more frequent. These by-effects were ascribed to an amorphous alkaloid in the mixture. The totaquine mixture has no advantage over quinine alone in preventing relapses; neither would it act as true causal prophylactic. By causal prophylactic is meant destroying the parasite before it enters the red blood cells. To achieve it a drug must kill either the sporozoites or the exoerythrocytic forms. As the drug is absorbed quickly no higher initial dose is necessary as with other drugs like mepacrine or the sulphonamides. The dosage recommended is 30 grains in three divided doses for seven or eight days.

Mode of Action :—Recent literature contains few additional data on the clinical effects of quinine, most studies being concerned with an evaluation of synthetic drugs as compared with quinine. Quinine does not destroy sporozoites or gametes of *P. falciparum*. The mode of action upon schizonts is still under debate.

As a suppressive drug quinine was used extensively in World War I and later. It was believed to be effective. Any failure was ascribed to an improper and irregular administration of the drug. However, some doubted its effectiveness, Fairley (1945) and Findlay and Stevenson (1944) used quinine in a dosage of five to ten grains per day in the army, in controlled experiments and it proved a failure as a suppressant. This probably occurred because of its rapid absorption and excretion, the plasma concentration not remaining high for a sufficiently long time to have action on the parasites. None of the other cinchona alkaloids could be more effective because of the same reason. As a suppressant drug quinine has given way to one of the synthetic drugs, mepacrine or paludrine. The value of quinine and other cinchona crystalline alkaloids in antimalaria therapy is equal and a mixture of these alkaloids can be used as a completely efficient substitute for the single alkaloid quinine.

Mepacrine

Mepacrine was in use for more than 10 years at the time (1942) Java was lost with its quinine supplies. This drug had definitely been considered an effective antimalarial and was even believed to have some advantages over quinine therapy, and certainly superior in suppression of malaria. Quinine had been successfully used for three hundred years and was no less effective than mepacrine and hence quinine was still considered to be the drug of choice. Another reason for this preference was a political and economic one. Mepacrine as Atebrine was manufactured only in Germany and the exact method of manufacture was not disclosed. With the loss of quinine from Java more attention was paid to mepacrine and considerable amount of research was done during war time. Plans for large scale production were laid. Various names were given to it in different countries. It was called mepacrine hydrochloride (B. P.) quinacrine hydrochloride (U.S.P.), Acriquine (U.S.S R.), Crindora (Italy), Haffkinine—Acriquine (Bombay). Most of the work till the beginning of the war was done with the German manufactured drug. As the method of manufacture was not disclosed there used to be doubts about identifying the drug manufactured in other countries with the German drug. Chemical, pharmacological and clinical investigations sponsored by National Research Council (U.S.A.) and Medical Research Council (England) established the identity of the American and English products and numerous investigators showed that they were no more toxic than the German product.

Pharmacology :—Methods of accurately estimating mepacrine in blood plasma, urine and tissues were devised, and accurate methods were developed. This was important as the action of a drug is dependent on its concentration in the blood plasma and tissues. Shannon, *et al* (1944) found that when mepacrine was given either by mouth or by intramuscular injection, a large proportion, 90 per cent. was fixed in the tissues, about 3 per cent. was excreted in the urine and about six per cent in the faeces, in the first twenty-four hours. When the drug was stopped the excretion rate fell off rapidly but traces were found in the urine for many weeks. On the ordinary daily dosage of the earlier therapeutic regimes, the maximum plasma level is not attained for several days, but once the balance between the intake on the one hand and the rate of excretion and degradation on the other has been achieved, a fairly uniform plasma level may be expected. In persons taking a regular daily dose, the general rule is that 40 per cent of the final level is reached at the end of the first day and 40 per cent of the deficit is made up each day subsequently, so that 90 per cent. of the peak level is attained by the end of the fourth day. If however the dosage on the first day is doubled, this plasma level is attained at the end of the second

day and if it is trebled, this near peak is attained on the first day and the peak level for that particular dosage can be maintained subsequently by the ordinary daily dosage. Conversely, when the drug is discontinued the plasma level falls at the rate of about 20 per cent daily for several days but traces of mepacrine are still present even after eight weeks. If 0.4 gm. per week is used in suitable divided doses a peak level of between 8 and 15 microgrammes is obtained about the end of fourth and fifth week. But a level of 15 to 30 microgrammes with a mean above 20, is reached with the same time if the dose is increased to 0.6 gm. per week given in six doses. As it takes a longer time to reach an effective level, the prophylactic treatment should be started two weeks before the date of entering an endemic zone and if the time is short dosage should be increased and a single loading dose of 0.6 gm, should be given before commencing the ordinary regime (Army Med. Bull. 1945)

The behaviour of mepacrine is thus in sharp contrast to that of quinine which appears very early in the blood in relatively higher concentration, reaches its peak concentration in about four hours and falls far below the therapeutic level by the end of twenty four hours.

The plasma concentration of mepacrine necessary to effect a clinical cure in malaria, varies both with the host and with the strain of parasite but it is generally believed that a minimum level of 30 microgrammes is required. During suppression therapy an overt malaria does not occur if the plasma level is above 12 microgrammes.

Toxic Effects:—Mepacrine may cause (*a*) gastrointestinal disturbances—abdominal pain, vomiting and diarrhoea; (*b*) symptoms related to the central nervous system such as cephalagia, mental depression, delirium, psychosis and convulsions; (*c*) collapse and death. However the incidenceof these symptoms is low. It varies with a number of factors, It is higher (1) in children (2) in psychopaths (3) in those in whom the drug is given by injection (4) when given with other drugs particularly plasmochin (5) in the poorly nourished and (6) when the dosage was high initially. These toxic effects can be obviated by such simple means as taking sodium bicarbonate or glucose at the same time. Besides most of them—for example, the gastro-intestinal disturbances and the mild psychosis that sometimes follow the early doses—frequently do not occur later during the course when some tolerance for the drug has been established. They are therefore not an indication for discontinuing the drug altogether, not even, except in rare instances, for modifying the dosage. Maegraith, *et al.* (1945 a, b and c) have shown that mepacrine in the usual dosage for treatment as well as for suppressive therapy does not cause any damage to the liver or kidney and it has no deleterious haematological effect on blood cells even when the drug is continued for 12 months (Maegraith *et al*, 1945. c.)

Dosage.—The recommended and used dose of the German drug up to the last war was administered in doses of 0.1 gm. three times a day, for 5 days, for a total of 1.5 gm. From the newer knowledge of the absorption and excretion and the level of plasma concentration and from also the clinical experience gained during the war (1939-1945) in army personnel, it became obvious that the usual recommended dosage was insufficient. In order to reach the high level required for adequate concentration, a high initial dosage was necessary. This applied whether the drug was given by mouth or parenterally. Different doses have been recommended but most often 0.8 to 1.0. gm. is administered in the first twenty four hours. The United States Army (1944) prescribed 0.2 gm. of mepacrine immediately and then every six hours, night and day, during the first twenty four hours to a total of 1.0 gm. and 0.1 gm. three times a day for a further six days to a total of 2.8 gm. in all,

For the parenteral administration the intramuscular route is preferred to the intravenous, as it is safer and has no disadvantages. If it is given intravenously it should be given very slowly. If the parenteral method is indicated, as in the unconscious patient, two injections of 0.2. gm. of mepacrine in 5 c.c. of distilled water are given into the gluteal region one on each side at an interval of six hours. Administration by the oral route should be begun as early as possible but if for any reason this is delayed beyond six to eight hours, another intramuscular injection should be given and repeated every eight hours until oral therapy can be instituted. The total dosage both by the oral and parenteral route in the first twenty-four hours should be 1.0 gm.

Action.—In the usual dosage mepacrine destroys exoerythrocytic forms as well as asexual blood parasites in malignant tertian parasites. In *P. vivax* mepacrine has action on asexual blood parasities but not on the tissue stage (exoerythrocytic forms). Hence the tendency of B. T. infection to relapse repeatedly despite the prolonged anti-malarial treatment with mepacrine.

For suppressive therapy a daily dosage of 0.1 gm. is given. This dosage should be started not less than two weeks before the subject enters a malarious area. If the entry is earlier higher initial dosage is necessary to bring up the level of plasma concentration. On this dosage (0.6 to 0.7 gm. mepacrine weekly) malaria suppression was adequate and, provided the drug was continued for the prescribed period, cure invariably resulted with *P. falciparum*, But in P. vivax infection a similar mepacrine regimen was effective in preventing overt attacks of benign tertian malaria only while the drug was taken, as they occurred as soon as the drug was stopped. On this suppressive therapy (0.6 to 0.7 gm. weekly) no attacks of malaria occurred (Fairley 1945) even when non-immune persons were exposed to infective bites in a hyper-endemic area of malaria in the jungle. Even under all the stresses and strains of hard physical work, prolonged marches, exposure to extreme cold. and flying at high altitudes no malarial attacks occurred. As a result of this prophylaxis, gametocytes would never appear in the blood and there would be no malaria carriers. There would be no deaths due to cerebral malaria and no attacks of blackwater fever.

Mepacrine is definitely superior to quinine both as a curative and suppressive agent but has the disadvantage of colouring the skin and a few toxic effects. However, they are not as frquent as might be thought.

Paludrine

The loss of supplies of quinine as a result of Japanese occupation of countries producing quinine in 1942 induced the chemists and biologists to engage in a search for a new antimalarial drug, The quest for new synthetic antimalarials was mainly centered round derivatives of quinoline and acridine, the basic structures of pamaquine and mepacrine, respectively. But paludrine has been developed on entirely different chemical lines. Curd, Davey and Rose (1945) in England started their search by investigating the activity of pyramidine and its derivatives in bird malaria. Pyramidine was chosen because of its presence in nucleoprotein and associated enzyme systems and because of its proved value as a component in certain sulpha drugs particularly sulphadiazine which were known to possess antimalarial activity. It was found that antimalarial activity was enhanced by introduction of a guanidine group in pyramidine nuclei. The first compound produced was active in human malaria but had unpleasant side effects. Finally, two highly potent antimalarial drugs were produced, *viz.*, 4430 and 4888. These drugs were both very active against the blood forms of P, gallinacum and were also found to affect the exoerythrocytic forms of the parasites. This activity against exoerythrocytic forms of avain malaria is practically unique amongst antimalarial drugs and in this respect 4888 was found to be more active than 4430. 4430 was originally given the name 'Paludrine.' As 4888 has been found to be a highly efficient antimalarial drug in human cases, the manufacturers I.C.I.Ltd.) have transferred the name 'Paludrine' to 4888.

Composition.—'Paludrine' is known chemically as N,P-chlorophenyl-N_5 isopropyl-biguanidine. Paludrine is a base which forms salts such as the hydrochloride and acetate. The hydrochloride is an odourless, bitter, white crystalline powder having a melting point of 240 °C. It is a stable salt which dissolves slowly in water giving a solution that may be boiled without decomposition.

Pharmacology,—Paludrine is absorbed rapidly and almost completely from the gastro-intestinal tract. It can be estimated in blood by a colorimetric method described by Spinks and Tottey (1945) and by King (1946). It has been shown that peak levels are reached within three hours of administration. Fall in concentration is rapid, although sufficient may remain after twelve hours to cause a build-up if the drug is taken twice daily. This reaches its maximum after four or six doses (Maegraith, Adams *et al* 1946). Paludrine is present in cells in four times the concentration in the blood plasma. The drug is rapidly excreted, more rapidly than mepacrine. Even after a dose of 500 mg. twice daily, the blood level falls below the level of estimation within one week from the cessation of the dosage and the drug cannot be detected in the urine after nine days. It is not surprising, therefore, that no ill effects have been reported following long continued dosage for prophylactic effect. Despite the rapid excretion of Paludrine its potency is so great that frequent dosage is unnecessary.

Toxic Effects.—In animal experiments Paludrine has produced no adverse effects on blood pressure, respiration or intestinal movement. There are no toxic effects in the usual therapeutic dosage adopted, *i.e.*, 300 mg. for 10 to 21 days. The toxic effects of the drug have been observed in experiments at Cairns (Australia) with high dosage as 1.0 gramme daily. They may be described as gastrointestinal, urinary and haematological.

(*a*) Gastrointestinal effects: Vomiting commonly occurs in patients with overt malaria or when the first total daily dose 1.0 gramme is given as a single dose or in 5 divided doses of 200 mg. each. However if the treatment was begun with 100 mg. three times a day on the first day vomiting was no more frequent than with other antimalarial remedies, such as quinine or mepacrine given to patients with overt malaria. Abdominal pain, vomiting and some diarrhoea for 12 hours developed in two patients. Maegraith *et al* (1946) noted abdominal discomfort and nausea in some patients when a dosage of 500 mg. or more was given.

(*b*) Urinary changes: In patients who were administered high dosage of 1.0 gramme daily for 14 days there was microscopic haematuria, in some frank haematuria, albuminuria and granular casts and, in one, blood casts in his urine. But in none, there seemed to be any real damage to the kidney. No case developed symptoms suggesting nephritis. Both the urinary and gastrointestinal toxic symptoms were, in general, of minor significance. They occasioned no anxiety, were related to initial high dosage of paludrine in patients sick with overt malaria and were relieved by diminishing the dose.

(*c*) Paludrine tends to produce leucopenia but not agranulocytosis, and a slight increase of myeloycytes.

(*d*) Parekh (1947) observed dermatosis in two out of a series of 48 cases.

N. H. Fairley (1946) has given an excellent account of his experience with Paludrine in "a series of experiments performed to determine the antimalarial activity of Paludrine in volunteers infected with New Guinea strain of *P. vivax* and *P. falciparum*." He discusses the drug under the following headings:—

1. *Suppression and Causal Prophylaxis*:—Volunteers were subjected to a large number of infective bites (120 *P. vivax* and *P. falciparum*) over a period of 62 days during which they were exposed to fatigue and cold. While taking paludrine (100 mg. daily) no parasites were demonstrated microscopically in the blood and there were no minor symptoms of malaria sometimes encountered with other drugs and no toxic effects whatever. When the drug was withdrawn overt vivax malaria developed in from 24 to 33 days but no falciparum fever was met with. Carefully planned experiments have shown that it is the primary wave of the pre-erythrocytic forms that is inhibited in both vivax and falciparum infections contrary to what obtains with the other drugs where the action is mainly schizonticidal. In fafciparum infection the lethal effect is complete and the cure is radical while in vivax infections some of the pre-erythrocytic or early forms survive and commence schizogony when tha drug is stopped.

These experiments also indicated that 50 mgs. of paludrine daily or 100 mgs. twice a week would constitute an effective dosage regimen for non-immunes in highly malarious areas.

2. *Therapeutic Action*:—Paludrine is a powerful schizonticide both in vivax and falciparum infections interfering with nuclear division of early schizonts. Given daily in doses of 300 mgs. for 10 days falciparum malaria was cured in 104 out of 105 individuals. The results in vivax infections though good are not consistently so. It is considered that 300 mgs. daily for 21 days would serve as an overall course, radically curing falciparum malaria, clinically curing vivax malaria in most cases permanently, and preventing infection of mosquitoes for at least a period of 33 days.

3. *Drug Control of Malaria in Indigenous Native Population*:—The low toxicity of paludrine and its effective action on the parasite give it an important place in any plan for the control and eradication of malaria in infested areas. The experiments mentioned above were made with non-immunes and it was proved that effective control could be exercised. What the results in native populations with premunity will be like have still to be adequately worked out. Komp and Clark (1936-1937) found that eliminating premunity by producing early radical cure resulted in the local population becoming highly susceptible to an epidemic and reacting very severely to reinfection while adjacent villages escaped lightly.

4. *The Action of Paludrine on Gametocytes*:—Pnludrine has no action on gametocytes circulating in the blood. If a gametocyte carrier taking paludrine is bitten by a mosquito, the quantity of the drug present in blood of the carrier is sufficient to prevent the development of cycle in the stomach of the mosquito. If the drug is given to the patient in the early stages development of gametocytes may be prevented. Gametocytes of P. vivax are killed during tha course of ten days of treatment of clinical attack, but not those of P. falciparum.

Maegraith *et al.* (1946) have tried the drug in more than 157 cases of malaria of Mediterranean, Indian and Burman origin. They have come to similar conclusions as workers at Cairns. They have found it effective in varying doses from 10 mg. to 750 mg. and of 50 to 600 mg. twice daily for 14 days in the treatment of benign and malignant tertian malaria, respectively. They found that the administration of of single doses of 50, 100, 200, 300 and 400 mg. produced clinical cure of relapsing and delayed primary cases of benign tertian malaria. The same effect can be produced by 400 mg. of mepacrine. They did not find the drug toxic except for occasional nausea. They considered the absence of a colour an advantage.

In the treatment of malaria the following dosage has been recommended:—

Malignant tertian and quartan malaria; 0.1 gm. three times a day for 10 days or 0.1 gm. twice a day for 14 days will produce a radical cure.

Benign tertian malaria: For an acute attack the above dosage will produce a clinical cure. Paludrine will not prevent relapse. But if the drug is given in the dosage of 0.1 gm. twice weekly, evenly spread out, for six months the chances of relapse are far less than with other antimalarials.

Paludrine has not been used by the parenteral route because the drug is rapidly absorbed. In cerebral malaria 0.1 gm. has been given intravenously without any toxic effects.

Chloroquine.

From among the 14,000 substances, both natural and synthetic, which were examined in an intensive search for antimalarial drugs in America, S.N. 7618 was found to have antimalarial activity and given the name Chloroquine. It has been the subject of two reports in recent American Medical literature. Chloroquine has been compared to mepacrine hydrochloride, the synthetic drug, as regards its various properties.

Absorption, excretion, tissue distribution and degradation.—Absorption of chloroquine from the gastrointestinal tract is complete and somewhat more rapid than mepacrine. It is present in higher concentration than mepacrine in the blood on any given dosage schedule. Deposition of chloroquine in the various tissues is similar to that of mepacrine. S.N. 7618 like mepacrine is metabolised in the body, only a small part of the drug administered being found in the excreta. Ten to twenty per cent. is excreted unchanged in the urine and it can be increased by acidification of the urine and decreased by alkalization. The localisation of S.N. 7618 in the organs with slow rate of excretion and degradation necessitates the administration of a large initial dose of the drug for attaining the high concentration in the plasma which is required immediately and which is to be maintained. The concentration in the body fluids slowly falls after the drug is discontinued and it falls by 60 per cent. in a week. The minimal plasma concentration of chloroquine that is required for terminating an acute attack is in the range of 10 microgrammes per litre. In experimental animals S.N. 7618 behaves in the same manner as mepacrine both in short and long term experiments. S.N. 7618 is slightly less toxic than mepacrine.

Antimalarial Activity.—Chloroquine is more active than mepacrine in all the avian malarias in which it has been tested. In Cathemerium malaria, both in canary and duck, it is 3.5 times more active than mepacrine. Different tests against gallinaceum malaria show it to be 5 to 13 times as active as mepacrine. In lophirae malaria in the duck it is 2.5 times as active as mepacrine. Like mepacrine, chloroquine does not produce permanent cures in any of these infections nor is either drug prophylactic in sporozoite induced cathemarium malaria in the canary or gallinaceum malaria in the chick.

Chloroquine is highly active against the erythrocytic forms of *P. vivax* and *P. falciparum*. It does not prevent relapses in vivax malaria even when administered in doses many times those required to terminate an acute attack nor will it prevent the establishment of vivax infection when administered as a prophylactic.

It is highly effective in vivax malaria as a suppressive agent and in termination of acute attacks, significantly lengthening the interval between the treatment and relapse beyond that observed with mepacrine or quinine. In falciparum malaria it has been demonstrated to suppress the acute attack and to effect complete cure of the infection. Studies of the antimalarial activity of chloroquine against well standardised strains of *P. vivax* and *P. falciparum* have shown its activity to be approximately three times that of mepacrine. In well tolerated therapeutic doses a great majority of patients will be afebrile within twenty-four hours and the remainder will be afebrile within forty-eight hours. Thick smears for parasites will generally be negative in forty-eight to seventy-two hours.

Recommended Dosage:

A. For Suppressive Therapy: A dose of 0.3 gm. given on the same day each week has been found to be effective and is recommended.

B. For the Treatment of the acute attack: An initial dose of 0.6 gm. of chloroquine should be given and a further dose of 0.3 gm. 6 to 8 hours later. Alternatively 0.3 gm. may be given every six hours during the first twenty-four, making a total of 1.2 gm. 0.3 gm. should be given in a single dose in the morning for the next two days. This regimen lasting for four days will be adequate to produce cure in cases of *P. falciparum* and terminate an attack of *P. vivax*. Symptoms and parasites in the blood disappear completely.

Chloroquine has been tried in the treatment of the acute attacks of *P. vivax* malaria by Most *et. al.* (1946). His patients were military personnel who had acquired Vivax infections in the Pacific or Mediterranean war zones. These patients, during acute clinical attacks were divided into three groups; each one was given different schedules:

Treatment Schedules

In Plan A, 1.0 gm. was given in one day in doses of 0.4 gm., 0 3 gm., 0.3 gm. at 8 a.m., 12 noon and 5 p.m. respectively.

In Plan B, 1.5 gm. was administered in the course of four days, two doses of 0.3 gm. being given on the first day, and one dose of 0.3 gm. daily for the three succeeding days.

In Plan C, 2.0 gm. was given during seven days; the first day 0.4 gm., 0.2 gm., 0.2 gm. and for the remaining six days 0.2 gm. once a day.

They compared the efficacy of the three drugs (chloroquine Plans A, B, C Mepacrine 2.8 gm. in seven days and quinine 30 grains per day for fourteen days) as regards the rate of disappearance of parasites from the peripheral blood during the administration of the drugs and found that the peripheral blood becomes free from parasites more rapidly with chloroquine than with either of the other drugs; the difference was more marked between chloroquine and quinine than between chloroquine and mepacrine. This superiority was evident in Vivax malaria of Mediterranean or of Pacific origin in first attacks as well as in relapse occuring at any stage of disease.

They also found chloroquine more effective than quinine or mepacrine in controling fever during treatment of acute attacks of Vivax malaria. The temperature comes down to normal the next day and only in 2.1 per cent. of cases was there a high temperature on the 2nd day while with quinine or mepacrine there was fever on the 2nd or 3rd day in 8.7 and 8.0 per cent. of cases respectively. In controlling the symptoms of malaria chloroquine is at least as good as quinine or mepacrine and is superior to one or the other in the control of some symptoms. Headache and backache are relieved more rapidly with chloroquine and quinine than with mepacrine Quinine is more effective than mepacrine in the control of generalised aching but is not significantly better than chloroquine. Weakness, dizziness and light headedness disappear more readily with chloroquine or mepacrine than with quinine. Nausea persists longer in patients treated with the other two. The effect of each of these drugs on the duration of vomiting, abdominal pain and abdominal tenderness is essentially the same.

Toxicity.—In 365 patients Most. *et. al.* (1946) who were administered 0.8 gm. to 2.0 gm. in one to seven days there were no major toxic effects. When the drug was taken on an empty stomach occasional mild nausea was observed. Dizziness and light headedness were rarely noticed. There were no tinnitus or visual disturbances. About 20 per cent. of 284 patients treated with chloroquine developed pruritus during the course of treatment. Pruritus was usually localised on the palms and soles but occasionally it was generalised. It occurred frequently within the first two days of treatment but it was slight and transitory. In some there was erythema or mild papular eruption.

Most. *et. al.* (1946) opined that there were no significant symptoms of toxicity from chloroquine. In comparing chloroquine with quinine and mepacrine they say that chloroquine does not produce the disturbing symptoms of cinchonism produced by quinine and that it is just as safe as mepacrine. Further, they consider chloroquine preferable to mepacrine for patients with eczematoid dermatitis or a typical lichen planus, in whom the administration of the latter may produce an acute exacerbation of the dermatitis. They have never found any flare up of the underlying dermatitis of the patients treated with chloroquine.

Effects of drugs on interval prior to relapse following treatment.—In treating 500 patients with acute attacks of Vivax malaria of Pacific and of Mediterranean origin Most. *et* (*loc. cit.*) found a relapse rate of from 75 to 85 per cent for the former and 35 per cent for the latter. They followed these cases till they had a relapse or for a minimum period of one hundred and twenty days. Quinine, mepacrine hydrochloride and chloroquine do not materially influence the ultimate rate of relapses following the treatment of an acute attack. The rate of relapse is neither influenced by the age of tha disease, the number of previous attacks, the total amount of drugs administered or the duration of treatment. Cases treated with quinine, mepacrine and chloroquine had a relapse rate of 85, 80 and 70 per cent, respectively, during the period of observation of one hundred and twenty days. They have found that of the number of relapses which occur within one hundered and twenty days more than three-fourths will take place in the first fifty days after treatment with quinine while only one half

and one sixth will take place in the same time after treatment with mepacrine hydrochloride and chloroquine, respectively.

None of the drugs so far available produce complete cure of Vivax malaria. The choice of drugs should be on the basis of length of interval between the relapses. Most *et. al.* (1946) feel that in all these respects the interval before relapse after treatment with chloroquine will be on the average at least five weeks longer than that after quinine and about two weeks longer than that after mepacrine hydrochloride. Only a negligible number of patients treated with chloroquine will have relapses during the first fifty days after treatment. Thus not only does chloroquine promptly control symptoms, fever and parasitemia, but in addition spares the patient from another attack for a period of about two months.

It is suggested that the acute attack of Vivax Malaria and *P. falciparum* be treated routinely as follows :—

One tablet (0.3 gm.) of chloroquine is to be administered when diagnosis of Vivax Malaria is established by a positive blood smear. This amount of the drug (0.3 gm) is to be repeated four hours after the first dose. One tablet (0.3 gm.) is then to be given on each of the following three mornings, the total dose is five tablets totalling 1.5 gm. of chloroquine administered during four days.

Plasmochin

Plasmochin (Pamaquine, U.S.P., Pamaquine, B. P.. Praequine, French) was introduced by German workers in 1924. Cilional was another similar drug introduced in 1938 by the Germans and was supposed to be more potent than plasmochin but was never released for general use. The manufacturers claimed plasmochin to have both schizonticidal and gametocidal action and hence claimed that it would eradicate malaria. It cured clinical attacks of malaria (*P. Vivax and P. Malaria*) but only when given in doses which proved to be highly toxic in the majority of cases. It did not have any effect on the clinical course of *P. falciparum* but killed its circulating gametocytes. However, its gametocidal action was possible with small and perfectly safe dosage.

Absorption and Elimination.—It was absorbed in a short time and began to appear in the urine with in 20 minutes of administration. Only a small portion was excreted the bulk being destroyed in the tissues. The effective blood level has not been estimated. Toxic effects (West and Henderson, 1946) have been noticed from the time of introduction. They are (*a*) abdominal pain, vomiting, jaundice; in fatal cases hepatitis, fatty degeneration or necrosis of the liver; (*b*) headache, general weakness, anaemia, collapse and drug fever; (*c*) cyanosis and livid discolouration of lips and of the whole skin. Methoemoglobinuria and cyanosis of the lips are considered indications to stop the drug.

Clinical Experience.—The mode of action is not definitely known but is probably by reducing the rate of reproduction. In a schizonticidal dose it has been proved too toxic for general use and as such it has been given up as impracticable in the clinical cure of the acute attack. Even in a smaller dosage combined with quinine or mepacrine it has not proved useful. Its value lay in reducing the number of relapses in benign tertian malaria. 0.01 gm. twice daily for three days would destroy or sterilize the circulating gametocytes, particularly in malignant tertian infection. In the treatment of relapsing P. vivax a quinine-plasmochin combination has been less toxic than that of mepacrine-plasmochin and has been more effective than mepacrine alone (War Office Bull,. 1945).

Plasmochin has the unique property of destroying gametocytes not possessed by other antimalarials, but gametocyte destruction is not a measure that in any way aids the patient. It may be considered in certain circumstances to assume an important position as prophylactic measure for the general population in a malarious country. But this action of plasmochin has not proved so far of any practical value. Clark and his group (1941) arrived at the conclusion that plasmochin had contributed relatively little to effective symptomatic relief. Similar doubts regarding the prophylactic value of its gametocidal effect in controlling malaria in endemic areas have also been expressed by others.

It is hoped that the new drug pentaquine, a drug belonging to the same quinoline group, and which is described below will be more useful.

Pentaquine

Pentaquine (Loeb, 1946) (SN 13,276) is 6-methoxy-8 5-isopropylaminoamy-lamino-quinoline.

It is a drug similar to pamaquine. It is absorbed rapidly and completely from the gastrointestinal tract. In experimental animals pentaquine closely resembles pamaquine naphthoate with respect to absorption, excretion and tissue distribution. The difference being that the plasma level of pentaquine is sustained somewhat longer than that of pamaquine. The toxicity of the drug in adult human beings is qualitatively the same and quantitatively approximately one-half to three-fourths that of pamaquine. The toxicity is not increased by simultaneous administration of quinine. The toxic symptoms are anorexia, abdominal discomfort or pain, slight methaemoglobinuria, postural hypotension and drug fever.

The antimalarial activity of pentaquine is similar to pamaquine but it is effective in a smaller dosage. Pentaquine will partially cure a clinical attack of malaria when given in a large dose of 120 mg. base, but will also produce toxic effects and hence it is not recommended. The same toxicity will prevent its use in prophylaxis or in prolonged suppression of malaria. The recommended dosage in the cure of malaria caused by P. *vivax* is a daily dose of 60 mg. base (equivalent to 80 mg. of diphosphate) and 2 gm. (30 grs.) of quinine, administered concurrently in divided doses every four hours for fourteen days. This is sufficient to produce a radical cure of severe infections due to P. *vivax*. The daily dosage of 60 mg. base should not be exceeded. Treatment may have to be continued for a greater number of days in non-immune persons particularly if they are heavily infected. It is advisable that pentaquine be administered only under close medical supervision preferably in the hospital.

Its toxicity in children and coloured people has not been determined. In pentaquine we have a drug which will replace plasmochin in reducing the rate of relapse of *P. vivax* infection in combination with quinine, because of its lesser toxic effect. Though pentaquine is under clinical trial, it is hoped that a further search for a drug of lesser toxicity is being made.

Conclusion

Mepacrine was considered as a valuable addition to the armamentarium of the physician for the cure and suppression of malaria until 1942, but quinine had the pride of first place: Recent work has shown that mepacrine is a valuable drug in the fight against malaria. Despite the fact that quinine and other cinchona alkaloids have now had to take a place below mepacrine on the antimalarial list, recent work has in no way questioned their efficacy. On the contrary it has confirmed previous work regarding the antimalarial activity of all the cystalline alkaloids, and more especially that of a mixed alkaloidal preparation, which in some poor malarious countries may, on economic grounds, still prove to be the drug of choice for the masses.

Paludrine, a new British antimalarial, has been extensively tried and is as effective as a drug as mepacrine both in clinical attacks and as partial casual prophylaxis against *P. vivax*. It is non-toxic except in large doses which occasionally cause nausea and vomiting. Effective dosage is much smaller. There seems to be little to choose between single doses of paludrine and mepacrine in the treatment of the acute attack of relapsing or delayed primary benign tertian malaria, apart from the slight abdominal discomfort sometimes produced by the latter. The advantage of paludrine lies in the fact that it does not colour the skin and hence is a more satisfactory preparation to prescribe over a long period. The action of paludrine is not confined to the erythrocyte form of parasite as with mepacrine but also on the exoerythrocyte form of P. falciparum and partially on exoerythrocytic forms of *P. vivax*. It is possible that if paludrine (0.1 gm.) is given in a twice weekly dosage over a prolonged period it may affect the relapse rate of chronic B. T. Malaria, upon which mepacrine has little effect. This period is yet to be defined.

Chloroquine, an American synthetic drug, is a highly effective and safe antimalarial. It is considered superior to quinine and mepacrine in the treatment of acute attacks of malaria. It is more effective than quinine, mepacrine and paludrine even when administered in relatively smaller doses over a shorter period of time. Staining of skin, too, does not occur because it is colourless. But even though the occurrence of relapse is delayed much longer than with quinine or mepacrine it has no complete causal prophylaxis against *P. Vivax* and hence it does not diminish the rate of relapse. Chloroquine is a promising drug but it is still under clinical trial and it is worthwhile awaiting the results of further tests before coming to final conclusions.

The strict limitations of plasmochin in the treatment of malaria have long been recognised and recent work has merely served as a reminder of these. It is, however, the only drug that acts as a true causal prophylactic and actually prevents relapses in benign tertian malaria, albeit in large and dangerous doses. These unique properties should be remembered and in special circumstances advantage should be taken of them.

Pentaquine is a new drug of the same series and is equally effective with less than half the toxicity. This drug is under clinical trial and let us hope that it will replace plasmochin and be useful in preventing relapses of *P. Vivax*.

The intensive chemical and medical research that is now being pursued in various countries in search of new synthetic drug may lead to the discovery of a drug which is a complete antimalarial and at the same time non-toxic. However, at present, we have in paludrine a drug of better promise than any other antimalarial known so far. Chloroquine, from the work published so far, has a similar antimalarial property but has the advantage over paludrine in having a shorter therapeutic regimen. One must await further trials before assessing its place among the antimalarials.

Drugs alone will not be able to banish malaria. But with their help, it will be controlled in certain areas where hitherto this was impossible. Where a measure of control has already been attained these drugs will aid in making it more effective at a lower cost. Malaria incidenee may be still further reduced by the destruction of the mosquitoes by the use of insecticides like DDT assisted by the suppressant action of antimalarial drugs.

Primary Glaucoma and the Pitutary-Diencephallic system*

HERMAN ZONDEK, M.D., AND GERDA WOLFSOHN, M.D. *Jerusalem, Palestine.* *From American Journal of Ophthalmology, May, '47.*

It is a well-known fact that in many respects knowledge of the pathogenesis of primary glaucoma is still vague. Among other causes, endocrine factors are believed to be responsible for its occurrence—thyroid, pituitary, cortico-adrenal system, and gonads. In recent years we have had the opportunity of examining 22 cases of primary glaucoma which were referred to us for internal examination with the view that there might be a possible connection between the ocular condition in these cases and the diencephalon or pituitary-diencephalic system. Such a relationship has already been established between other ocular diseases and the pituitary body or the diencephalic-pituitary system (retinitis pigmentosa, Zondek and Koehler[5] and Zondek and Wolfsohn;[6] the Lawrence-Moon-Biedl syndrome; and pituitary-diencephalic exophthalmos, L. P. Daniels,[7] Zondek and Ticho[8]). We made tests of the carbohydrate and water metabolism, basal metabolism, blood cholesterol and the osseous structure of the skull. A few characteristic cases will be reported in brief.

*From the Department of Internal Medicine Biccur Cholim Hospital.

Case reports.

Case 1. C S., aged 15 years, gave the history that his mother was suffering from primary glaucoma (case 2). Although he had just been seen by an oculist who found increased ocular tension, the patient made no complaints. He was very tall—just over six feet —with a moonlike face. Pubic and axillary hair growths were normal. There was no facial hair growth. Visceral organs were normal. Blood pressure was 95/70 mm. Hg.

Laboratory findings showed: blood count and urinalysis, negative. Glucose tolerance test at half-hour intervals showed : 122, 118, 103, 107, 90, and 114 mg. per cent (hyperinsuline curve), Volhard test : after having drunk 1,000 cc. water, the patient voided 800 cc. urine within the next two hours. X-ray studies showed the sella turcica to be normal; the skull to be extremely rarefied, and the galea to have an appearance almost like cotton wool; thus, giving an impression of the beginning stages of Paget's disease of the bone. The eyes showed primary glaucoma.

Case 2. Mrs. E.S., aged 39 years, was the mother of the boy in Case 1. She had had a rather large goiter since childhood. For the past few years, the patient had seen rings in front of her eyes. Her voice was said to have grown hoarse and deep lately. She had a tendency toward pronounced oscillations in weight, for example, gain in weight had been 17 to 18 pounds in the last month. She was subject to moods of depression accompanied by voracious hunger and feelings of anxiety. She was masculine in type and showed hirsutism. She had a rather large parenchymatous goiter.

Examination on admission to the hospital showed the visceral organs to be normal. Blood pressure was 110/70 mm. Hg. Urinalysis and blood count were normal. Glucose-tolerance test at half-hour intervals showed : 80, 142, 117, 107, 96, and 75 mg. per cent ; glycosuria occurred at the time of the second and third readings. A second glucose-tolerance test at half-hour intervals gave this reading : 80, 117, 80, 62, 78, and 67 mg. per cent ; glycosuria occurred at the time of the second, third, and fourth readings (traces, 1 per cent, and traces). The sella turcica was widened in the anterior-posterior diameter. There were vascular furrows in the skull. Blood cholesterol showed 266 mg. per cent. The basal-metabolism rate was a minus five. The eyes showed primary glaucoma.

Case 3. Mrs. S. L., aged 42 years, in giving the family history said that three brothers and three sisters out of nine siblings were suffering from glaucoma. She had had four operations for glaucoma, one on the right eye and three on the left eye. Glaucoma attacks occurred just before menstruation, which is regular. She had always been fat, and during the past months had been gaining. She suffered from migraine-like headaches.

On admission to the hospital, her weight was 191.4 lbs. She had a moonlike face. Striae were not present. The pulse rate was 60. Blood pressure 120/80 mm. Hg. The visceral organs were normal. Urinalysis and blood count were normal, The glucose-tolerance test was : 68, 129, 120, 118, 169, and 230 mg. per cent ; no glycosuria. The Volhard test was normal, Basal-metabolism rate was a plus 29. Ten days after menstruation there were 500 mg. of estrone in the urine. The sella turcica was of normal size and shape. There were increased vascular furrows in the skull. The ocular findings showed primary glaucoma.

Case 4. Mrs. L. R. had suffered from migraine since childhood. Menstruation was somewhat irregular, and she had always been moderately fat.

Examination on admission to the hospital showed moderate obesity. The visceral organs were normal. Blood pressure measured 125/70 mm. Hg. Urinalysis and blood count were normal. Readings at half-hour intervals in the glucose-tolerance test were 117, 145, 121, 138, 110, and 163 mg. per cent (diabetic type) ; no glycosuria. Two blood-cholesterol readings were : 350 mg. per cent and 266 mg. per cent. The Volhard test showed : after drinking 1,000 cc. of water, the patient eliminated 1,220 cc. of urine within the following two hours. The basal-metabolism rate was a plus two. X-ray studies of the skull showed the posterior clinoid processes to be poorly defined. There were increased vascular furrows in the skull and extreme rarefaction of the osseous structure. The eyes showed primary glaucoma.

Case 5. Miss E. N, aged 30 years, had a negative family history. For several years, there had been a progressive enlargement of the prominent parts of the patient's body—nose, lips, tongue, hands, feet, and so forth. She had been suffering from an increasing number of headaches. Menstruation had become irregular and then had ceased entirely about a year earlier. About three years before, the patient had had X-ray irradiation of the pituitary gland. A few months after this, her vision became worse and she complained of green rings in front of her eyes. She was treated with pilocarpine and eserine. She is subject to moods of depression.

Upon admission to the hospital, she showed obesity. Her face was puffy and had a bluish-red tint. Her lips were thickened, and her tongue, feet, and hands enlarged. Her voice was hoarse. The pulse rate was 60 to 72. Blood-pressure reading was 140/70 mm. Hg. With the exception of the heart which was enlarged to the left and gave dull sounds, the visceral organs were normal. The tendon reflexes were sluggish.

Laboratory findings gave the following results, Blood count and urinalysis were normal. The glucose-tolerance-test readings were; 98, 110, 120, 134, 116, 134, and 134 mg. per cent. Blood cholesterol showed 169 mg. per cent. In the Volhard test, after the intake of 1,000 cc. of water, 320 cc, of urine were eliminated in the following four hours. The basal-metabolism rate was a plus 16. Electrocardiogram readings were normal. There was an enlarged sella turcica, unilaterally excavated ; the galea was very thick ; there were increased vascular furrows in the skull (pituitary tumor). The eyes showed primary glaucoma.

Case 6. Mrs. F. S., aged 62 years, gave a negative family history, and her previous history was irrelevant.

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Examination upon admission to the hospital showed obesity. She had cyanotic lips. Her pulse rate was 106 The blood-pressure reading was 190/110 mm. Hg. The visceral organs were normal, the heart and aorta were not enlarged. Urinalysis and blood count were normal. Readings for the glucose-tolerance test were: 115, 181, 203, 206, 225, and 181 mg. per cent; glycosuria was present at the time of the fourth, fifth, and sixth readings (1, 2, and 3.4 per cent). The Volhard test was normal. Blood cholesterol was 308 mg. per cent. The basal-metabolism rate was plus 18. An X-ray film of the skull showed a pituitary tumor which had penetrated into the sphenoid sinus. Ocular examination showed primary glaucoma in the right eye.

Case 7. Miss B. N., aged 45 years, said that her mother had glaucoma. The patient was first seen by us seven years ago. At that time, she said that menstruation had ceased about one year earlier. Her hands and feet had grown larger, and her face had coarsened. She complained of splitting headaches and was subject to moods of depression. Five years ago, X-ray irradiation of the pituitary gland caused the headaches to subside. After the lapse of a year, however, the patient began to see rings in front of her eyes. Following this symptom, a diagnosis of glaucoma was made. Since then she has been under the constant care of oculists.

Examination at this time showed her to be of the acromegalic type. She had enlarged hands, feet, lips, and tongue; her arms and legs were bulky. With the exception of a slightly enlarged left ventricle of the heart, the visceral organs were normal. Blood pressure showed 120/80 mm. Hg. Apart from traces of albumin, the urinalysis was negative. Blood count was normal. Glucose-tolerance test showed: 111, 151, 118, 125, 129, 111, and 117 mg. per cent. Blood cholesterol measured 262 mg. per cent. In the Volhard test, after the intake of 500 cc. water, 80 cc. urine were voided within the following four hours. The basal-metabolism rate was a minus two. There was bone atrophy around the sella turcica, which was uniformly enlarged. There was marked vascular congestion. The eyes showed primary glaucoma.

Discussion

Among the 22 cases of primary glaucoma studied, 16 cases gave various combinations of evidence which pointed to disturbances in the pituitary-diencephalic system. Obesity, menstrual troubles, disordered carbohydrate metabolism, a tendency toward water retention, deviations of the basal-metabolism rate from the normal average, decalcification or atrophy of the bony skull (particularly around the sella turcica), occasionally calcification also, congestion of the meningeal vessels, and a rise in blood cholesterol were among the signs noted.

It should be emphasized that abnormally high blood-cholesterol values were frequently found in processes localized in the pituitary-diencephalic region (Zondek and Ticho[8]).*

It is noteworthy, too, that pituitary tumors were present in 6 of these 16 cases, and that two of the patients with pituitary tumors presented the characteristics of acromegaly. In 6 cases out of our total number of 22 cases, there was no evidence of any pituitary-diencephalic disturbances. This fact may indicate that the pathogenesis of primary glaucoma cannot be viewed from a common aspect. On the other hand, it is impossible to ignore the findings established in the majority of our cases.

It would appear from previous investigations—at least on a number of cases of primary glaucoma—that two etiologic factors are of special importance:

1. Abnormal vascular function.
2. Hydration of the corpus-vitreum tissues.

In abnormal vascular function, both the abnormal narrowing (spasm and sclerosis) of the afferent vessels of Schlemm's canal (according to Friedenwald this delays the flow of blood through the canal and causes a decrease in water-reabsorption rate) and abnormal dilatation of the vessels (this causes an increase of vascular permeability and, therefore, an increase of intraocular fluid) play an important part.

It might be added that the lowering of intraocular pressure in diabetic coma, a condition known to be associated with dehydration, may be considered as a proof for the role played by the ocular fluid content in regulating ocular tension. Both abnormal circulation and the tendency toward tissue hydration may well be explained by disordered pituitary function. It is up to future research to demonstrate whether, and how, antidiuretic hormones can get into the eye.

In 1935, one of us (H. Z.) reported upon a syndrome for which the term "diencephalopathy" was suggested. This syndrome not only comprises certain metabolic disturbances pointing to the diencephalon but also changes in the osseous structure of the skull (either abnormal calcification or abnormal decalcification), psychic anomalies, and ocular disorders (retinitis pigmentosa).

Recently Zondek and Ticho showed that some types of exophthalmos are probably of pituitary-diencephalic origin. Even before this work was published, other authors had drawn attention to the possible part played by the thyrotropic factor of the anterior lobe in the genesis of this diseases. Among the etiologic factors in this type of exophthalmos, hydration and edema of the external ocular muscles are known to be of importance. The assumption that the antidiuretic factor of the posterior pituitary lobe may be responsible for the occurrence of local water retention does not, therefore, appear to be far fetched.

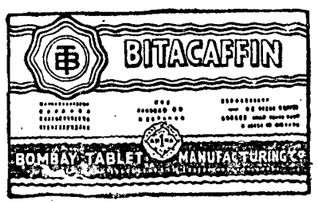
It is not unreasonable to assume that both pituitary-diencephalic exophthalmos (as designated by Zondek and Ticho) and some types of primary glaucoma may be included under the heading "diencephalopathy." At least, this assumption is not unreasonable in so far as anomalies of circulation or of water-salt metabolism may result in different clinical mainfestation in the eye. As with exophthalmos, it should be possible to define certain types of primary glaucoma as "pituitary-diencephalic glaucoma."

The fact that the origin of a number of cases of primary glaucoma can be traced to tissue hydration (*corpus vitreum*) points to the therapeutic effect of

*The author has recently learned that Schmelzer also reported upon the rise in blood cholesterol in cases of primary glaucoma (Med. Welt, 1943, v. 44 and 45, p. 779).

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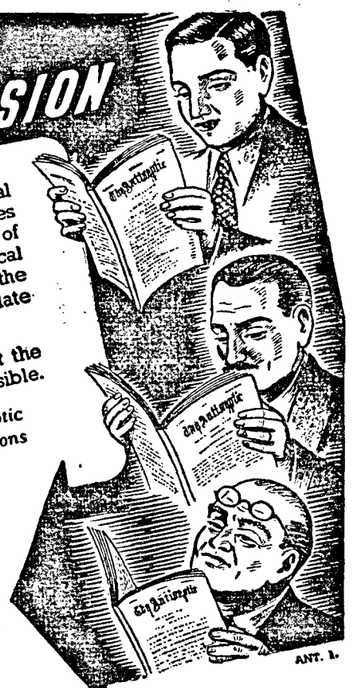
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dehydrating measures. It may be assumed that the beneficial effect of thyroidin recorded by Herel is to be thus interpreted. A few patients to whom we have given mercurial diuretics have stated that they have had at least subjective relief. This hint should be checked by oculists, since it may serve as a supporting measure in situations in which acute action on the increased intraocular pressure is required.

Summary

Sixteen out of 22 cases of primary glaucoma showed in varying degrees, changes which pointed to the pituitary-diencephalic system. Six of these 16 cases presented pituitary tumors. No pathologic findings could be obtained in 6 of the 22 cases. The question as to how far pituitary hormones (particularly of the posterior lobe) or pituitary-diencephalic factors are to be held responsible for the occurrence of primary glaucoma is discussed. "Pituitary-diencephalic" glaucoma is the term suggested to designate those cases of primary glaucoma which exhibit the pituitary-diencephalic symptoms herein described. Such a definition would be analogous to that for the syndrome of pituitary-diencephalic exophthalmos.

Indications for Surgery in the Treatment of Gastric and Duodenal Ulcers:—J. WILLAM HINTON *Visiting Surgeon, Bellevue Hospital from Balletion of N. Y. Academy of Medicine Dec. 1946.*

The end results from both medical and surgical treatment of ulcers are frequently poorly understood by both the internist and the surgeon because they lack the opportunity for a long period of observation of the results of both methods. The life cycle of an ulcer is long and the flare-ups of pain and massive hemorrhage cause the patient to become discouraged or alarmed and frequently he seeks the advice of another physician, or more likely a surgeon. as the one to offer permanent relief. Having spent over 18 years in the Ulcer Clinic of the 4th Division at Bellevue Hospital and 7 years in the Ulcer Clinic at Post-Graduate, I believe I can see more clearly the advantage of both methods of treatment and I shall present my deductions today.

The patient suffering from a gastric ulcer is more likely to be advised operation than a patient with a duodenal ulcer. The danger of malignant degeneration is the motivating factor in the choice of surgery for most cases of gastric ulcer. The incidence of the development of malignant changes is quoted variously as 1 per cent to 70 per cent. The pathologists have had difficulty in the differential diagnosis of some of the gastric lesions as Cole illustrated 10 years ago. These are the same cases which the roentgenologist, the gastroscopist and the clinician have difficulty in accurately diagnosing. The clinical course of an ulcer of the stomach has a most important bearing on the indications for operation. In some cases it is difficult to distinguish a gastric ulcer from a carcinoma. In 8.5 per cent of our cases, we could not be certain of the diagnosis and an immediate operation was advised, but in this group 75 per cent were found to be ulcers upon histologic study following sub-total resection. This does not prove that a gastric ulcer becomes a carcinomatous lesion, but in a small group of cases we have no accurate method of differentiating between the two lesions. My views on this point coincide with the opinion expressed by Palmer that the existence of carcinomatous degeneration in a benign ulcer remains to be proved conclusively. The United States Bureau of Census states that there were 6,390 deaths from gastric ulcer in 1943 and 2,943 deaths from duodenal ulcer. These figures are hard to reconcile since gastric ulcers constitute only about 10 per cent of the total number of ulcers encountered. In our clinic at Bellevue Hospital we found, that of 1,256 ulcers 89 per cent were duodenal and 11 per cent gastric.

In the stomach clinic of the 4th Medical and Surgical Divisions at Bellevue Hospital. which is entering its 19th year, we have adopted the policy that a gastric ulcer will respond to medical management as satisfactorily as will a duodenal ulcer, and in most instances it is easier to heal a gastric ulcer than a duodenal ulcer on a dietary reimen. The mistakes in following such a policy are few compared with the mortality from sub-total resection of gastric ulcers in the hands of the average surgeon. Any one doing a reasonable amount of gastric surgery can have a low mortality. The author has just roported, 162 cases of primary duodenal ulcer with 6 deaths or 3.7 per cent mortality, and 85 cases, 22 per cent of which were gastric ulcers in which a sub-total gastrectomy was performed, with a mortality of 3.5 per cent.

From 1920 to 1944 inclusive there were 806 ulcer admissions on the Medical and Surgical services of Post-Graduate Hospital 112 of which were gastric ulcers, 13.8 per cent of the total. It is interesting to review these cases as they came under the care of a large number of doctors during the 25 year period. Private cases are not included in this discussion. In the early part of this period local excisions and gastroenterostomies were performed for gastric ulcers. In 43 cases sub-total resections were done, with 11 deaths or a 25.5 per cent mortality. Thirty-three gastric ulcers were treated medically, with no deaths, but one of these patients was subsequently admitted with carcinoma one year after the first admission. In reviewing the history of this case it would seem that the patient had a carcinoma originally. There were 12 cases of gastric carcinoma in which there was a question of its arising on a pre-existing ulcer. These cases are included in the 112 ulcer cases and constitute 10 per cent of the total gastric ulcer admissions over the 25 year period. This is not high when we remember that gastroscopy was not employed in the early cases and our roentgen studies were not as accurate as they are now.

In two cases it might be argued that the ulcer developed into a carcinoma. One of these patients, a man 45 years of age, was admitted in January 1925 with a five weeks history of upper abdominal discomfort. The gastrointestinal X-ray series revealed a gastric ulcer on the lesser curvature in pars media and a Balfour excision and a gastroenterostomy were done. The patient was re-admitted in February 1941 with a carcinoma of the stomach which involved a pyloric portion on the greater curvature. Whether this carcinoma arose from the original ulcer or whether it was a separate growth cannot be proven, but it would seem that after a period of 17 years, in all probability the carcinoma was not related to the original ulcer. The second patient was a man 48 years of age admitted in January 1933 with an 8 year history of stomach trouble. He was found to have a pyloric ulcer and a gastroenterostomy was performed. In January 1939 he was re-admitted with an inoperable pyloric ulcer These two cases, and the medically treated patient readmitted with carcinoma of the stomach one year later, which was apparently an undiagnosed primary carcinoma, constitute the only clinical proof we have of the danger of carcinomatous degeneration.

The interesting question is whether sub-total gastrectomy should be so freely recommended in cases of gastric ulcer to prevent malignant degeneration when the procedure in the hands of the average surgeon carries such a high mortality. In this group of cases covering a 25 year period the 25.5 per cent mortality comes nearer to approximating the mortality in the average hospital than do figures given from large medical centers which represent the experience of a small group of highly trained gastric surgeons.

The decision as to conservative management or operative intervention in duodenal ulcers is usually dictated by the probability of operative mortality if surgery is advised.

Duodenal ulcers, if diagnosed early, will respond very satisfactorily in most instances to a medical regimen. A small percentage, even with adequate medical care, will become intractable or recalcitrant. The great difficulty encountered by both internist and surgeon is in differentiating between exacerbations of a chronic duodenal ulcer and intractability which necessitates operation. The patient with a chronic duodenal ulcer may become discouraged during a period of exacerbation and seek the advice of a surgeon. Frequently the surgeon mistakes an exacerbation for chronic intractability and if an operation is performed the end results will often prove disappointing, while the end results from sub-total resection for intractability prove most gratifying.

The duodenal ulcer which penetrates the posterior wall and becomes adherent to the pancreas can no longer be treated medically and becomes a surgical problem. Also, any duodenal lesion which has completely penetrated the wall of the duodenum and is adherent to an adjacent viscus, whether it be the gall bladder, the liver or the duodenohepatic ligament, is a true surgical problem and sub-total resection should always be performed with removal of the ulcer *in toto*. Gastroenterostomy will prove most disappointing in this type of case. In a previous review of gastroenterostomies for intractable duodenal ulcers we found only 24.5 per cent of cures in 106 cases followed for 7.1 years. Of course if a gastroenterostomy is performed early, before the complications of the long standing ulcer have arisen, the results will be much better, but these patients can obtain symptomatic relief on an adequate medical regimen.

Continuous pain with the X-ray findings of a penetrating lesion in the duodenum will suffice to differentiate between the intractable ulcer necessitating operation and the exacerbation which will subside with adequate medical care. However, there is one type of duodenal ulcer which is difficult to diagnose and which will not respond to a medical regimen, and that is the ulcer on the pyloric sphincter. This ulcer causes extreme pain and frequently the gastrointestinal series will show, not a true penetrating lesion, but a marked pylorospasm. In this instance a sub-total resection should be done with removal of the lesion. This type of ulcer is similar to a fissure in ano, and, as is well known, the anal fissure causes pain out of proportion to the pathology found.

In the past 13 years I have not performed a gastroenterostomy for any type of ulcer. The so-called pyloric obstruction without pain will always respond to gastric lavage, anti-spasmodics, and dietary management. There are cases of pyloric obstruction which will not respond to a medical regimen, but these patients have a penetrating ulcer with associated pain. Gastroenterostomy in this type of case will prove most disastrous because the active duodenal ulcer remains unhealed and gastrojejunal ulcer is a frequent sequela.

Massive hemorrhage always presents a problem in the treatment of peptic ulcer. Conservative treatment in these cases is attended with a definite mortality.

In 135 cases of massive hemorrhage treated on the 4th Division at Bellevue Hospital from 1928 to March 1937 inclusive, there was a 12 per cent mortality under conservative treatment.

Hospitals without an active ambulance service see very few patients with exsanguinating hemorrhages because of the severity of the condition, and with the alarming feature of vomiting large quantities of blood, an ambulance is usually called immediately. The patient admitted with a severe gastric hemorrhage should have a blood grouping immediately and a transfusion started. Hemorrhage is caused either by a venous ooze or by erosion of a large artery. Most bleeding ulcers are duodenal, since 90 per cent of all ulcers are duodenal. A gastric ulcer may have a large artery at its base but massive hemorrhage from a duodenal ulcer results from erosion of the superior pancreatico duodenal artery or one of its large branches by the ulcerating process. An arterial hemorrhage will prove fatal unless controlled while a venous ooze will respond to conservative treatment.

Surgery is employed occasionally as a life-saving measure, but these instances should be few in a large series of cases. Most massive hemorrhages can be controlled by transfusion and conservative measures. The problem is to determine which case will continue to bleed. We have used the transfusion test as the best means of determining which patients have arterial hemorrhages necessitating operation as against those with venous ooze. A continuous transfusion is given by the indirect method and if after receiving 1500 to 3000 cc. of blood the patient remains in shock, it is very likely that the superior pancreatico duodenal artery is eroded through, if it is a duodenal ulcer, or that a large artery is eroded in the crater of a gastric lesion.

* Presented before the Friday Afternoon Lecture Series of The New York Academy of Medicine, March 8 1946.

Whether conservative treatment should be continued after recovery from the massive hemorrhage ,or whether an elective operation should be performed, depends upon the X-ray findings and the clinical course. If the patient is free from pain, then surgery is seldom indicated regardless of whether it be the second or third massive hemorrhage. We practically never advise operation as an elective procedure for a patient who has recovered from a massive hemorrhage unless he is suffering from uncontrollable pain.

The first sub-total resection for severe uncontrollable hemorrhage done on the 4th Division at Bellevue Hospital was performed by me on a 27 year old man in March of 1937. In this case the ulcer had eroded through the superior pancreatico-duodenal artery which was sutured after sub-total resection, and the patient recovered.

From 1937 to 1945 inclusive we have had 142 cases of massive hemorrhage on the 4th Division at Bellevue Hospital. Of these, 104, or 73 per cent were not operated upon. Thirty-eight operations were performed, 14 of which were emergency procedures. Among the 24 elective operations, there was one death, a mortality of 4 per cent; among the 14 sub-total resections performed as a life-saving procedure, there were 5 deaths, a mortality of 35 per cent. In the 104 unoperated cases these were two deaths, a mortality of 2 per cent. The total number of deaths in the operated and unoperated cases was 8, a mortality of 5.6 per cent. This reduces the 12 per cent mortality of the 1928-1937 group by half.

From 1920 to 1944 inclusive, 115 cases of massive hemorrhage were admitted to Post-Graduate Hospital. This hospital does not have an ambulance service, so the type of case is not as severe. Eighty-two of these 115 patients received conservative treatment. Thirty-three, or 28 per cent were operated upon. but not during the acute hemorrhage. Seven, or 21 per cent, died as the result of the operation. Of the 26 patients living, 12, or 46 per cent, were re-admitted for subsequent hemorrhage. Of the 82 patients treated conservatively 15 or 18 per cent were re-admitted for massive hemorrhage, but they were not operated upon. One died, a mortality of 1.2 per cent. We may conclude that in these cases the hemorrhage on admission was not severe and that those patients who were advised operation might possibly have done better with conservative treatment. When we compare the mortality and the re-admissions in the two groups, we can see the great advantage of having a group of internists and surgeons dictate the policy in the treatment of massive hemorrhage,

Conclusions

1. In not more than 10 per cent of gastric ulcers should there be a question as to the diagnosis. In the questionable cases an immediate operation should be advised.

2. Gastric ulcers respond more readily to medical management than do duodenal ulcers. The mortality from routine sub-total resections for gastric ulcer far exceeds the possibility of malignant degeneration in unoperated cases. Only those duodenal ulcers which fall in the chronic intractable group should be operated upon.

3. So-called pyloric obstruction is not an indication for operation.

4. Massive hemorrhage in the majority of cases should be treated conservatively with blood transfusion. There is a definite mortality with conservative management alone; in our experience it has been as high as 12 per cent. Sub-total resection is indicated occasionally as a life-saving procedure. Our mortality has been reduced by half in the past 9 years by using it in selected cases. An elective operation should not be advocated for patients who have recovered from a massive hemorrhage unless they have associated with pain. Patients operated upon for painless massive hemorrhage are frequently re-admitted with subsequent massive hemorrhage even after sub-total resection.

Intestinal Tuberculosis: Some Observations —BY R. Y. KEERS,—*From the British Journal of Tuberculosis; April 1947.*

Intestinal tuberculosis of the secondary ulcerative type has long been recognized as a frequent and serious complication of pulmonary tuberculosis in its terminal stages, with the result that the considerable volume of literature on the subject has been concerned more with pathological and statistical data than with clinical study from the therapeutic aspect. In the British journals only one paper on intestinal tuberculosis has appeared during recent years (Maxwell, 1939), which deal mainly with symptomatology and in which the high mortality associated with this complication was held to have discouraged investigation. In America, as a result of the intensive studies of Brown and Sampson (1926), more attention has been paid to therapeutics, for these writers proved that intestinal tuberculosis need not necessarily be a terminal manifestation. They pointed out that the classical symptoms of diarrhoea, wasting and abdominal pain did not appear until the lesions were well established, indicated clinical findings suggestive of early lesion, and they emphasised the value of radiology in diagnosis. More important still, they showed conclusively that many of these early cases could make a satisfactory recovery.

Following on the work of Brown and Sampson papers on this subject have appeared at intervals chiefly in American and Canadian journals. But little has been added to our knowledge, and there still appears to be a tendency to regard intestinal tuberculosis as a complication carrying a uniformly fatal prognosis.

Communications published during the years of war include one by Burke and Aronovitch (1941), in which a series of 226 cases of pulmonary tuberculosis, all moderately or far advanced, showed a 31·4 per cent. incidence of intestinal lesion on X-ray examination. These writers believed that the development of intestinal disease was related to a deficiency of vitamins C and D and advocated a vitamin supplement for all cases of advanced pulmonary disease. Kennedy *et al*, (1941) studied a series of 120 cases, again occuring in far-advanced pulmonary disease, which they

treated with a low-residue diet containing ample protein. minerals and vitamins. Their results consisted of a series of charts showing a satisfactory gain in weight in individual patients receiving this diet. Frimodt-Moller (1943) reports the treatment of 64 cases of intestinal disease with heliotherapy and a high vitamin diet. He considered that a general beneficial effect followed this regime, but gave no definite detailed results. Hardt *et al.* (1939) studied 238 cases, the greater number of whom had also advanced pulmonary lesions. which they treated with calcium, high vitamin diet and ultra-violet light. They concluded that those receiving calcium showed a more definite improvement than those receiving only a high vitamin diet with or without ultra-violet light.

These papers suggest that we are still in danger of regarding intestinal disease as confined to the advanced pulmonary group, and consequently of overlooking cases which occur in association with more limited pulmonary lesions and which, if recognised in time, can do respond to intensive treatment. The following examples are recorded to draw attention to this possibility.

Case Records

Case No. 1.—Male aet. 42. Admitted January 16, 1942, with a history of cough, sputum and lassitude for the preceding six months. Sputum averaged ½ ounce daily and contained numerous tubercle bacilli. B. S. R. 23 mm. No symptoms of alimentary dysfunction on admission. Chest X-ray showed infiltration in right upper and mid zones with cavitation in the upper zone. A right A. P. was induced shortly after admission and four weeks later adhesions were divided. Following adhesion section a pleural effusion developed with considerable constitutional disturbance, and very gradually the pneumothorax space obliterated. First digestive symptoms appeared in April, 1942, when patient complained of occasional epigastric discomfort and heartburn. These symptoms were transient and at the beginning gave rise to no anxiety. They recurred at intervals throughout the remainder of the year. but were never associated with diarrhoea and the patient's general condition was unaffected. It was proposed to carry out a right thoracoplasty early in 1943, but in January the vague digestive symptoms became more persistent, the heartburn and epigastric discomfort being then associated with flatulence, anorexia and loss of weight. The possibility of an intestinal focus was considered and a barium X-ray showed involvement of the internal ileum and caecum with considerable thickening amounting almost to a tumour mass. The patient was treated by means of a low-residue, high-vitamin diet. localised exposures of ultra-violet light three times weekly, and the intravenous injection of 5 c.c. of a 20 per cent solution of calcium gluconate on alternate days. A rapid improvement followed within a few weeks, the digestive symptoms subsided, and a right thoracoplasty in two stages was carried out in the late spring of that year. Convalescence was slow but uneventful, and the patient was finally discharged in December, 1943. Follow-up in 1947 indicated that the patient was very well, at full work, and completely free from all digestive symptoms.

Case No. 2.—Female aet. 24. Admitted July 23, 1942, with a history of lassitude, cough and haemoptysis for the preceding two months. Sputum averaged three to four pieces daily and contained fairly numerous tubercle bacilli. B. S. R. 37 mm. No digestive symptoms on admission. Chest X-ray showed slight infiltration in the right upper zone, while in the left lung there was fairly extensive infiltration in the upper third with a moderate-sized cavity.

A left A.P. was begun shortly after admission, the collapse being made effective by adhesion section. In September patient began to complain of anorexia and occasional nausea associated with loss of weight. This was attributed to extension of the disease in the right lung, for which a right A.P. was induced. For a time the digestive symptoms subsided, but the patient failed to gain weight, and in February, 1944, was complaining of right-sided abdominal discomfort. Instestinal tuberculosis appeared a likely explanation and the diagnosis was confirmed radiologically, barium X-rays showing an ulcerative lesion in the ileocæcal region limited in extent. Treatment by means of low-residue, high-vitamin diet, U.V.L. and intravenous calcium gluconate was initiated at once with a good response. Discomfort and anorexia disappeared and the abdominal condition gave no further trouble. The patient eventually had a right upper thoracoplasty and was finally discharged from the sanatorium in 1946. She has been seen at regular intervals since discharge and is very well.

CASE No. 3.—Male aet. 20. Admitted October 16, 1942, with a history of left pleural effusion three years previously. From this he had made a satisfactory recovery, and remained apparently well until two months before admission, when he had a haemoptysis. He denied cough and sputum, but X-ray showed extensive infiltration throughout the left lung with cavitation, and a positive sputum was eventually found. B.S.R. 41 mm. No abdominal symptoms.

An attempt to establish a left A.P. failed, and in spite of strict bed-rest the patient's condition deteriorated, with loss of weight and X-ray evidence of extension of the disease in the left lung. After four months patient complained of epigastric discomfort, flatulence and occasional transient attacks of colicky pain in the lower abdomen, with diarrhoea. A barium X-ray was carried out in April, 1943, when it was reported that the last 3 or 4 inches of the ileum and the ascending colon showed a condition of marked spastic hyperactivity. A barium enema confirmed the presence of an ulcerative lesion of the caecum, ascending colon and terminal ileum, with little or no evidence of hyperplastic reaction. Treatment with high-vitamin diet, U.V.L. and intravenous calcium produced immediate and dramatic results. Discomfort, diarrhoea and anorexia disappeared within a few days, gain in weight proceeded steadily, and by August patient had put on a total of 17 pounds. A further barium examination was carried out in the beginning of 1944 which showed that, while the bowel lesion had extended in the interim to involve the transverse and descending colon, there was now evidence of considerable scarring and contraction. Clinically the patient was very much

of sclerosing and hardening, so that it becomes less easily moulded and the range of accommodation becomes progressively smaller. As this process goes on, near objects become more and more difficult to see clearly, and when the near point of clear vision recedes beyond the distance at which the individual is accustomed to read or work he becomes inconvenienced. With the emmetropic eye this occurs between the age of forty-five and fifty years; in the long-sighted it occurs earlier; in the short-sighted later or not at all. Reading or fine work then becomes difficult, print becomes indistinct and, in its efforts to focus, the ciliary muscle, working near the limits of its capacity, becomes fatigued, leading to the development of headaches and strain. At first, relief may be sought by holding the book farther away or by reading in a bright light to contract down the pupil, but eventually these resorts fail. A century ago, the great oculist, Sir William Mackenzie, in his classical textbook, advised as treatment the giving up of all use of the eyes for near work, tenotomy of the rectus muscles which were supposed to have some accommodative action, and cauterization of the urethra, for the weakness of the eyes was attributed essentially to masturbation and spermatorrhoea. To-day the cure is more simple and pleasant—the provision of spectacles to augment the physiological decline of accommodative power.

Refractive errors are the next most common cause of eyestrain, particularly hypermetropia which can be compensated by accommodative effort and astigmatism which tends to excite constant accommodative strain, since, unable to obtain a clear image at any point owing to the irregular refraction, the patient constantly strives to achieve it by accommodating now for one local line, now for another. Particularly, as has been noted, is this so in small astigmatic errors associated with the retention of good visual acuity, for here the measure of success which accommodative effort achieves stimulates it to greater endeavour. Then follow headache, dizziness, irritability, fatigue and the host of nervous symptoms which will be considered later. A difference in refraction between the two eyes (anisometropia combines the disabilities of all types of refractive error) for the attempt at fusion—if the difference is small enough to allow fusion—tends to bring on the symptoms of accommodative asthenopia.

Accommodation, whilst playing the major part in the two preceding conditions, may itself lead to eyestrain of an acute type if it fails in the absence of other anomalies. An insufficiency or weakness of the ciliary muscle may result from all the causes which may induce muscular fatigue—general debility, malnutrition, acute illness, pregnancy or chronic intoxications. From the medical point of view the important feature is that symptoms of eyestrain may come on without much visual disability, for the muscle may succeed in its task but by only the expenditure of most of its available power; like other muscles, unless it works consistently within its margin, symptoms of fatigue readily arise.

Convergence is closely associated with accommodation, for the two activities are synkinetic in that, on looking at a close object, the visual axes must converge. It has been seen that phylogenetically, convergence is a recently acquired faculty and it is frequently ill-developed and cannot easily be sustained. Moreover, it works physiologically in close conjunction with accommodation, the eyes accommodating and converging to the same degree. In the long-sighted a great deal of accommodation is required to see a near object but only the normal amount of convergence; in the short-sighted, no accommodation, but again the normal degree of convergence. Therefore theoretically, the individual is faced with the dilemma of either neglecting his accommodation (in which case he does not see clearly) or his convergence (in which case he sees double), and the disorientation of the two physiologically associated functions again leads to strain. Correcting spectacles, of course, by neutralizing the refractive anomaly, allow physiological collaboration, and fortunately convergence is a relatively labile function, which, more than any other ocular movement, is trainable by orthoptic exercises. It is in disabilities of this type, indeed, unless they are due to debility, that these exercises have their greatest value in practice.

Muscular imbalance, when the eyes are not in proper alignment, is as common as would be expected, for accuracy in anatomical arrangement or physiological function of the degree required to maintain the optic axes of the two eyes upon an ever-changing fixation point is rare. If the capacity for binocular fusion is strong, cerebral reflexes automatically compensate for slight failures in equilibrium between the two eyes. But if the disparity is great, fusion can only be maintained under constant strain, and heterophoria exists. If, as occurs particularly in children, fusion reflexes have not sufficiently developed, or if the imbalance is too great, a squint develops, fusion is not attempted, and eyestrain ceases.

Aniseikonia, an inequality in the size of the images formed in the two eyes, is a recent conception developed in America. Theoretically it should cause eyestrain owing to difficulties in the fusion of the two images; in practice it is difficult to assess its influence, which probably applies to few cases only. Treatment, if indicated, is by special "size lenses" which neutralize the inequality by altering the size of the images.

Symptoms.

The *ocular symptoms* of eyestrain, which in combination are classically called asthenopia, are in general what would be expected when it is remembered that in all its aspects it is due to a breakdown in muscular effort to maintain clear vision in conditions of stress or to prevent the confusion of diplopia. Temporary blurrings of vision are experienced; the letters in reading for example, appearing to run together or become confused. This may be momentary and pass off, as an extra effort of the ciliary muscles or of convergence restores the focus, but as fatigue sets in relapses occur, which become of longer duration until the patient finds he has to give up from annoyance or exhaustion. The eyes themselves feel tired, hot and "gritty", a feeling which may eventually give place to a dull ache. At the same time there is a tendency for them to become suffused and watery, but, although blepharitis, styes and conjunctivitis are frequently considered as evidence of eyestrain and curable by spectacles, particularly in children, it would seem reasonable to conclude that the only etiological factor contributed to such infective states by strain is a reflex vascular engorgement and a chronic irritability which leads to constant rubbing of the eyes.

The *reflex symptoms* are more confusing and therefore more important to the practitioner. Pre-eminent among these is headache. It may be over or around the eyes, frontal, temporal or vertical, but quite frequently is referred to the occiput or even down the neck, or it may be generalized. It varies widely in nature—it may be dull and aching or sharp and shooting, merely annoying or wholly incapacitating; it may be permanent or periodic, coming on preferentially after the use of the eyes, as in reading or in a cinema, in the evening when fatigue becomes intensified by relaxation, or quite frequently first thing in the morning. Conforming therefore to no specific type and simulating many, a persistent headache of undiagnosed origin should excite suspicion of the eyes.

The headache is, of course, due to reflex irritability of the trigeminal nerve, and since the ophthalmic division finds its cell-stations down the bulbo-spinal root, symptoms may be referred farther afield. It is probably this low cell-station that accounts for the frequency of occipital headache, and a relation with the nucleus of the vagus may account for the occurrence of indigestion and nausea in such patients. Similarly the eyes are heavily committed in the proprioceptive system centred around the vestibular apparatus, and dizziness and disorientation may be prominent features in the clinical picture.

It should be mentioned again, even at the cost of repetition, that all of these symptoms may arise while the vision is good to casual testing. In these cases compensation is being maintained at a cost, and it is obvious that the breaking point will be reached more readily in the feeble than in the robust. Thus the symptoms occur commonly in states of debility, in convalescence from illness, or in pregnancy. Moreover, they appear more readily when other strains and stresses are greatest, in addition perhaps to increased use of the eyes—the child starting school, the adolescent leaving the comparative security of school for the responsibilities of the outside world, particularly if he finds himself in an office, the demobilized soldier who leaves open-air life in the field and returns to his desk, and the adult in periods of worry and anxiety. Frequently the abnormal state of strain is merely temporary and the patient can happily discard his spectacles at a later date. Finally, as might be expected, such symptoms are sometimes morbidly aggravated in neurasthenia or states of anxiety neurosis, in which ocular symptoms are consistently and vociferously complained of with little or no organic basis but merely form an expression of some subconscious anxiety. Increased by an obsessional fear of blindness, the symptoms in such patients may be very distressing and real.

Treatment

Optical treatment for eyestrain, already indicated in the previous paragraphs, is usually necessary to attain relief, but it is important to remember that the techniques used should be of meticulous accuracy. If the most usual cause is a small optical anomaly, it is obvious that its correction must be exact: indeed, the inadequate corrections of a refractive error, which previously may not have given rise to any symptoms of strain because of its size, may place the patient for the first time in the position of one with a small error and precipitate symptoms. It goes without saying, of course, that the examination should not be confined to the refraction but should include the whole visual function of the eyes, including their muscular balance, the power of accommodation and convergence and of fusion. Equally unsound is the wholesale and indiscriminate correction of refractive errors which do not give rise to any symptoms. The incidence of a normal refraction and a normal muscle balance is so rare as to be justly considered abnormal; and in no eye is a perfect optical image formed: to expect that it would be is to misinterpret the entire economy of living organisms. Correction should be made only if it seems clear that the error is such as would account for the patient's difficulties.

The matter should, however, by no means be be confined to an optical examination with a consequent visual correction by rule-of-thumb methods. The eyes form a delicate index of the general state of fatigue, and the onset of symptoms of strain—unless amply accounted for physically—should lead to an investigation of the general health of the patient, his habits, his anxieties and the conditions of his work, as well as his ability to meet them adequately. The possibility should never be neglected that even genuine symptoms of eyestrain may be the first indication of a much more deeply seated trouble, and the easy routine of affording relief by glasses may merely postpone an ultimate and more serious breakdown, which, anticipated earlier, might have been averted by a more comprehensive and philosophical view of the patient's difficulties.

The Hysteria in General Practice.—BY WILFRED LESTER, M.B., B.S. *Psychotherapist West End Hospital for Nervous Diseases; Clinical Assistant Psychiatric Department, Prince of Wales Hospital, Tottenham.* (*From the Practitioner, May, '47*).

Hysteria is, of course, hysteria the world over, but that the social environment can and does affect its type, course and treatment there can be no question. For instance, it is well established that the coarser types of conversion hysteria are far more common in the working classes than in the middle or upper classes, whereas anxiety hysteria is found more frequently among the black-coated workers and professional classes. The cause of these distinctions is uncertain. Whether the middle and upper classes (in Western civilization) find it impossible to enjoy their higher standard of living without a feeling of guilt or anxiety, or whether it is that the lower orders are more prone to an atavistic regression to substitutive or compensatory magical postural exercises is a problem for further psychological research. Be that as it may, hysteria in all its rich and variegated symptomatology is one of the most common conditions seen by the busy practitioner, so much so that, particularly in working-class practice, it constitutes

improved, the gain in weight being now 26 pounds; all abdominal symptoms had disappeared, and the bowel movements were perfectly normal and regular. A left thoracoplasty was carried out later in the year with highly satisfactory results, and the patient was finally discharged in March, 1945. He has been seen at intervals since and has remained in excellent health, leading a full and busy life.

CASE No. 4.—Male aet. 30. Admitted October 22, 1943, with a history of lassitude, cough and sputum for the previous five months; sputum averaged about ½ ounce daily and contained numerous tubercle bacilli. B.S.R 22 mm. Digestive system apparently normal. Chest X-ray showed infiltration in right upper and mid zones with cavitation. A right A. P. was begun on November 26 and, following adhesion section, a satisfactory collapse was obtained. About six weeks after admission patient complained of occasional attacks of colicky pain in the lower abdomen, associated with diarrhoea. Appetite was poor and there was a slow but steady loss in weight. Barium examination of the intestine showed localised inflammatory changes involving the terminal 6 inches of the ileum, with ulceration. The usual line of treatment with vitamins, U. V. L. and calcium was instituted and relief of symptoms followed immediately. Diarrhoea and pain ceased, appetite improved and the patient gained weight steadily. Progress was uninterrupted until his dicharge from the sanatorium in August, 1944. Subsequent follow-up found the patient well, free from all symptoms and carrying on full work.

CASE No. 5.—Male aet. 20. Admitted October 3, 1944, with a history of lassitude, cough and sputum for the preceding three months. Sputum confined to two or three pieces daily, but contained numerous tubercle bacilli. B.S.R. 49 mm. No digestive symptoms. X-ray of chest showed infiltration involving the upper halves of both lungs. Patient was treated by means of strict bed-rest, but showed little response. After five months he complained of anorexia, and had occasional loose motions associated with abdominal discomfort and loss of weight. X-ray examination showed tuberculous involvement of caecum and ascending colon, with ulceration. A satisfactory response followed treatment by vitamins, U. V. L. and calcium, improvement in symptoms being immediate. Abdominal discomfort vanished, bowel movements became normal within a fortnight and patient began to gain weight. At the time of writing the patient is awaiting a left thoracoplasty; his general condition is satifactory and he has been completely free from all digestive symptoms for over eighteen months.

CASE No. 6.—Male aet. 39. Admitted November 19, 1943, with a history of cough and lassitude since the previous July. Sputum moderate in amount (four to five pieces daily), but contained many tubercle bacilli. B.S.R. 10 mm. No digestive symptoms. Chest X-ray showed scattered infiltration in right upper and mid zones, with cavitation in mid zone. Patient was treated by means of bed-rest in the first instance, with some general improvement, but after two months the X-ray appearances were unaltered and accordingly a right A.P. was induced. The collapse was unsatisfactory owing to extensive adhesions, and the pneumothorax was terminated and replaced by phrenic paralysis. The pulmonary lesion, however, remained unaltered, and despite continued strict bed-rest there was no evidence of healing. Five months after admission patient began to complain of epigastric discomfort and flatulence, followed a week or two later by complaints of lower abdominal pain and occasional diarrhoea. Barium X-rays showed disease of the terminal 3 inches of the ileum and of the caecum. Apart from some temporary relief of the abdominal pain no benefit resulted from the usual regime of vitamins, U.V.L. and calcium in this case, and the succeeding months showed a deterioration in the lung condition, with extension of the disease on the right side, followed by a spread to the left. A left A.P. failed and the patient slid steadily downhill. The symptoms of intestinal tuberculosis increased steadily in severity and the patient died on May 14, 1945.

Discussion

These cases have been selected for publication from the clinical material seen in a sanatorium during the past six years, and are put forward as a reminder that intestinal tuberculosis is not invariably a terminal phenomenon nor is it associated only with, advanced pulmonary disease. The cases recorded all showed pulmonary cavitation, all had positive sputa, but all were considered suitable for collapse therapy and, with the exception of Case No. 6, all have made or are making an entirely satisfactory recovery. The part played in this recovery by the routine treatment adopted for the intestinal disease is difficult to assess. The major portion of the credit for the ultimate result must be given to the successful collapse of the diseased lung and the consequent cessation of the stream of infective material flowing down intestinal canal from the pulmonary cavity. One cannot ignore the fact however, that symptomatic and general improvement occurred in several of these cases following the institution of treatment for the intestinal lesion and before collapse therapy was begun, and that it was due to their general improvement that surgical collapse was made possible. It will be noted that in Case No. 6 effective collapse proved impossible, and in this case treatment for this intestinal disease produced only some transient amelioration of symptoms.

Treatment in each case was the same. An ordinary full diet, but with all roughage eliminated, was given, supplemented by vitamins A and D in concentrated form and by 300 mgms. of ascorbic acid daily. Calcium gluconate, 5 c.c. of a 20 per cent solution, was administered thrice weekly by intravenous injection. Ultra-violet light was used cautiously, the chest being kept covered, and was well tolerated in all cases.

While we cannot, of course, draw any authoritative conclusions from a small series of individual cases such as this, one is, perhaps, justified in recording one's impression that the treatment outlined proved of considerable assistance in five of the cases and was at least responsible for a dramatic relief of symptoms. This symptomatic relief was succeeded by sufficient improvement in the general condition to enable the position to be consolidated by the successful completion of pulmonary collapse.

Summary

Six cases of intestinal tuberculosis, occurring in association with moderately extensive pulmonary disease, are recorded.

An account is given of their treatment with a low-residue, high-vitamin diet, calcium and ultra-violet light.

It is suggested that this regime is of considerable value in such cases, but that the permanency of any result achieved is dependent upon effective control of the parent lesion in the lung.

The barium examinations in these cases were carried out by Dr. J. E. Blewett, radiologist to the Aberdeen Royal Infirmary, to whom I am greatly indebted for the interest which he took in their investigation.

Eyestrain

—BY SIR STEWART DUKE-ELDER, K.C.V.O., D.Sc., Ph.D., M.D., F.R.C.S. *Surgeon-Oculist to H.M. the King; Ophthalmic Surgeon, St. George's Hospital.* (*From the Practitioner, May, '47*)

Eyestrain may be defined as the striving of the visual apparatus to clarify vision by ineffectual adjustments; and its manifestations depend partly upon the use to which the eyes are put and partly upon the capacity of the individual to sustain continual effort. It should be remembered that biologically the eyes were adapted for relatively simple purposes—to look for enemies and for food; and although, from long custom, we accept the conditions in which we live to-day as normal, it by no means follows that they have evolved sufficiently to fulfil the exorbitant demands of unremitting close work imposed upon them by a highly complex and artificial civilization. The more is this understandable when we remember the functional minutiae required for the attainment of accurate vision and the meticulous degree of coordination necessary between the movements of the two eyes so that they can fulfil the requirements of binocular vision. Thus convergence of the eyes upon a near object, for example, so constantly required for near work, with the exception of its presence to a slight degree in the higher apes, is a new function unique to man and is frequently one of the first to break down in conditions of strain. Indeed, that the eyes are able as a rule to meet the demands constantly made upon them is a compliment of no mean order to our adaptability, and it is not surprising that of all human ailments, eyestrain of one type or another is one of the most common. I shall deal shortly with the subject under four headings—the factors in work which cause eyestrain, the ocular defects which predispose to it, the symptoms to which it gives rise, and the treatment thereof.

The Factors in Work Causing Eyestrain

Faulty illumination.—The most common factor determining eyestrain to-day, even to those with "normal" eyes, is insufficient or ill-distributed illumination. There is a popular superstition that too much light is bad for the eyes and that harm results from work under artificial illumination: it is true that to look directly into the sun is dangerous, since the infrared rays may produce a retinal burn, but the eyes have been evolved to see and work most efficiently under illuminations comparable to that of diffuse daylight. There is no medical danger in artificial lighting; its usual fault is that it is either not nearly strong enough or so badly distributed as to induce the annoyance of glare. Summer sunlight at noon has an intensity of the order of 10,000 foot-candles and on an overcast day it is about 1,000 foot-candles. Too often at work or when reading in the evening the illumination available is of the order of 1 or 2 foot candles. No-one can work or read efficiently or comfortably unless he sees what he is doing, and it is only necessary to turn on the available artificial light at noon to realize how poor a showing it makes and how great are the disadvantages under which our eyes habitually work.

Another factor of importance is the *fineness of the work* that may be habitually undertaken or the lack of contrast which its constituent parts show. This is commonly seen in the woman sewing black material in the evening, and is found in an extreme degree in certain industrial occupation, such as hosiery linking, the winding of filaments in electric bulbs, or in radio-valve manufacture In the first instance much help can be obtained by direct illumination which throws up detail by casting shadows; but the most prolific cause of eyestrain in that respect is the tendency to bring the work close to the eyes so as to see more clearly. This results in constant strain of accommodation to maintain the focus, and of convergence to avoid seeing double. In the most accentuated cases, it should be noted, relief may be obtained by the wearing of special spectacles which aid accommodation by magnifying with spheres and assist convergence with appropriate prisms.

Ocular Defects Causing Eyestrain

So far as present knowledge goes, the visual mechanism of the retina shows no signs of fatigue and is capable of receiving visual impressions all through the waking hours without signs of strain. Eyestrain is solely the result of muscular work done in the endeavour to produce clear images on the macula of each eye. When a gross anomaly of vision exists and vision is so blurred and indistinct that any striving to adjust the optical mechanism would be futile, no attempt at correction is made, the person reconciles himself to the disability of inadequate sight, and the question of eyestrain rarely arises. This happens in the case of high refractive errors, paralysis of accommodation, or a squint. It is when the error is relatively small and the patient is able to rectify it, to some extent at any rate, by muscular effort, so that constant attempts to do so bring the biological reward of clear vision, that eyestrain arises. It is therefore the small error of refraction, the weakness of accommodation, the insufficiency of convergence or the latent squint with which it is essential to deal. It is not the error which causes the trouble but the continuous effort put forth to correct it. This brings about diagnostic difficulties, for even though the symptomatology suggests an origin in the eyes, the patient may protest that he sees normally, and on testing his vision the doctor may find that this indeed is the case: such are the cases which most usually obtain the most unexpected and dramatic relief from appropriate therapeutic measures.

Presbyopia is the most common cause of eyestrain. All through life the lens undergoes a process

almost the backbone of his practice as well as the bane of his existence. A substantial part of the bread and butter of his practice consists of the women, young and old, who come for their bottle of bromide or valerian or what you will, week in week out for years on end. He will say bitterly that this is so in spite of repeated attempts at sending them farther afield for more expert advice and treatment. For it must be confessed that the hysteric, as seen by the practitioner, is the ugly duckling of medicine. A nuisance to everybody, she is beloved by nobody. Hospitals may investigate her (to exclude the possibility of organic disease) but never treat her; psychiatric clinics may treat her bravely but it must be admitted largely ineffectually, precisely because conditions do not permit of the necessary investigations. This is no reflecion on hospital psychiatric clinics. Restricted accommodation and staff difficulties are making it more and more difficult for them to cope with the ever-increasing flow of psychoneurotics of more circumscribed psychopathology and more favourable prognosis than the middle-aged hysteric. The patient, after a few perfunctory interviews is usually returned to her doctor with a polite note to the effect that as the waiting list is very long, and the case oldstanding, thus requiring protracted treatment, the clinic regrets.

Thusthe conscientious practitioner eager to obtain the best possible advice and treatment for his hysteric, is frustrated at the outset. Willy nilly therefore he must treat her himself.

What then is it in the hysteric that she should constitute a factor of so much importance in the general practitioner's life? To answer this pertinent question I propose to discuss a typical case, investigated and treated in practice over many years in order to illustrate certain aspects of the psychogenic motivation without becoming involved in the intricacies of depth psychology. Certain clinical features of the patient's present condition will be described only to be re-examined later in the light of an exhaustive family history which, it will be seen, contains the root of the matter itself.

The patient, we will call her Mrs. X., is a buxom rosy-cheeked woman of fortynine, with plain but pleasant features. When she smiles, which is frequently, she displays a set of ill-fitting dentures which do not worry her in the least. She has been married for twenty years and has but one child, a daughter aged eighteen who works in a local factory and who is already courting. Well past the menopause, the patient is, it would appear, enjoying an Indian summer of cosy and contented middle aged married bliss. Her husband, in regular employment as a Post Office sorter, is a man of equable temperament and obviously devoted to his home and family. His spare time is taken up by back-yard rabbits and poultry and, being a handy man, to odd jobs about the house. His wife's symptoms (she has no main symptom, a point to be noted) are many and of long standing.

Since leaving school she has been a martyr to frequent headaches, backache, pains across the shoulders, and "a funny feeling under the heart, I can't explain it". As for her bowels, "If I didn't take something regular I'd never go at all". Her symptoms take turn fortuitously in being the most prominent. To-day it may be the headache, with the backache a close runner up, the rest forming a decorative background to her loosely woven tale of woe. The following week the pain under the heart may take precedence. But whether it is her head, her back, or her heart, she remains her pleasant, placid, martyred self. Indeed, such is her cheerful demeanour that it is difficult to believe that she is the bearer of so much suffering. For instance, only recently (on a Sunday) she had such a bad "bilious attack" that she spent most of the day in bed. It was almost as bad as the attack she had at her niece's wedding the month previously when she was brought home after nearly ruining the party. On one occasion, while on holiday at Southend, she was seized with an attack of pain between the shoulder blades which kept her in bed for the best part of the "week's holiday", the doctor in attendance treating her with marked energy and success for fibrositis. She is frequently incapacitated on Sundays, and on those unhappy occasions Dad cooks the joint while the daughter Audrey, in a fury (apparent only in the excessive rattling of the crockery she has to wash up), tidies up generally and lays the table. Audrey on the verge of an acute anxiety attack palpitates lest her mother should come down to tea only to have another "turn" in front of her young man.

So long as those around her continue their ministrations with unfailing and uncomplaining zeal, so long will she remain their grateful and apologetic charge, expressing with ready tears her lamentable inadequacy. In this manner the attacks repeat themselves relentlessly year in year out, while Mrs. X remains as buxom and as fresh looking as ever. She has been attending the doctor on and off for thirty years, and if she is spared (which is more than likely) she will continue for another thirty.

This, then is the chronic hysteric, and there is not a busy practitioner who has not treated scores of them, On the point of taking the family out on a fine Sunday afternoon he receives an urgent message to visit Mrs. X who is having a "bad attack". During a Wednesday afternoon round on the golf course he will receive a message to visit Mrs. X on the way home. When she enters his consulting room on a busy winter's evening, he groans inwardly, but braves himself manfully to face the ordeal. With a maddening calm and an unfailing garrulity she goes on interminably from her back to her head, and then on her stomach and heart, until the doctor almost beside himself contrives somehow to bring the ordeal to an end. Beaming good-bye and clutching her sacred bottle to her bosom, Mrs. X steps blithely out of the surgery, not before giving her usual promise to return when the medicine is gone.

Basic Etiological Factors

Thus for years on end the practitioner sees the chronic hysteric, physics her, feels for her and curses her. Yet he, who is as keen on doing as decent a job of work as any man who values his self-respect, has perforce to repeat, this hated ritual *ad nauseam*, and, if he wishes to retain his patient, to pretend he likes it. Now this sorry state of affairs is neither inevitable nor irretrievable, for like most evils it can be challenged if not overthrown by the cool clear light of reason. By reason I mean a knowledgeable insight into the psychogenic motivation. To acquire this the general practitioner is not obliged to rush off and fortify himself with a specialist course in psychological medicine. Obviously this is as impossible as it is undesirable. The object is not to make the practitioner a master of a speciality, but to make his everyday work more purposeful and satisfying. Moreover, his knowledge is obtained by means denied the specialist. Only the practitioner can acquire that intimate knowledge of the patient, her histoy, her family, and her social milieu, which added together do much to neutralize his ignorance of psychopathology.

This is not a counsel of perfection. Obviously the treatment of choice is psychotherapy carried out by a specialist in cooperation with the family practitioner. But this is mere crying for the moon. Thus, whether the hysterical personality under discussion is due to a Freudian desexualized substitutive gratification at the genital level of libidinal organization, or to an Adlerian bid for power through illness, or a Jungian misadventure in individuation, is of small moment to the family practitioner. It is sufficient for him to realize that it is the patient's mood—the disarming good humour, the placid acceptance of so much suffering, *la belle indifference de l'hysterique*—that constitutes the hysterical personality and which distinguishes it from the hypochondriac.

Although it may be difficult to reconcile this mood (which seems to reflect a high degree of social adjustment) with an endo-psychic conflict so severe as to cause dissociation of the personality, the practitioner will only arrive at a true evaluation if he accepts the complex symptomatology as a working compromise effected by the ego in order to carry on with some semblance of normality.

According to Freud, the conflict which is repressed is fought out in the patient's unconscious. The combatants are certain component impulses of primitive sexuality and the ego at the behest of the super-ego or conscience. The ego having to face the stern reality of the outer world finds these uncurbed and primitive impulses inimical to its welfare and so offers resistance to them. The battle thus joined ends in stalemate. The armed truce (the neurotic compromise) which follows consists of the following terms :—

The unbridled component sexual impulses (the ID) promise to keep the peace on condition that some of their demands are allowed conscious expression. The ego (with the vigilant and undaunted super-ego at its elbow) for its part accepts this undertaking with the proviso that such conscious expression shall assume a form acceptable to its security. Thus emerges the patched-up peace which constitutes the hysterical conversion neurosis. The erstwhile combatants, honour partially satisfied, lower their guns but keep their powder dry.

To Adler the neurosis is simply a bid for power through illness or an escape from an assault upon the *amour propre* of the patient.

Mrs. X, of course, is sublimely unaware of any disturbance other than her aches and pains. In fact, so strong is the repression in her case, and so complete the physical compromise, that the merest hint at a mental origin of her symptoms is enough to evoke in her a tigerish resistance. On the other hand, tell her that she is the innocent victim of an unjust providence that sees fit to inflict upon her a host of bodily infirmities, and she is yours to command for ever.

You may give her the most nauseating draughts and she will swallow them with avidity. She will tolerate injections at any time at any part of her anatomy provided they are sufficiently painful. You have but to mention operation—she cannot undergo it quickly enough. Her teeth are hardly in question before they are out *in toto*, as in the case of Mrs. X. In fact, the more dramatic the treatment the more likely is it to appeal to her. She will endure almost any physical barbarity administered in the name of treatment so long as her body is the object of it. Let the weary practitioner in a moment of despair mention the possibility of "nerves" or in his perennial frustration adopt an irritable off-hand manner: the response is as automatic as it is unforgettable. Whether he has been a devoted attendant for ten weeks or ten years is no matter. The wounded tigress attacks. The doctor may be conciliatory or otherwise; he never sees her again.

At home a sadder state of affairs exists:—In constant need of attention, which is always forthcoming, her control over her household is complete. So significant is this domination through need, that Freud has called this aspect of the neurotic compromise the "secondary gain". This is an additional compensatory mechanism which affords the ego a positive satisfaction so marked that to attack it is sufficient to invoke the whole force of the personality against the presumptuous assailant. If the doctor prescribes a course of treatment for her which demands the close attention of the family, then she must have it, and the household must bear the expense and inconvenience of it.

Let a long-suffering husband by so much as a flicker of the eyelid hint the mildest of protests, and he is a heartless brute, worse than the beasts of the field who never desert their own in distress. Her manner will be either aggressive or whining; experience has taught her which mood earns the highest dividend. This she extorts with such venom that the poor wretch of a husband is never allowed to forget his folly. On his next day off she will have an "attack" that will keep him on the run to and from her bed the day long. Sitting in front of a cheerful fire on a cold, wet winter's evening listening to his favourite wireless programme, she will insist on his going to the doctor's to fetch the repeat of her medicine that the elements render it impossible for her to collect herself. And so the score is settled: never was victory savoured with such unconscious relish.

That she should enjoy perpetual bad health and be able to impose her will wherever it listeth is more harmful to her than all the rank potions she somehow contrives to put away during the whole course of her hysterical career.

Analytical Discussion

The practitioner's task is obviously a formidable one. He finds when he comes to grips with it that he has not only a neurotic on his hands, but a family

of neurotics—in fact, he is up against the "family neurosis". It is as if the household itself were infected by the all-pervasive influence of the hysteric. However, until the family neurosis has been carefully investigated the practitioner will lose track of his original prey, for although the chronic hysteric and her family are bound together in the coils of the family neurosis each individual member must be tackled separately before the knot which binds them can be finally unravelled. This entails an exhaustive history of the patient, including her birth, infancy, childhood, adolescence and maturity, together with an investigation of those members of her family whose activities impinge upon the attitude and behaviour of the patient herself.

In the case of Mrs. X the data were obtained from herself, her mother, her husband, her sister, and her daughter.

The youngest of seven children, she was born of a poverty stricken working-class family in a London slum area. Her father, a casual dock labourer, died when she was five. Compelled to find work, the widow left our patient to the tender mercy of her turbulent and unruly brothers and sisters.

The mother's story continues as follows :—The patient was breast fed for twelve months and was very difficult to wean. She was two before she would take any solid food at all. She started thumb sucking before she could walk, and continued it until she left school at the age of fourteen. Soon after starting school she began getting "bilious attacks" (probably cyclical vomiting). These vomiting attacks were particularly in evidence at examination time, so that she missed the scholarship examination as well as several school examinations. She was a happy child—always out on the streets with her playmates. In this connexion her aunt, who was a close neighbour at the time, volunteered a significant addition to the story. She said that although the child was friendly enough she always chose playmates younger than herself so that she could "boss them". The mother added that when her daughter was six a man exposed himself in front of her in a local wood yard. She went to the police but nothing came of it. The girl appeared none the worse for the experience.

On leaving school, she went into a factory but couldn't settle down. The patient said her headaches started with her first job. After two years of factory life, during which time she tried half-a-dozen jobs, she eventually came to rest in domestic service, in which sphere she remained until her marriage. She was first courted by a sailor when she was twenty-three, but as he was too fond of drink and altogether too rough she gave him up. As she says "I never felt safe with him". Her husband courted her four years before he married her. Their child was born two years later after a painful and protracted labour which elicited from the patient the vow "never again."

After, this, her symptoms, already well in evidence, began to assume that inexorable rhythm which at present constitutes the essential part of her existence.

Now the history of every neurosis contains some evidence of emotional deprivation in infancy and childhood with a consequent inadequacy of emotional fulfilment in later life. Just as the infant deprived of sunshine and an adequate diet develops rickets that may lead to permanent physical stunting, so the infant deprived of love and security develops character traits and behaviour difficulties which may lead to permanent emotional stunting.

Mrs. X is an excellent case in point.

The seventh and unwanted child of a worn-out, irritable mother in an impoverished household she clings to the breast as the only source of warmth and security within her compass, and surrenders it only after a protracted struggle. Refused the substance, the child clings to the shadow and sucks its substitute breast (the thumb) with sorrowful and nostalgic satisfaction. Its rufusal to take solid food is already a measure of its inadequacy; a direct result of the early deprivation of love and security.

At the age of five, crisis is followed by disaster. Within a few months, her father, a kind but feckless man, dies. Her mother is compelled to find work, whilst she too is turned out of her home (already bereft of its main props) to experience the cold and cheerless reality of school.

Even in these circumstances the strong well-integrated personality remains undaunted; nothing will prevent her developing into a successful, well-adjusted citizen. But our patient has no chance from the start. Insecurity, fear and rejection are not the handmaidens of courage. Nevertheless, if she cannot overcome her difficulties outright, neither will she submit to them, Escape is her solution, and neurosis her sanctuary. The difficulty in weaning, the refusal of solid food for two years, and the thumb sucking, each manifestations of a profound emotional disturbance, prove too much for her in the face of further environmental difficulties. And so, neither strong nor weak, she chooses the neurotic compromise exemplified so aptly in her attitude towards other children. Unable to impose her will on older children she does not submit and become a lesser light among them. That would never satisfy the neurotic craving for mastery which is calculated to dispel the inferiority which she feels in reality. This is effected by her domination of younger children.

At school she is happy and well so long as no undue stress is imposed upon her. Unable to cope with the strain of examinations, she is equally unable to face ignominious failure; hence the vomiting attacks, which, if they deprive her of any chance of victory with honour, will most certainly save her from defeat with dishonour.

At a time when even the healthy organism is in the grip of psychosomatic changes which manifest themselves in the inchoate and idealistic strivings and yearnings of adolescence, our hysteric finds her resources inadequate for the challenge. Once again she eludes defeat by neurotic compromise. Just as in childhood she achieved an incestuous encounter with a substitute father (in the wood yard) and emerged unscathed (the guilt, of course, being projected on to the offender) so in adolescence she gained a substitute home in service, and later a permanent substitute father (her husband).

Mrs. X is a classical example of the emotionally inadequate female drawn inexorably to the emotionally inadequate male. Dropping the sailor who obviously would have made impossible demands on her, she chose the more accommodating post office sorter. The relevant facts concerning this aspect of the family neurosis were obtained largely from the husband. His story is as follows :—

Mrs. X, during her courting days, was never partial to kissing or caressing. This her husband attributed to a proper maindenly coyness, a pleasing manifestation of sweet and innocent virtue. After marriage, although the coyness disappeared, other obstacles to marital felicity took its place, and Mrs. X was as unresponsive as ever. Mrs. X's version of her obvious frigidity and vaginismus was as usual exculpatory: "she was made small" or perhaps "he was too big". Her husband, with a deprecatory blush at the latter explanation, ever kind and understanding, henceforth gradually surrendered his marital prerogatives. Thus again was peace achieved with honour. Coitus, or a travesty of it, never more frequent than once a month, gradually dwindled to a mere bi-annual birthday ritual. Thus Mr. X aiding and abetting in full measure his wife'e hysterical foibles becomes a key figure in the family neurosis. It is his kindly understanding, his ineffable patience which give full play to her inexhaustible demands.

Close inspection, however reveals a very different kettle of fish.

It appears that Mrs. X was the only girl in his life, and he was past thirty when he began courting her. His chief interests up to that time had been the Boys' Brigade, in which he was a junior officer, and rabbit breeding. Questioned closely regarding his choice of mate, he admitted that he knew she was "rather delicate and quiet-like", but that these were the very qualities that originally attracted him. He said he felt at his best in her company. He remembers Mrs. X saying during their courtship "how safe and contented she felt when she was with him". As well she might.

One can imagine them on their usual Sunday afternoon stroll in the park, he resplendent in his Boys' Brigade officer's uniform she with an expression of smug self-satisfaction leaning heavily on his manly arm.

She was always "cold", of course, but that didn't worry him unduly because "he wasn't very interested in that sort of thing himself". He attributed it all to her delicacy of feeling and ministered to it ungrudgingly, thus pleasing his wife and at the same time satisfying his own craving for knightly chivalry embodied in his fantasized ego ideal of St. George slaying the dragon and rescuing the maiden in distress. Just as his wife and his uniform provided him with the means of gratifying unconscious masculine drives that his puny physique denied him, so his rabbit breeding provided a ready source of substitutive or compensatory libidinal satisfaction. In short, he was not understanding, but semi-impotent; not kind, but neurotically quixotic; not patient, but complaisant.

Although the husband was at peace with the world, it was with his aid that the first breach was made in the family neurosis defence system. Otherwise well adjusted he was readily amenable to the intellectual appraisal of the situation with which the practitioner primed him.

Management of the case

Thus was cooperation with the family first effected. Slowly, almost imperceptibly, the practitioner, with his newly acquired ally, came to closer grips with his patient. Ostensibly as solicitous as ever, the husband gradually freed himself from the yolk of his wife's insatiable demands. Her Sunday attacks are no longer so incapacitating; indeed there is a marked falling off in their frequency. When such an attack does occur a plan of action is put into operation. The husband finds he has an urgent meeting at the Club at eleven a.m., which, as it happens, keeps him long after the dinner hour. The daughter, leaving her mother some cold unappetizing fare on a tray, announces her intention of dining at her boy's place. The mother's reaction to such spoiling tactics ranges the whole gamut, from loud and vitriolic denunciation, to a plaintive wailing. But this avails her nothing. Thus, slow but sure inroads are made into her second line of defence—her secondary gain. Gone are the days when she had but to command for everyone to obey with servile alacrity, and, surprisingly enough, she is all the better for it. Although everybody is still kind, there is, so far as she is concerned, something fresh in the atmosphere, a strange new awareness in everybody, a new sprightliness in their demeanor which, although it doesn't escape her notice, nor fail in its purpose, is beyond her comprehension. The doctor at this stage is master of the situation. No longer is Mrs. X the old woman with the "pains all over" to be fobbed off with blandishments and a bottle of tonic. If he cannot master her completely he can at least understand her and manage her without merely having to accommodate her. To the patient and her family he can now unfold (with emphasis varied to suit the occasion) the origin, course and management of each fresh peccadillo. Indeed it is in management, the product of his prolonged and painstaking investigations, that lies the secret of his present success.

With the aid of little more than the elements of psychogenic motivation plus common sense and interest applied to human affairs he has achieved results which compare favourably with those obtained by many a skilled psychiatrist. He may be unable to psycho-analyse his patient, but he does know when, who and why to reassure, to placate, to yield, to be firm, to offer suggestion, persuasion, and even to use family intervention. All this he can achieve with a sureness of touch which, apart from earning him fresh laurels every day, will add zest to his work and comfort to his soul.

BOOK REVIEWS

Essentials of Syphilology:—By R. H. Kampmeier, M. D., *of Vanderbilt University, School of Medicine. Published by Blackwell Scientific Publications Ltd., Oxford. Price 25 s. nett. Sold by M/s Macmillan & Co., Ltd., St. Martins Street, London.*

We welcome this new text book of syphilology which gives a practical exposition of syphilis as a systemic disease for the study and information of the general practitioner, health officer and undergraduate student. The objectives of the book are:

(1) To present the concept of syphilis as a systemic disease having manifold manifestations and presenting problems for every type of specialist.

(2) To promote better habits of history taking and physical examination.

(3) To emphasize that clinical diagnosis must be verified by either dark-field or serologic evidence of syphilis.

(4) To develop a critical evaluation of serodiagnosis.

(5) To emphasize the role of syphilis in many chronic diseases, years after infection was acquired.

(6) To stimulate better anti-syphilitic treatment.

(7) To stress the need for the treatment of contacts through the local health authorities.

(8) To demonstrate that the education of the patient's relative to the disease is an important factor in the control programme.

We are absolutely certain that the book amply fulfils these objectives of the author. It bristles with most useful and practical information culled from clinical experience. There are twenty chapters dealing with every aspect of syphilis and each chapter begins with a very pleasing and instructive and informative historical note on the subject which each chapter deals with. There are 87 coloured and half-tone illustrations and they are so good and clear that they look like actual demonstrations. As the author writes, syphilis offers to the physician an intriguing challenge to his diagnostic abilities, a satisfaction in the results of treatment in many of his patients and an interesting insight into the psychological responses of his patients, for the simple reason that no other disease is related so deeply to fundamental emotions and instincts than syphilis.

The book is printed in art paper and its excellent get up is a great credit to its publishers M/s Blackwell Scientific Publications Ltd.

The general practitioners of this country should not fail to read this book which is undoubtedly an outstanding and brilliant contribution to syphilology, practical and convincing with details and important points clearly explained and brought home by appropriate case notes.

Preventive Medicine and Public Health:—By Wilson G. Smille of the Cornell University Medical College, New York. Published by Messrs. Macmillan & Co., London: Price 30 s. net.

This book is not of the usual type dealing with topics of sanitary engineering and environmental sanitation, but is based on the conception that Preventive Medicine and Public Health is a social science. The author defines Preventive Medicine as a function of the individual in promotion of personal and family health and Public Health as a community function. He believes that the teaching of Preventive Medicine will be most effective if it is integrated with the teaching of clinical medicine and that the departmental teaching should also be integrated with the work of the official health service of the community. It is on these lines that this book has been written and the result is excellent in every respect. The practitioner or the medical student is thus given a clear cut conception of his share of responsibility in his undertakings of Preventive Medicine or Public Health. Their clinical aspects are stressed in every chapter so that the physician may play his part intelligently and co-operatively. The most arresting and instructive part of the book is its last section dealing with Public Health Administration. The eleven chapters that go to compose this section are worthy of careful perusal, particularly in our country where the Health Services are more or less insufficient, ineffective and uncordinated. The author quotes the opinion of the Committee of Medicine of the New York Academy of Medicine on what should constitute the objectives of *adequate medical care*:

(1) To maintain and continually to improve the quality of medical services.

(2) To extend medical care as rapidly as possible and to provide the best known practices and facilities of medicine to the whole population.

(3) To reduce the per capita or individual cost of medical service while increasing the total expenditure for medicine.

(4) To provide adequate compensation to all physicians, to utilize more fully the service of younger physicians and to maintain medicine as a profession and not as a business.

We like this book immensely and after going through it we feel that it is a book which will be needed by every practitioner of medicine if he means playing his part well. More than the practitioner, the medical student should not fail to master this book because it will inculcate in him the right perspective from which he should view the principles and practice of Preventive Medicine and Public Health. We heartily recommend this book to the medical students and practitioners of our country.

* * *

Poisons; Their Chemical Identification and Emergency Treatments:—By V. J. Brookes and H. N. Alyea. Published by D. Van Nostrand & Co., New York and Macmillan & Co., London. Sterliing Price 16/6 net. Dollar Price 3 s.

This is an excellent book on Poisons useful for rapid reference to know the nature of poisoning and its treatment. Full details are given under each poison—its identification, symptoms and treatment.

The data on hazardous industrial chemicals are also described and the chapter dealing with the subject is well written. Chapter 4 gives an elaborate and exhaustive table of emergency information for immediate reference. Chapter 6 deals with poisoning foods, plants, snakes and spiders. The last chapter deals with special technics such as artificial respiration, the gas mask, the inhalator and treatment for shock. We warmly recommend this book to the police, legal and medical profession.

* * *

Applications of Germicidal Erythemal and Infra Red Energy:—By Mathew Luckiesh, D. Sc., D. E. Published by D. Van Nostrand Co., New York and Macmillan & Co. London. Price 30/-net.

On going through the book one will be amazed at the diversity and richness of materials presented by the author regarding the various aspects of light and radiant energy. He will also be gratified to note the practical application of radiant energy to human welfare, such as killing of air-borne and water-borne bacteria by means of germicidal energy, the production of artificial sunlight, the uses of ultra-violet and infrared energy. The book is made up of sixteen chapters and each chapter is replete with information. It will be particularly useful to those who are doing research on light and radiant energy and to those who use light therapy in its various forms in the treatment of certain diseases. It is undoubtedly a great and authentic contribution on the subject of practical applications of germicidal, erythemal and infrared energy.

* * *

Congress Medical Mission to Malaya:—By Dr. C. Siva Rama Sastry, Foreward by Dr. B. C. Roy, Price Rs. 2/-. Copies can be had from Sree Haranadha Murali, Tenali, S. India.

Dr. Sastry was one of the members of Congress Medical Mission to Malaya. In this book he not only gives an account of medical relief work done by the Mission but also gives a very pleasant and readable description of the people of Malaya-the Malayans the Chinese and the Indians who make up the population of that country. The author's narrative is simple and effective. He cannot escape the conclusion, borne out of his own first-hand observation and experience, that the British want still to rule and exploit Malaya as long as possible. We heartily recommend this book to our readers. It gives us a clear glimpse of what Malaya is to day and how she should be in future.

* * *

Penicillin in Ophthalmology:—By Indian Ophthalmologists, Published by Ophthalmological Books Publishing Co., Chodavaram, Vizag. S. India. Price Rs. 2.

It is a small but useful book of 64 pages dealing with the uses of penicillin in diseases of the eye. Most of the information it gives is abstracted from various medical journals. As such it is absurd to call it a book written by Indian Ophthalmologists.

ABSTRACTS

Ambulatory Treatment of Peptic Ulcers with Protein Hydrolysates and Dextro-Maltose.—CO TUI (*Review of Gastroenterology*, 14: 108, Feb. 1947) reports 164 cases of peptic ulcer treated with protein hydrolysates and dextri-maltose. All these cases were "intractable," in that symptoms had not been relieved by any other therapeutic regimen; 144 were duodenal ulcers, 16 gastric, and 4 combined. The duration of symptoms ranged from 5 to 17 years; 102 patients showed evidence of malnutrition; 12 had hematemesis or melena; 8 a history of perforation. The protein hydrolysate is given in doses that supply 0.6 gm. nitrogen per kg. body weight; a carbohydrate, usually salt-free dextri-maltose, is added to make up 50 calories per kg. After the daily allowance of the powders is weighed out they are dissolved in a watery mixture of 1 to 1½ liters; it has been found best to make two separate solutions of the hydrolysates and of the dextri-maltose; the solutions are chilled and are usually divided into 8 equal parts to be given every 2 hours (i.e., in 16 waking hours); for patients who have night pains, an additional feeding of the protein hydrolysate, with or without the sugar, may be given when the patient is waked up by the pain. In some cases more frequent feedings are given during the day, The protein hydrolysate is given first and the dextri-maltose immediately after. For the first week no vitamins are given. The protein hydrolysate and dextri-maltose are given in place of all food until the patient is free from pain for two weeks; then one bland meal is given at breakfast time in place of one hydrolysate feeding; the next day two bland meals with 5 hydrolysate feedings. If any of these meals causes distress, however, the patient is returned to the exclusive hydrolysate feeding for another week; and the procedure is then repeated. The routine of 3 bland meals and 5 hydrolysate feedings, without dextri-maltose, is continued for two to three months. Then hydrolysates are discontinued and milk fortified with one tablespoonful of milk powder is substituted for the hydrolysate feeding, but the 2-hourly feeding schedule is continued for four to six months longer. The procedure after that becomes "indefinite" as with the other methods of medical treatment of peptic ulcer. Gastric analyses during treatment with protein hydrolysates show that the hydrolysates rapidly neutralize the gastric acidity; the hydrolysates provide an already digested product that relieves the stomach of digestive effort, and also supplies "a rich source of nutriment" that facilitates tissue repair including healing of the ulcer. The most frequent untoward effect of the treatment is diarrhea, usually painless, but this can be controlled by the administration of Kaomagma or Kaopectate Other symptoms such as "gas pains," flushing, palpitation and headache were occasionally reported but were rare. All the patients in this series were ambulatory during treatment and usually continued to work without interruption, although a few did not work for the first week of treatment. There was relief of pain within the 24 hours after the first hydrolysate feeding in 48 cases; in 24 to 48 hours in 82 cases; and in 48 hours to one week in 18 cases. Only 16 patients did not show satisfactory immediate response to treatment. Eighteen patients were unable to continue treatment in the early part of the series, but after the protein hydrolysates and the dextri-maltose were given in separate solutions, there have been no failures due to intolerances. During the period of observation there have been 18 recurrences, but some of these patients went back on a 3 meal schedule before the end of the two months' period. The protein hydrolysate treatment, the author states, is not "a magic wand" that "banishes peptic ulcer forever" in two weeks' time. (*Courtesy, Medical Times May, '47*)

Renal Complications of Sulfonamide Therapy.—B. S. ABESHOUSE and L.M. TANKIN (*Journal of Urology*, 56: 658, Dec. 1946) report 12 cases of renal complications following sulfapyridine therapy, 12 cases following sulfathiazole thereapy 14 cases following sulfadiazine therapy and 2 cases following sulfamerazine therapy. Renal complications following sulfonamide therapy are of two types: mechanical, caused by the deposition of crystals or concretions in renal tubules, pelvis, or ureter; and chemical, acute toxic and degenerative nephritis. Every person receiving any sulfonamide should be under close observation for the detection of any symptom of renal complication. Crystalluria alone dose not indicate serious renal dumage, but is an indication for temporary withdrawal of the drug, or decreasing dosage, forcing fluids and alkalinization. Such symptoms as hematuria, anuria, or oliguria azotemia

and renal or abdominal pain indicate immediate withdrawal of the drug, and prompt institution of treatment. In anuria, cystoscopy or ureteral catheterization may be necessary to differentiate between complications of the mechanical type and of the chemical type. If the usual conservative measures and catheterization fail to restore function, operation may be necessary, either decapsulation alone or combined with pyelostomy or nephrostomy or restrograde ureteral catheterization. In the authors' 12 cases of renal complications following sulfapyridine therapy, hematuria was a symptom in every case; renal colic was present in 2 cases; urolithiasis, acetonuria anuria in one case each. Conservative therapy was successful in every case, and cystoscopy was not necessary. In the 12 cases of complications following sulfathiazole therapy, hematuria was a symptom in 7 cases, uncomplicated in 3 cases, associated with azotemia, crystalluria, oliguria, anuria in one case eaoh; crystalluria was the only symptom in 2 cases and anuria in 3 cases. Cystoscopy and ureteral catheterization were necessary in 3 cases; in the others conservative therapy resulted in recovery. In the 14 cases of complications following sulfadiazine therapy, hematuria was a symptom in 12 cases, without other symptoms in 2 cases, with renal colic and azotemia in 4 cases, with crystalluria, renal stone, oliguria and anuria ino ne case each; oliguria and azotemia were present in 2 cases; crystalluria in 2 cases, an anuria in one case. There was one death in this group in which anuria failed to respond to decapsulation and nephrostomy; in this case autopsy showed thrombosis of both renal arteries, a complication not previously reported following sulfanzomide therapy. In the 2 cases of complications following sulfamerazine tharapy, anuria was present in both, with hematuria in one case and renal pain in the other. One responded satisfactorily to conservative therapy, the other required ureteral catheterization. Renal complications of sulfanomide therapy can be prevented or their incidence reduced by the following measures: determining previous sulfonamide therapy, drug sensitivity or idiosyncrasy; determination of renal function before and during therapy; use of accurate dosage; maintaining water balance; alkalinization to sustain the pH at 76 in the urine. (*Courtesy: Medical Times, May '47*)

Rheumatic Pneumonia :—BY JAMES BURNET, *writes in The Prescriber, June*, 1947 :—In an article on Rheumatic Fever, by Dr George G. Griffith (*J. Amer. Med. Ass.*, Apr. 5, '47), it is stated that pneumonitis was overlooked by most American clinicians until Boaz and Schwartz as well as others called attention to it. The article by Boaz and Schwartz appeared in the *American Heart Journal* in April 1927 and other articles were published later by other writers. This surely is evidence that in America, at all events rheumatic pneumonia was not recognized until a decade ago. Griffith notes that pneumonitis was found in 11·3 per cent of 1,046 patients with prolonged rheumatic fever. He is quoting from an article by himself on Pneumonitis occuring in Rheumatic Fever (*Amer. J. Med. Sc.* July '46). I mentioned the fact that pneumonia was sometimes met with in rheumatic fever in my "Manual of Children's Diseases," which was published in 1905. No doubt there may have been earlier reference to this complication of acute rheumatism in children, but if so they were (and are still) unknown to me at the time. My statement was challenged by several reviewers but now, at all events, it has been found to be accurate.

There is not the slightest doubt that pnenmonia (or pneumonitis, if that term is preferred) does occur in the course of acute rheumatism in children in certain cases. Whether such is the case in adults I do not know. Even in recent textbooks on children's diseases the fact is not mentioned, or at least, when it is, it is given very scanty notice. In all my cases the first clinical feature observed was shortness of breath. This was followed by cough, which might suggest the onset of pericarditis; but physical examination of the chest always revealed dull patches with a burst of fine crepitations over the dull areas. There was always an associated pain with pleurisy and usually a definite rise of temperature, definitely above the level it presented before the pneumonia set in. It has been stated that in such cases a pleural effusion may make its appearance quite suddenly. I have never, so far, found this to be the case.

In my opinion every case of acute rheumatism occurring in childhood, especially if prolonged, should be carefully watched with a view to detecting the onset of pericarditis and pneumonia, both of which are apt to be overlooked. Cough is likely to be one of the earliest symptoms in both conditions, and is, therefore, not sufficiently diagnostic. Only a very minute physical examination of the chest will clear up the diagnosis in such cases. I insist also on a daily percussion of the heart as well as a daily auscultation, for I am convinced that in every case of acute rheumatism the cardiac muscle is involved, and it is only by means of percussion that one can judge of its condition. Large doses of salicylates should be given. Small doses are of little or no value. It is, I think, a mistake to give sod. bicarb. as well, as this is bound to interfere with the action of the salicylates and materially lessen their effect. I am aware that sod. bicarb. is added to prevent the acidosis which is apt to develop when salicylates are administered. I have never once seen this happen, even when large doses of sod. salicyl. were given. For children I prefer acid. acetylsalicyl. It seems to act more promptly and to give better results. Should pneumenia develop, the salicylates should be oontinued whatever other treatment may be considered nscessary.

Immunization against whooping-cough—J. H. LAPIN, *The Journal of Pediatrics*, 29: 90. 1946.

Recent public health studies on the efficacy of prophylaxis against whooping cough attest to its value, so that by now practically all pediatricians include this immunization, together with diphtheria inoculations and smallpox vaccination, as routine in the care of well children. Factors studied were: (1) the age at which immunization was begun; (2) the type of vaccine used; (3) the time interval between injections; (4) the concentration of the vaccine; and (5) the total dosage administered.

Desirable Age.—To test this question, 20 infants from 3 to 6 months of age received 120 billion *H. pertussis* vaccine in three doses at four-week intervals. Three months later, rapid agglutination tests were performed. The blood of three infants (15 per cent) was 4 plus; the blood of five infants (25 per cent) was 3 plus; and the others (60 per cent) were negative. Thus, only 40 per cent of the infants immunized between 3 and 6 months of age were positive, whereas when inoculations are postponed until after 6 months of age, from 90 to 95 per cent are positive.

Type of Vaccine.—SEMOFF, in a commparison of commercial combined or multiple vaccines with fluid toxin, found reactions with alum solutions to be generally more severe and to cause nodules and abscesses, whereas plain fluid toxins gave the best results of all.

This objection to mixed vaccines does not apply to the mixtures of whooping-cough vaccine with fluid diphtheria toxoid nor to the mixtures made with aluminum hydroxide (Cutter method). These have been distinctly useful in a technique different from any cited. If the first injection of whooping-cough vaccine (40 billion produced marked pain or fever, the remainder of the 80 billion *H. pertussis* was given in 5 doses of 16 billion each, mixed with 0.5. cc. fluid diphtheria toxoid. This resulted in a distinct diminution of reactions. Another type of mixed veccines, the so-called triple immunization, or 3 in 1, against whooping-cough, diphtheria, and tetanus in a mixture with aluminum hydroxide resulted, in my experience, in a slightly larger percentage of reactions when used for routine immunization; but it proved very useful for the booster doses given every second year or so. In such cases, the minimal quantities needed for the booster dose resulted in only mild reactions. Thus, if due weight be given to reactions, only the plain *H. pertussis* vaccines of the Sauer (human), Kendrick (sheep), Lilly (bovine), and Cutter (human) types should be given. The possibility of sensitization to vaccines harvested on other than human blood seems to have been nullified by theoretical demonstration of the improbability of such a phenomenon as well as by the practical experience of many thousands of inoculations. Reactions will occur with any of these vaccines, but usually they are mild.

The Total Dosage.—The total dosage to be given was originally set by SAUER at 80 billion, but serologic tests showed that a fair percentage of children needed 110 to 140 billion for complete immunization and clinical results of exposures seemed to show that 80 billion were frequently insufficient, while 130 billion usually resulted in complete protection.

The Time Interval Between Inoculations.—Protection would be definitely greater if four-week intervals were employed.

The Concentration.—Fifth, the concentration of the vaccine to be employed, originally set at 10 billion to the cubic centimeter, is now recommended to be 20 or 40 billion to the cubic centimeter. A study of three groups of children inoculated with 15, 20 and 40 billion concentrations, with a total dosage of 120 billion, showed statistically insignificant variations in reactions, as judged by pain, local swelling and fever. (*Courtesy: Ind. Jr. of Ped. Jan. 1947*).

Studies on Pertussis Immunization:—W. SAKO, *The Journal of Pediatrics*, **30**: 29, 1947.

The recommended three doses of alum-precipitated pertussis vaccine (40 billion per cubic centimeter, Lilly) were administered at monthly intervals to 8690 Negro children from 2 weeks to 5 years of age. The agglutinin titers were run by the method of MILLER and SILEVRBERG apyroximately two to four months following completion of immunization. The children were unselected except for the fact that their agglutinin titers were all negative prior to immunization.

Contrary to popular opinion, young infants are able to produce anti-bodies as a result of pertussis immunization just as well as older children. In the immunization of these young infants, prolonged antigenic stimulus as afforded by alum precipitation is necessary for efficient antibody production. The alum-precipitated vaccine, except for its tendency to produce sterile abscesses, gave far less local and systemic reactions than the fluid or combined vaccines. Severe reactions were an infrequent occurrence with the young infants. Local and systemic reactions were associated with high agglutinin titers indicating that, although undesirable from the practical standpoint, they are highly desirable immunologically,

Following pertussis immunization the agglutinins reach a plateau level in two to four months and remain at this level practically unchanged for at least three years. A "stimulating dose" of pertussis vaccine administered eight to twelve months following completion of immunization of young infants raises the agglutinin titer to higher levels within one month, after which the plateau is maintained for two years or longer.

A follow-up of immunized and non-immunized children with known agglutinin titers shows that immunization of young infants below 3 months of age is highly effective and supports the contention that, although immunity may exist in the absence of agglutinins, susceptibility does not occur in the presence of agglutinins in high titers (1 : 320 or above.)

Data have been presented to show that immunization of young infants below 3 months of age is immunologically sound and highly effective if an alum-precipitated vaccine is used. On the basis of these findings, physicians are urged to institute a programme of early immunization against pertussis on a nation-wide basis. (*Courtesy : Ind. Jr. of Ped., Jan.* 1947.)

Immune Response to early Administration of Pertussis Vaccine:—W. W. WADDELL, Jr. and C. S. L'ENGLE, Jr., *The Journal of Pediatrics*, 29 : 487, 1947.

The prophylactic use of pertussis vaccine has become an accepted pediatric procedure. Pertussis vaccine as an immunizing agent would hardly have attained such widespread favour had clinical trial not justified its value in the prevention and amelioration of pertussis.

As presently-done it is the usual custom to administer pertussis vaccine at from 6 to 8 months of age. It has been generally believed that an adequate immune response could not be expected at a younger age in that pertussis vaccine would fail to stimulate adequate antibody response in young infants.

The purpose of this study was to observe the immune response to pertussis vaccine administered to young infants as measured by agglutinin titers at various age levels.

The plan of study was: one-half cubic centimeter of a vaccine containing 40,000 million killed pertussis bacilli (phase I) was administered deep subcutaneously to 129 infants at one week of age, with a second dose of 1 c. c. at one month of age, and a third dose of 1 c. c. at 2 months of age. In order to determine the advisability of a booster dose, I. c. c. of vaccine was administered to 50 previously vaccinated infants at approximately 6 months of age and the agglutinin titer determined one week later. In a smaller group of infants the same dosage and the same interval were employed, the first dose of vaccine being administered at 2 months of age. Agglutinin titers were observed at various age periods.

It is our present custom to advise that immunization against pertussis be started as from 6 weeks to 2 months after birth. A booster dose at 7 to 8 months may well be given as an added measure of precaution although this additional dose would not seem necessary in the majority of infants since the antibody content of the blood of vaccinated infants showed little tendency to wane over a period of 6 months, the duration of this study. A satisfactory immune response, can be regularly expected when a first dose of pertussis vaccine if administered in the neonatal period. Pertussis vaccine can be safely administered at this early age period without fear of disagreeable local or systemic reactions. (*Courtesy : Ind Jr. of Ped., Jan.* 1947.)

Penicillin in the Treatment of Syphilis in Children : J. YAMPOLSKY and A. HEYMAN *The Journal of the American Medical Association*. **132**: 368, 1946.—The result of penicillin treatment of syphilis in children varies considerably and depends on the type and duration of the infection.

In this sudy, 23 of the 32 infants with infantile congenital syphilis have obtained a satisfactory response. These 23 children now present a normal response to the serologic test or have a steadily dicreasing titer. All of them are clinically well, have normal spinal fluids and exhibit no clinical evidence of the disease. Four children have persistently positive KAHN tests sixteen months after treatment. These patients were older than 4 months at the onset of treatment, and their sero-resistance is believed to be the result of late diagnosis and treatment.

We do not believe that the 3 fatalities in this series are related to penicillin therapy. Two of the deaths apparently resulted from an overwhelming syphilitic infection in premature and malnourished infants, while the third fatality remains unexplained.

Although penicillin was ineffective in the 2 infants who developed sero-relapse, both of these patients have responded satisfactorily thus far to larger doses of the drug.

The results obtained in this study indicate that penicillin is an effective agent in the treatment of infantile congential syphilis. Although the optimum dosage of penicillin cannot be determined in such a small series of cases. We believe that a total dose of penicillin of 100,000 units per kilogram of body weight is effective in the treatment of the majority of these cases.

The results obtained in the treatment of interstitial keratitis indicate that this condition is refractory to parenteral penicillin therapy. The poor response of this manifestation to all forms of antisyphilitic therapy has long been observed. Recent work by WOODS and CHESNEY has indicated that the refractoriness of interstitial keratitis to treatment is due to the lack of vascularity of the cornea and the low concentration of the antispirochetal agent in the cornea. Although satisfactory concentrations of penicillin in the ocular tissues are said to occur after the local instillation of penicillin, this form of therapy did not improve the results in our cases.

No response was obtained in any of the patients with CLUTTON'S joints who were treated with parenteral penicillin. This type of arthritis is also refractory to routine antisyphilitic treatment. The exact pathogenesis of this disease, as well as that of interstitial keratitis, is obscure. It seems probable, however, that the poor response of both these syphilitic manifestations to penicillin therapy is in some way related to immunologic factors, the nature of which is still poorly understood.

All the children with acquired syphilis who have been treated with penicillin have thus far obtained the satisfactory response. The number of such cases in this series is small and the period of observation is ralatively short. However, it appears that doses of penicillin comparable to those found effective in acquired syphilis in the adult are also effective for the treatment of this form of the disease in children.

In general, the result of penicillin therapy in late congenital asymptomatic neurosyphilis is satisfactory. Although none of the patients with this disease developed normal spinal fluids, the response to penicillin is comparable to that observed after fever therapy. The patient who continues to show an elevation of the cell count a year after receiving penicillin is regarded as a treatment failure and should receive fever therapy. It should be emphasized that most of these patients with asymptomatic neurosyphilis had previously received prolonged arsenic and bismuth therapy without apparent effect on the spinal fluid; the good results following the administration of penicillin indicate that this drug is far more effective than arsenic and bismuth preparation in the treatment of this disease.

Although a rapid reversal of the spinal fluid abnormalities occurred in the infants treated with penicillin, the changes in the spinal fluid in older children were much slower. This difference in the response of the spinal fluid in early and late congenital neurosyphilis has been observed to a lesser degree in the acquired form of this disease.

Penicillin appears to be effective in the treatment of early neurosyphilis and late asymptomatic neurosyphilis. However, the results obtained in the 2 children with juvenile paresis were disappointing. Both children had to be committed to mental institutions; only slight improvement was apparent after penicillin

therapy. In both of these patients the disease was far advanced at the onset of treatment, and the response of such patients to any form of antisyphilitic treatment is usually discouraging.

One patient with slight eighth nerve deafness obtained a fairly good response to penicillin, but the child with severe deafness showed no improvement. This manifestation of congenital syphilis is in general refractory to other forms of treatment. Although a good response was obtained in only 1 patient, this may be significant and may indicate that penicillin is useful in the treatment of the earlier and milder form of this manifestation.

The results described in this report must be interpreted in the light of the fact that commercial penicillin has been a changing mixture of various substances. The content of impurities has gradually decreased as potency in terms of units per milligram has increased. The relative amount of the several identified penicillin fractions G, F, X and K, has likewise varied from time to time. These two changes, and perhaps others suggest that therapeutic efficacy may not have remained constant, and that it may be significantly different today than it was originally. it is not now possible to assess the extent to which these changes may have affected the results here reported. The manufacturers of penicillin are now taking practical steps to correct this situation. In the meantime, it seems advisable that the doses of penicillin recommended in this report be at least doubled in order to maintain its efficacy in the treatment of syphilis in children. (*Courtesy Ind. Jr. of Ped., Jan* 47)

EDITOR'S REQUEST.

(1) **All the Branch Secretaries of the A. I. M. L. A. are requested to forward to the JOURNAL all the scientific papers read at the clinical meetings.**

(2) **Members of the Profession are also requested to send as many contributions as possible for publication in the JOURNAL.**

The Journal is badly in need of good articles, and help in this matter will be gratefully appreciated by the Editor.

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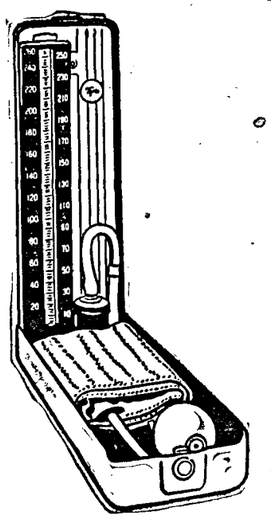
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THE INDIAN MEDICAL JOURNAL

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Thought for the Month.

It is the duty of the State to extend over the people its guardian care, that those who cannot or will not protect themselves may nevertheless be protected; and that those who can and desire to do it, may have the means of doing it more easily. This right and authority should be exercised by wise laws, wisely administered; and when this is neglected the State should be held answerable for the consequences of this neglect—Lemuel Shattuck.

LEADING ARTICLES

ADEQUACY OF MEDICAL CARE

The modern concept of adequacy of medical care is based on two fundamental ideas.

(1) Medical Service organisation should cover the whole population of a country, in progressive stages if unavoidable.

(2) Medical Care offered to the individual should be as complete as possible.

The current trend of opinion is that the State should assume responsiblity for the organisation of adequate medical care. In fact, all the modern States have accepted this responsibility. How far each State, though willing, is yet capable of fulfilling this responsibility is altogether a different matter.

Socialised Medicine as it is in Russia was organised by her before the last war. But other countries of Europe whose medical organisation was in various stages of development have been so utterly ravaged by the war that it will take considerable time for them to rebuild their medical services on the modern concept of adequate medical care. Great Britain has begun its work in this matter by the passing of a National Health Act which would come into force during 1948. It is more or less a form of socialised medicine adapted to British conditions, and we think it is a move in the right direction.

Our country is still far from the goal of adequate medical care in the comprehensive sense of the term. She has now attained her

independance. But her leaders are so busy in the making of India's political constitution and will continue to be so busy for the next few years that it is not likely they would find time to devote their attention to medical organisation in the full-blooded manner and vigour. The fact that all the Provincial Governments have accepted the principles and methods of complete and comprehensive health service for the people as recommended by the Central Health Survey and Development Committee shows that they have accepted the responsibility for adequate medical care of their people and will initiate action as soon as they are in the saddle under the new constitution. We think this would take at least five more years and that the profession or the people should not become impatient at this unavoidable delay.

Meanwhile it is the duty of the profession to chalk out a plan of action. In a sense, it may be taken that the recommendations of the Central Health Survey and Development Committee are those of the profession, because most of our medical leaders were members of that Committee and were instrumental in arriving at these recommendations. They aim not only at adequate medical care but also at preventive measures by means of intensive Public Health Programme.

We wish to emphasize certain aspects of the work ahead of us so that issues may not be confused and dogmatism may not come to prevail in the realm of ideas and ideologies.

Nearly 60 to 70 per cent of mortality in our country is due to epidemic diseases, malaria and tuberculosis. These could never be stemmed by curative organisations but only by sound and intensive measures aimed at the removal of root causes of these diseases. The programme outlined by the Health Development Committee in respect of these matters is quite practical. The cost, of course, would be very heavy indeed, but it is a profitable investment in many ways. This work must be intelligently done and given high priority.

If we have to urge the Government to undertake and execute Health Planning, we must also urge the people to pay extra-taxation by educating them on the advantages which would accrue to them as a result of such a programme of health work. Let it not be forgotten that the degree and extent of Public Health measures and adequacy of medical care cannot escape the law of economics, namely, it will be within the limits of the capacity of the people to pay in the form of more taxes.

The Central Health Development Committee has assumed a free medical service for all—rich or poor. While this is no doubt a laudable ideal, it may not be possible for some time to come. It is therefore necessary that the medical service for those who could pay for it should be based on compulsory National Health Insurance and similar voluntary organisations.

There is not much opposition in our country against State Medical Service. In fact, even now, all the hospitals are run by the Provincial Governments with a fair degree of efficiency. While, therefore, the people and the profession would welcome the extension of State Medical Service to its widest possible limits, there will yet be room enough for the operation of National Health Insurance both by the Government and the private agencies.

In the new dispensation we envisage it is quite possible that private medical practice may be squeezed out. But this need not be if the practitioners form into small groups and if each group organises a Health Unit and offer to the people a complete medical service. At present the practice is individualistic and as such the practitioner is not in a position to offer a complete medical service.

It is a great enterprise and it is a new enterprise to our country—this planning of adequate medical care in all its comprehensive aspects. We are quite confident that within the next five years each unit province and State of the new Indian Union and Pakistan will be humming with beneficient activities, of which provision for adequate medical care will easily top the list.

INDUSTRIAL HEALTH

Dr. Bedford of the Industrial Health Board of Medical Research Council, London, who was invited by the Government of India to advise it on Industrial Health, made an extensive tour of factories all over our country. His observations * reveal a sad state of Industrial Health. Some of his observations are given below:

(1) The employers were completely indifferent to the living conditions of workers in industries.

* Report of the Scientific Advisory Board, 1946, pp. 193-196

(2) A good proportion of factory buildings were unsuitable for a tropical climate, in fact for any climate.

(3) Factory lighting was too poor.

(4) Factory canteens were dirty and the diet ill-balanced.

(5) There is a callous disregard among employers in general regarding the need for protection of workers against industrial health hazards.

(6) Though legislation provided factory inspection and adequate safe-guards, this is only on paper and precious little is done.

He recommended the following measures to be undertaken.

(1) Research in Thermal environment as the radiant temperature is a very important factor in the worker's environment, particularly in the tropics.

(2) Fact finding surveys.—
On factory lighting and its effect on the efficiency of workers, as revealed by spoilt work or output.

(3) To co-relate sickness absenteeism and accident frequency—the records for which are practically non-existent—with thermal and meteorological findings.

(4) To measure the incident of silicosis, tuberculosis and poisoning by toxic solvents.

He also stresses on the need for researches on such problems as the optimum hours of work, the arrangement of the working hours, increasing efficiency by greater mechanisation etc.

India is on the eve of great industrial enterprise and within a few years new industries of various types on vast scales would be started. Our Government should therefore enforce comprehensive industrial health regulations which would benefit both the industry and workers therein.

These regulations are well discussed and detailed in Adarker's report as well as in the report of the Health Development Committee. We hope that the Government would closely follow the recommendations contained in these two reports.

On only one point we wish to make our observation and that is with regard to teaching of Industrial Medicine. At present very little of it is taught in our medical colleges. The question that would arise soon will be whether it should be included in the syllabus of the undergraduate studies or treated as a post-graduate subject for specialisation by those who seek a career in Industrial Medicine. We would choose the latter alternative for many reasons. Already the medical curriculum is bloated with too many subjects and it will be an unbearable burden if the vast subject of Industrial Medicine is included in it. Secondly it can be taught more completely and effectively in a specially organised post-graduate course than what is possible in the necessarily brief under-graduate study.

Another question that would arise is the extent of responsibility of the proposed Industrial Health Service in the Adarkar's report. Should it treat only the industrial hazards to which the workers are exposed or also other diseases which they may contract in common with the rest of the population? We are of the view that the latter function should be delgated to the National Health Service while the Industrial Health Service should confine itself to the prevention of diseases and accidents in industry and to the rehabilitation of the disabled workmen, but it should undertake the education of the workers in the preservation of their health and well-being.

LICENTIATES IN SERVICE.

There are about 3000 licentiates in various medical services of the country, the largest number being employed by the provincial governments. They are placed in what is called the *Subordinate* medical service, on what Sir Gordon G. Jolly characterised as "menial pay and status".

The All-India Medical Licentiates' Association has been urging on the authorities for the last 41 years to abolish the subordinate medical service and to take the licentiates into the provincial medical service on the basis of a competitive examination. It has been a mere cry in the wilderness.

The Association has gone even to the extent of effecting the abolition of medical schools in the hope of helping the cause of attainment of unitary type of medical education and also of helping the authorities to establish one unitary type of medical service. Most of the medical schools are abolished but

the subordinate medical service yet remains in all the provinces!

Is it not the duty of the Government to integrate the existing medical licentiates in service with the medical graduates in service as and when they abolish the medical schools? This is an implied statutory duty which they should have discharged. We may cite an example. When legal education was reformed in Madras Province and Bachelor of Law was made the minimum standard of legal education, all those who were not Bachelors of Law but who have only passed the pleadership examination were allowed to enroll themselves as advocates of the High Court, on par with the Bachelors of Law, subject to only one condition, namely they should have been in the practice of legal profession for a minimum period of five years. We question why similar treatment should not have been accorded to the medical licentiates.

It is not yet too late to retrieve the position. None of the Provincial Governments have so far given any positive reply to this demand of the licentiates. If they believe that the licentiates could not be absorbed in the Provincial Medical Service on the ground that they are much inferior to the medical graduates, let them say so. Then the future medical licentiate would decide whether to choose service or practice. If on the other hand they believe that licentiates are entitled to equal opportunities as are normally given to the medical graduates, there should be no delay in the re-arrangement of the medical service. What we want is a positive reply from the provincial governments one way or the other. Of course they are pre-occupied with so many urgent problems, but that cannot be an excuse for their apathy and gross indifference in this matter.

Whether our Association would agree or not, it would welcome a frank statement from the provincial governments as to what line of action they intend adopting in respect of this particular demand of the medical licentiates in service, viz., the abolition of subordinate medical service and the absorption of existing licentiates in the provincial medical service on a reasonble antedate for the years of service already put in by them.

We are quite aware of the beggarly remuneration and provoking conditions in subordinate medical service. This intolerable state has already given rise to the idea of "direct action" by the Licentiate Service personnel. They have asked the Association to initiate and lead the "direct action". The Association has appointed a sub-committee to study and report what type of "direct action" is feasible consistent with the dignity of the profession and the interest of the public. Let us await this report.

Meanwhile we earnestly request the provincial Governments to enunciate their policy in respect of the unification of the medical service. That would avoid unnecessary misunderstanding and each party to the dispute would then know where it stands and how it should act.

OTHER ARTICLES

What Every Physician Should Know About Cross-Examination:—MYRON SULZBERGER, JR. *Member of the New York Bar (From the Bulletin of the New York Academy of Medicine, October, 1946.)*

Physicians are in court almost as frequently as lawyers. It is said that court records in New York City would reveal that suits involving personal injuries constitute about 70 per cent of the litigation. Since each side will have at least one physician, there are at least as many doctors as lawyers in every such case. This situation is not peculiar to New York City; it is reported that it exists throughout the United States. Furthermore, personal injury actions are not the only species of litigation where physicians are required. Doctors testify in goodly numbers in will contests involving, insanity, in various criminal trials, such as assault, rape, homicide and the like, and in health, accident and disability insurance cases. All in all, it appears that the physician is quite a "man about court." Wisdom would appear to dictate that physician should familiarize themselves with the problems of witnesses.

A famous English barrister once said, "There is never a cause contested, the result of which is not mainly dependent upon the skill with which the advocate conducts the cross examination." This statement was made in the days when flowery oratory was in vogue and when it played a very important part in the trial of cases. Today, that form of oratory is passed, and it plays a minor role in litigation. If cross-examination was the decisive factor in litigation in those days, it is doubly true today. Though the quotation set forth here was made to convince lawyers to become proficient in the art of cross-examination, it is equally appropriate for witnesses. This is especially so for physicians because more is expected from the professional expert by the triers of the facts. Any person who takes the stand will make a better and more convincing witness if he becomes familiar with the methods utilized by cross-examiners.

All witnesses are subjected to both direct-examination and cross-examination. Both terms should be defined and explained simultaneously if the process of cross-examination is to be fully appreciated.

Law dictionaries define direct-examination as the examination of a witness by a lawyer who calls the witness to the stand and who first examines him, and they define cross-examination as the examination of such witness by the adverse lawyer, after the conclusion of the direct examination. Webster's Collegiate Dictionary defines "Cross-Examination" thus: "To examine or question, especially as a check to a previous examination."

The true significance of cross-examination and the purpose and utility of the process and the reasons for its effectiveness can be fully appreciated and understood only if it is examined in the setting in which it is used and of which it is an integral feature —the trial of a case in court. Cross-examination is a practical art and it is natural that it fitted and adapted itself to its setting.

The principal feature of this setting, in so far as cross-examination is concerned, is that the direct examiner presents only such evidence, and calls only such witnesses, and asks only such questions as will favor the side of the examining lawyer. The direct examiner will ask for nothing except facts favorable to his own side. The direct examiner does not ask the witness to disclose all that he knows, and the witness does not do so. If the examination of the witness stopped at this point and no attempt was made to find out what else he knows, the testimony would probably present half truths only. The direct examiner does not ask questions that might impair or discredit the story or the witness that he presents to the judge and jury. The factors that might weaken the original testimony or that might lessen the credit of the witness might remain hidden if the examination were to end there. The best person to make the search for what remains hidden, the undisclosed remainder, is the person who is most interested, the opponent. Thus, when the direct examination is concluded the cross-examiner is given an opportunity to complete the picture—to develop and bring to light those facts and circumstances which may have been suppressed on the direct examination. If any facts unfavorable to the direct examiner's case really exist and these are to be learned, the cross-examiner must ferret them out.

The practical effect of all this is that the cross-examiner will probe only for such facts as will be unfavorable to the direct-examiner's case. Since partisan counsel will, between them, endeavour to bring forth all the favorable and unfavorable facts concerning each side, a fair appraisal of the witness and the stories should ultimately result.

Whenever partisans present evidence, it is desirable, before any evidence is accepted as wholly trustworthy, that it be subjected to testing and checking. The test can be effected by subjecting the offered evidence to a scrutiny and analysis calculated to discover and expose, in detail, its possible weakness and thus to enable it to be estimated at no more than its actual value. That is the function of a cross-examination and it is called the finest weapon ever invented to discover truth.

The ultimate objective of a cross-examination is to extract from the witnesses whatever may be unfavorable to the direct examiner's case. The unfavorable matter would be of two varieties, (1) facts that support the cross-examiner's contentions, and (2) facts that discredit the witness or the story or that weaken the direct examiner's case.

To extract each unfavorable fact constitutes a separate and distinct objective for the cross-examiner in every case. The nature and character of the unfavorable facts will vary with the case and the witness. The number of possible unfavorable facts is limitless.

An illustration will serve to clarify and explain this statement: A case of assault will be assumed. The sole disputed issue is, 'Did defendant shoot plaintiff at 3 A.M., on November 30, 1939 in Grand Central Station?" The plaintiff contends that the defendant did this, and defendant denies it. Though a single issue exists, it contains three elements: (a) did the defendant shoot the plaintiff, (b) did the shooting occur at the Grand Central Station and (c) did it occur at the time in question. Separate witnesses may be called to prove each element of, or the whole of, this proposition. Witness Roe is called by plaintiff and says that plaintiff and defendant were at Grand Central Station immediately before 3 A.M. on November 30, 1939. The witness is then turned over to the cross-examiner for questioning. The cross-examiner will ask himself, "What facts can be extracted from witness Roe that will be unfavorable to the plaintiff's case?" A very meager list of facts that would tend to support the defendant's proposition, or that would tend to discredit witness Roe, or the statement that plaintiff and defendant were at Grand Central Station at the time specified are these: Roe did not actually see the plaintiff and defendant at the Grand Central Station at the time in question, he simply heard they were there from plaintiff, Roe is a confirmed liar, Roe would not recognize the plaintiff or the defendant if he saw them, his eyesight is very poor, Roe is related to and very friendly with the plaintiff, it was very dark at the time and place in question and Roe could not have seen these men, plaintiff and defendant were very friendly both before and after this occurrence, defendant did not own a weapon, Roe was convicted of numerous crimes including perjury, Roe is very susceptible to suggestion, Roe's statement is improbable in numerous particulars, he had innumerable talks about the matter with plaintiff and his lawyer, that Roe made previous contradictory statements and that he is biased and prejudiced against people like the defendant.

Any or all of these facts would tend to create doubt or disbelief in the proposition being maintained by the plaintiff. The list of unfavorable facts set forth here could be expanded almost *ad infinitum*.

This illustration should make the distinction between the two varieties of unfavourable facts more apparent. Facts of variety number one (those that support the cross-examiner's contentions) are not intended to impugn or impeach the credit or trustworthiness of the story or the witness. Factual examples of variety number one in this suppositious case are: the plaintiff and defendant were very friendly before and after the time when the shooting is supposed to have occurred and that the defendant never owned a weapon. These two facts do not

impeach Roe's trustworthiness or contradict Roe's statement that plaintiff and defendant were at the Grand Central Station at the time specified. These two facts merely lend support to the cross-examiner's contention that the shooting did not occur, on the theory that it is improbable that the defendant shot plaintiff if they were so friendly both before and after the occurrence was supposed to have taken place, and if the defendant never owned a weapon. The search for facts of the second variety is made to induce disbelief, or to destroy confidence or trust in the story or the witness or both.

The art and the skill in conducting an actual cross-examination consists in knowing when to question a witness and in knowing what to extract from each witness and how to do it.

To cross-examine or not to cross-examine, that is the first question. Cross examination is a double edged sword. It is a dangerous weapon to use. Before a lawyer commences to question each witness, he wonders, "What hidden facts will the cross-examination reveal? Will these hidden facts strengthen or weaken the case of the cross-examiner? Will they show that the witness is trustworthy or unreliable? Will the cross-examiner develop facts favorable or unfavorable to the cross-examiner's case? Will the answer give the witness a personal victory over the cross-examiner?" The lawyer faces this dilemma before every question is asked on cross-examination unless he knows in advance exactly what answer the witness will give in response to each question. What an enigma for the cross-examiner who is in doubt as to what the witness may know or say or do. "There lies the real danger in cross-examination and there begins the art."

The danger is enhanced by the fact that if a witness is strenously cross-examined and not impeached in any particular, the story and the witness will be strengthened in the eyes of the triers of the facts, on the assumption, that a witness who is not discredited after a thorough and searching cross-examination must be telling the whole and entire truth. Though the belief is common among witnesses and juries that "a lawyer can do anything with a cross-examination," that he "may make the worse appear the better reason" and that he "may make the truth appear like falsehood," lawyers know that these ideas are wholly without basis or foundation. Cross-examination has been aptly described as a "mental duel" between lawyer and witness. This "duel" often results disastrously for the lawyer as these illustrations reveal:

An instance is furnished by a surgeon's suit for a substantial fee. "Can you tell me," asked the lawyer, "How long it took to knock off that operation?" "Two hours" replied the surgeon. "The labor of two hours then is that for which you ask $ 1,500?" "No," replied the surgeon, "I ask it for the knowledge of a lifetime." The lawyer asked one question too many in this exchange with a renowned surgeon, and came off second best.

A well known illustration, reported by Wigmore, concerns the famous Lord Coleridge in the case involving a Sister of Mercy, who was expelled for transgression of the rules of the Convent, and therefore commenced suit for libel. Coleridge contended that the breaches of discipline were trivial. He pressed Mrs. Kennedy, "the matron," on the point, asking what had Mrs. Saurin done? Mrs. Kennedy said as an example that she had eaten strawberries. "Eating strawberries!" exclaimed Coleridge, "What harm was there in that?" "It was forbidden, sir" said Mrs. Kennedy–a very proper answer. "But Mrs. Kennedy" reiterated Coleridge "what trouble was likely to come from eating strawberries?" "Well, sir," replied Mrs. Kennedy, "You might ask what trouble was likely to come from eating apples, yet we know that trouble did come from it." The answer floored Coleridge.

Though art of cross-examination begins with knowing when "to cross-examine or not to cross-examine," it centers around knowing what to extract from each witness so that the direct examiner's case may be weakened, and his witnesses and their testimony discredited, and in knowing how to extract it. So that physicians may more successfully cope with an effective cross-examination, the methods employed by cross-examiners to achieve these ends are for convenience and simplicity being arbitrarily divided into four categories: (1) The vulnerable points of the case; (2) Material for cross-examination; (3) Fixed objectives and (4) The manner of questioning the witnesses.

1. The cross-examiner constantly hunts for the vulnerable spots in the story and the witness–those vital spots that seem most susceptible to a successful attack. The skillful cross-examiner develops a sixth sense in discovering the vulnerable points in each case. The vulnerable points in a given case may be its most improbable feature or a particular trait or characteristic of a witness. The facts in each case, and the make-up of each witness, determine the points of vulnerability in the matter. The physician's records, or the fees said to have been received, or the nature of the treatments administered may reveal angles that will serve as targets for investigation. Similarly, features affecting the witness himself may lead to the place where the attack should be directed —examples of these would be: The witness's memory or his opportunity to observe what he claims he saw or the witness's temper or stubbornness or bias or relationship to a litigant. There is really no limit to the possible number of vulnerable spots that can be selected.

2. While the direct examination unfolds, and while the cross-examination is in progress, the cross-examiner searches for material for cross-examination–the ammunition that the cross-examiner uses for attacking the witness. Whereas the vulnerable spot is the target, the material for the cross-examination is the weapon with which the attack is made. The finest ammunition is a statement, or a writing, that contradicts or is inconsistent with a witness's oral testimony. The search for material really commences long before the trial. The search is made for everything and anything that might affect the witness's credit or contentions.

3. An effective cross-examination demands that counsel have definite and fixed objectives in mind while the cross-examination is in progress. However, wherever possible, the cross-examiner keeps these objectives hidden from the witness. It is axiomatic

that the only way to get anywhere is to know where you are going." This is especially appropriate advice for cross-examination. These fixed objectives may be broad or narrow, To discredit a witness or a story may be the mission of the cross-examination or it might consist in being to secure an admission from the witness that he "does not remember what happened on November 30, 1939 at 3 AM., at Grand Central Station." Each unfavorable fact that counsel might elect to extract can constitute a separate fixed objective for the cross-examiner. To explore generally into a particular subject matter could likewise be an objective. Any end might serve as an objective for the cross-examiner.

4. It is the answer rather than the question that weakens the case or impeaches a witness. It is the answer that either affirms or denies the unfavorable facts that the cross-examiner seeks to extract. The cross-examiner's problem is to persuade the witness to give or to obtain from him the desired answer. The questions are simply the means by which these objectives are attained. Since witnesses do not always easily or willingly disclose the answer that is wanted, a plan of attack (a method of questioning each witness) will be devised that is best calculated to achieve the desired end. The technique of questioning witnesses actually utilized in law courts is based on sound and tested principles of logic, psychology and human nature.

The method of questioning witnesses naturally varies a great deal. The cross-examiner sometimes adopts a rapid fire method of questioning. This is tried to prevent a witness from manufacturing a story as the examination proceeds. The rapidity of questions may force the witness to answer truthfully because he is not given time to create a cohesive fabrication. The psychology of suggestion is another device of the cross-examiner. Here the form of the question is intended to suggest an answer. With a pliable witness, the question may be phrased so as to suggest the desired answer. With a hostile or stubborn witness the question may be so phrased that the desired answer is wholly contradictory to what the witness thinks the cross-examiner wants. Being a contrary-minded person, or an individual who does not want to be led, this witness will disagree with what he thinks the cross-examiner wants—irrespective of whether it is true—on the theory that an answer opposite from what the cross-examiner apparently seeks must be good for the side this witness favors. What may be called the "off-guard technique" is often used with success. There a witness will be asked a series of questions on an apparently immaterial problem, and then a pertinent question will be shot at the witness on the subject about which the cross-examiner is most anxious for information. The witness may be off guard and thus give a truthful reply. With a malingering faker claiming deafness, the cross-examiner may ask the witness as he leaves the stand—when the witness is less alert, believing that the examination is concluded and in a voice too low to be heard by the witness if his claim of defective hearing were true—"Mr. Jones, didn't you forget this piece of paper?" If the witness hears the question, he will probably give an answer. It must be apparent that illustrations of this character could be set forth without limit. Those given are merely intended to give the reader a sketchy idea as to what is meant by the "ways of questioning" a witness.

Though each witness and each case is an individual problem for the cross-examiner, for decades similarities were discerned by experienced cross-examiners both in witnesses and in the factual situations as to which witnesses were questioned. Experience taught the trial lawyer that with witnesses of a similar kind, or with a like factual situation, a reasonably effective cross-examination could be conducted along substantially similar lines. Substantially identical cross-examinations—here called standard patterns of cross-examination—thus developed, and these standard patterns were passed down by lawyers from generation to generation. So long as they worked satisfactorily they were used. When "existing" patterns cease to be effective, lawyers will develop new ones. Where similar witnesses or factual situations occur frequently, the cross-exmination for that character of witness or situation becomes quite standardized and routine. The lawyers themselves do not always realize when a given examination is a "standard pattern of cross-examination." Unfortunately and all too frequently, the cross-examiner's "stock in trade" consists of a few "standard patterns" and when these are exhausted without advantage to the cross-examiner, the lawyer feels more beaten than the witness.

Based on these similarities witnesses and factual situations are classified, typed and catalogued for cross-examination. There are various types and kinds of witnesses, the exaggerator, the child and the expert and the like. Substantial similarities will exist for each of these separate types. The variety of different factual situations is equally numerous. There would be included here the automobile accident, the execution of a will, the making of a contract and any kind of factual situation involved in litigation. Each of these factual situations will have certain things in common. Nothing appearing here is intended to convey the impression that standard patterns of cross-examination are tricks. They are nothing of the kind. The "standard patterns" are sound legitimate methods of cross-examination based on tried and tested principles. No case is ever concluded without some examples of standard patterns of cross-examinations This article will consider those patterns of cross-examination that will confront the physician most frequently.

"Never cross-examine an expert in his own field" is an oft repeated adage. This advice is earnestly followed by skillful lawyers in the examination of physicians. Lawyers thus avoid a cross-examination of the purely medical aspects of the physician's testimony, unless the character of the litigation makes it essential for the lawyer to study and acquaint himself thoroughly with such phases of the case. Physicians must anticipate, therefore, that generally, they will be cross-examined concerning non medical matters.

Before illustrating standard patterns of cross-examination with typical appropriate examples, a word of general advice to witnesses with respect to the art of answering questions might be in order. Though this advice may appear too obvious, it is

amazing how infrequently it is followed. The witness should listen to each and every question carefully and he should think over the question before hazarding an answer. The witness may and should take all the time that may be reasonably necessary to give an answer. No extra points are scored for speed. If the witness does not understand a question he should say so and request that it be repeated. If the meaning of the words are not clear, he should ask for enlightenment. It is better to be known as an ignoramus than a liar. If the witness does not know, or remember the answer, he should say so. If he is not sure or certain of the answer, he should reply that he believes, or thinks, that the correct answer is so and so, but that he is not sure or certain of it. However, the solution for this, is not for the witness to answer that he does not know or does not remember when he does in fact know, or does in fact remember, for this is a false answer. If a witness was asked, "Did you ever serve a term in Sing Sing prison," the answer "I do not remember" would hardly satisfy.

The witness should answer the specific question asked. This may seem like unnecessary advice but it really is quite important. Each answer should be responsive to the question. If the witness gives an unresponsive answer the jury may believe that he is deliberately attempting to be evasive. Volunteering information not called for may be quite dangerous, and it may serve to give the crose-examiner ammunition to discredit the witness. Many famous cases illustrate how the habit of answering only the question asked, and of avoiding the practice of volunteering information not called for in the question proved extremely helpful to the side that called the witness. A classic illustration of this principle is reported by Keed on "Conduct of Law Suits":

"Some time ago the writer, while waiting in court, watched the trial of a case where the plaintiff sought to recover damages for a breach of warranty. The defendant had sold him a horse with an express warranty that he was sound and kind and free from all 'outs.' The next day the plaintiff noticed that a shoe was loose, and he undertook to drive him into a blacksmith's shop to have him shod, when the horse exhibited such violent reluctance that he was obliged to abandon the attempt. Repeated efforts made it evident that he never would be shod, willingly, and therefore he was obliged to sell him. The defendant called two witnesses. The first, an honest, clean looking man, testified that he was a blacksmith, that he knew the horse in question perfectly well, and he had shod him about the time referred to in the plaintiff's testimony. 'Did you have any difficulty in shoeing him?' asked the defendant's counsel. 'Not the least. He stood perfectly quiet. Never had a horse stand quieter.' The other, a venerable-looking man, with a clear, blue eye, testified that he had owned the horse and that he was perfectly kind. 'Did you ever have any trouble about getting him into a blacksmith's shop?' 'Well, sir, I don't remember that I ever had occasion to carry him to a blacksmith's shop while I owned him.'

"The plaintiff's counsel evidently thought that the cross-examination would only develop this unpleasant testimony more strongly, so he let the witnesses go. The jury found for the defendant. The next morning, as the writer was sitting in court waiting for a verdict, a man behind him, whom he recognized as the blacksmith, leaned forward and said, You heard that horse case tried yesterday, didn't you? Well, that fellow who tried the case for the plaintiff didn't know how to cross-examine worth a cent. I told him that the horse stood perfectly quiet while I shod him; and so he did. I didn't tell him that I had to hold him by the nose with a pair of pincers to make him stand. The old man said he never took him to a blacksmith's shop while he had him. No more he did. He had to take him out into an open lot and cast him before he could shoe him.'"

Witnesses should remember that it is not essential to impress the jury that they possess a high I.Q. They should convey the impression that they are honest, fair and trustworthy. This is especially so where the witness is being asked to testify as to facts. Where the witness is called upon to express an opinion or to act as an expert, the learning, the qualifications and the experience of the witness then become quite relevant.

A few examples of "standard patterns" of cross-examination follow:

1. An investigation as to a physician's qualifications and experience is a "standard pattern" of inquiry. The investigation will ordinarily cover the physician's hospital connections, the phases of medicine in which he specializes, the number of cases similar to the case in suit that he has previously handled, his experience in the field of medicine under inquiry, his familiarity with the medical writings on the subject and all those factors from which a doctor's qualifications and experience are usually measured. The physician's answers should be frank and fair and his qualifications should not be exaggerated or minimized. The witness's stand is not the place for self-praise or self-derogation. Each can be ruinous for the physician. An example of what happened to a physician who tried to appear more learned than he actually was is set forth at this point. It involved a suit for disability insurance benefits. Plaintiff claimed total disability as a result of a heart condition—angina pectoris. The insurance company's physician was a heart specialist. Counsel for the plaintiff came to the conclusion that the defendant's physician was inclined to exaggerate; that he was unwilling to admit ignorance on any subject affecting heart disorders. The witness gave the impression of being an unusually pompous individual. Plaintiff's counsel thereupon prepared a list of texts which included two fictitious works. "Harrison on Heart Disease" and "Page on Heart Failure," which were "manufactured" by counsel. The pertinent cross-examination relative to the medical authorities follows:

Q. Are you familiar with the authoritative texts on heart disease?

A. Of course.

Q. I suppose that you have read the authoritative texts and refer to them constantly in your work, correct?

A. I would say that I possess most of them in my own library.

Q. Have you heard of Lewis on Diseases of the Heart?

A. Certainly.

Q. Have you heard of Levine on Clinical Heart Disease?

A. Of course.

Q. These books are standard authorities on the heart?

A. That is correct.

Q. I suppsse that there are few books on the heart that are not known to you?

A. I would say that is correct.

Q. Have you heard of P. D. White on Heart Disease and Harrison on Heart Disease?

A. I have.

Q. What about Page on Heart Failure and Anderson on Heart Diseases?

A. Certainly.

Q. Would you say that you have read or examined all the books that I have mentioned?

A. I would say that I not only read them but studied them carefully as well.

Q. Do you know whether any of the book that I have mentioned contain statements contrary to the conclusions that you have made?

A. I do not recall, though I doubt it. If they exist, show the passages to me. You apparently have a number of medical text books on the counsel table.

Q. Do you keep abreast of all current writings on the heart?

A. That's essential in my speciality.

Q. How frequently would you say that you had occasion to study or refer to the texts that I have mentioned?

Preparation is the key to success for the medical witness. A lawyer prepares for cross-examination. Why should the physician do less in anticipation of this mental duel? The physician's preparation should commence with the examination of the patient and with the making of the medical records of the case. Both should be made with an eye toward the trial. Before the trial a study should be made of the subject matter of the pertinent texts and the authorities should be examined. Conferences with the patient and the lawyer before testifying are most desirable. If all these instructions are followed the doctor will step up to the witness stand ready to devour the blood of the cross-examiner.

A Conception of Industrial Health*—By R. C. BROWNE, D.M., M.R.C.P., *Nuffield Professor of Industrial Health in the University of Durham King's College, Newcastle-upon-Tyne*, (*From the B. M. G. July 14, 1947*).

At any moment of time, and especially in a relatively free-thinking community, the volume of public support lent to an idea is often as important as the intrinsic novelty of the idea itself, and when the pressure of opinion surpasses a certain critical value action leaps from latency to life. The conception of industrial health now has reached this point. It is, however, always a salutary exercise, on starting a new venture, to consider whether its aims and outlook are really original, whether they represent a step in a process of thought which started long ago, or whether they are merely the return of a cyclical fashion.

Some Preliminary Thoughts.

It is also appropriate now to put forward some preliminary thoughts about this new Nuffield Department in King's College, and about the methods of approach which it is intended to adopt in order to study some of the facets of this very wide problem of industrial health. But first, perhaps, the very word "health" itself requires some consideration, as we must remember that the classical conception, which the Greeks called had in their day a limited application, usually to the soundness of the body only, and now, like so many other words of like derivation, it has lost caste and become our English "hygiene" with its stereotyped suggestion of soap and water, teeth and tooth-brushes, forms and files, strictly departmental thinking, and rather dull courses of lectures.

But health surely means, among other things, freedom from disease, good performance at the job whether of mind or hand, the right rate of growth and the happiness born of a satisfactory wholeness of existence, Moreover, in their wisdom the founders of this Chair intended to indicate a breadth of interest, especially in the direction of the causation and prevention of disease, which would not have been clearly shown by the use of any other word. It is, then, worth while taking trouble to define what is meant by health, because when a new subject or a new attitude towards an old subject comes into view it is only too easy to be under a misconception about what is meant, or even to say that there is no such thing; and, indeed, the most recent attitude towards medicine, which is often thoughtlessly criticized along these lines, is that of social medicine, which some people deny exists at all, and which others even think is medicine in relation to the State.

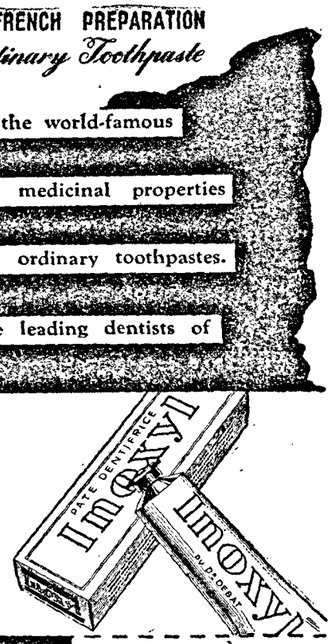
It may, therefore, be suggested now that the field of study of our new department here may be considered to be the reciprocal and triple relation between job and health and social state, and it is worth while noting at this point that this contrasts somewhat with a conception based upon industrial *medicine* or *disease* as usually conceived, because there is, of course, no true dividing line between industrial and non-industrial illness.

* An inaugural lecture delivered at King's College on Feb. 1947.

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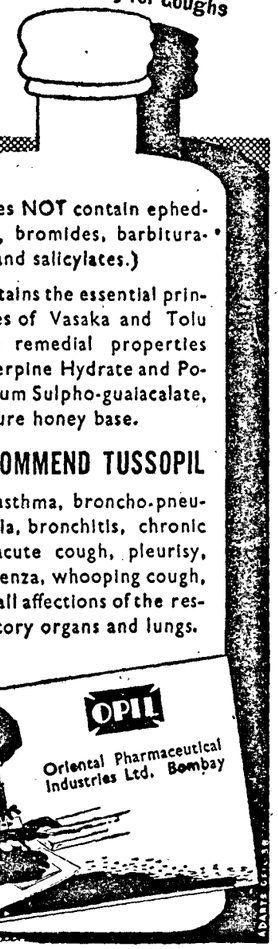
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Foundations of Industrial Health

As long ago as 1670 the Italian doctor Ramazzini laid the foundation stone of industrial health with his book *De Morbis Artificum Diatriba: A Dissertation on the Diseases of Workmen.* Ramazzini was not only a bedside doctor but spent much of his time visiting workshops and mines, noting especially the conditions of work, and his conception of industrial health was wide, as shown by the later edition of his book, which included chapters not only upon the diseases of learned men but even upon the health of nuns—an investigation which we may well imagine to have taxed his ingenuity to a high degree and to have involved secret methods, perhaps including even personal disguise.

After a long interval this work was followed, in the middle of the eighteenth century, by a most brilliant practical demonstration of preventive medicine applied to a small community by the naval captain James Cook, who, on a voyage which lasted more than three years, which stretched from latitude 52°N. to 71°S., and which meant, therefore, going through the Tropics, lost through illness but one out of his crew of 118 men. The Royal Society appropriately marked this feat by awarding him the Copley medal for his paper entitled "The Method taken for Preserving the Health of the Crew of His Majesty's Ship, the *Resolution*, during her late voyage round the world." Now Cook's outstanding demonstration, the more notable because he was a layman, was not so much due to his having made any new discoveries in the science of preventive medicine, but can be ascribed almost entirely to his making the fullest application of the principles which were known at the time, to his attention to detail, and to the fact that he had complete charge of a small and isolated community.

The next step forward in this subject came in 1831 with publication of a book entitled the *Effect of the Arts, Trades, and Professions and Habits of Living on Health and Longevity, with Suggestions for the removal of many of the agents which produce Disease and shorten the duration of Life* by that famous Leeds clinical surgeon Charles Thackrah. This publication went into two editions in two successive years, but unfortunately the writer died at an early age, long before his prime.

The next figure in this field, who towers, moreover, above all others before or since, is that of the great lay sociological sanitarian Edwin Chadwick. In the nineteenth century it was Edwin Chadwick who laid the foundations of what we now call social and industrial health. In conjunction with his colleague, Dr. Southwood Smith, he undertook an inquiry into the effects of labour in factories upon the general condition of the operative classes, and carried out an investigation upon the employees of the East India Company. Chadwick pointed out that the recording of the incidence of sickness is the first step necessary to indicate its origin, and he suggested that all records be related to the job, wages, price of food, and, indeed, to any and every change in the material circumstances which affect the workpeople. Moreover, this great man was also interested in the effect of an abnormal environment upon the human being, and he therefore undertook a research to find out how tailors reacted to the hot and humid atmosphere in which they worked.

Set this work against that being done and the outlook which prevails to-day, when we see new departments of social medicine and public health using the morbidity or sickness survey as one of their chief weapons of inquiry, and when recently the Medical Research Council and the Royal Navy have together investigated the action of hot and humid atmospheres upon a man's performance. Notice that we are only now beginning to give effect to ideas first put forward by Chadwick nearly 100 years ago.

In the outlook, of three of these pioneers—Ramazzini, Thackrah, and Chadwick, a physician, a surgeon, and a non-medical sociologist—can be seen three of the four essential methods of approach for any new department of industrial health—namely, the bedside or clinical, the outdoor or field, and the statistical, for in those days the laboratory had not attained its present eminence. It may incidentally be noted here that Chadwick's point of view demonstrates the artificiality of dividing social from industrial health, since he emphasized that health is related not only to job alone but to every circumstance which surrounds the working man.

Recent Trends in Industrial Medicine

The last 50 years have not, perhaps, produced any such outstanding individual figures as these, but they have been notable for the development of a number of important trends in this branch of knowledge. *Pari passu* with the Industrial Revolution, which of course is still taking place, and with the introduction of more and more machinery, came a volume of preventive legislation, and with it the setting up of both mechanical and medical inspectorates directly responsible to the Government, for bringing about compliance with the law. With the increase in the complexity of industry comes the widening of the range of chemical substances which are used, and we have therefore seen a great rise in preventive toxicology, associated in the past with the name of Sir Thomas Legge; and indeed, until recently, this approach to the subject has been almost synonymous with what is meant by industrial health. Likewise, too, with increasing mechanization has come the rise and fall of the conception of fatigue as a scientific entity, with the subsequent realization that its study is merely another way of looking at all the different environmental influences acting upon the working man or woman.

We have also seen in the last 30 years a great increase in research by committees, sometimes sitting at a distance from where the problem lies; and we have witnessed an attempt, with the various Compensation Acts, to equate money with injury and illness, together with an only partially successful realization that a physical token cannot replace even that which is physical in a human being, and still less can it replace that which is psychological, which indeed money may make worse. These are important points to keep before us, because every illness of the body affects the mind, and many of the mind the body too. This attempted false equation produces also the attitude of mind which, though perhaps rightly, pays a man more for doing a dangerous job, then wrongly stops at that point and forgets to make it safer.

Two world wars have greatly accelerated the winning of knowledge in this field, but some of the early effort in the late war was either a repetition of former work or it was designed to re-emphasize principles which were already known, and we observed the melancholy but understandable spectacle in the stress of 1940 and early 1941 of industry attempting to run in almost complete ignorance of much of what had already been discovered by the Industrial Fatigue Research Board of the Medical Research Committee in the previous war.

During the recent struggle, however, a type of research with a rather different emphasis began to appear in each of the three armed Forces, the so-called personnel research, which was aimed largely at attempting to fit more closely to his needs the many and often very complex mechanical situations in which the modern fighting man finds himself—to use, in other words, the principles of anatomy and physiology to modify the mechanical *milieu*.

The New Nuffield Department

How, then, in the light of this brief historical survey should the new department here set about its job? It is intended to direct the effort about equally into three interconnected spheres—the outdoor field of industry, the hospital, and the laboratory. In the field, man will be considered socially, in his group or herd; and here an attempt will be made to assess his liability to disease and accident, and, in certain cases perhaps, his performance at the job, and to set these against the conditions in which he lives and works. The methods of statistical survey will be used here. The experiment, as it were, is already going on, and we have therefore to devise the best methods of sifting out the answers to our questions and, indeed, to consider carefully what questions should be posed. We hope to undertake such a survey in some representative parts of industry in this area. The problems here are not the major illness or the dramatic fatal accident, but the short-term illness and, in some industries, the enormous number of small accidents and injuries, some of which become infected and leave much greater disability. Our thinking about accidents often tends to be clouded by too much disapproving attention as to whose fault it was, or whether there was carelessness or not; it is not taken up enough with improving what may be an unsatisfactory relationship between a man and his machine, and, by attention to fundamental mechanical design, with making it impossible for an accident to happen to even the biggest fool.

The design of any piece of apparatus which comes into contact with the human being must be conceived upon a basis broad enough to include not only the aesthetic approach but also some simple principles of anatomy and physiology. These do not, of course, compete with the aesthetic point of view, but supplement it, because surely a thing purposely designed to fit the healthy human body is no less beautiful than one which does not do so. If, for example, a machine is needed, it is necessary to make it fit the sizes of the range of men or women working it. It must be the right width and height, and attention must be given to the method of control; the handles must be so placed that smooth direction can be obtained, and they must turn in the most natural way so as not to be too easy or too stiff. Thus, examples of the type of questions which arise are: Is it better to have a push-pull lever or a turning handle?; and, how must the controls themselves be shaped so that they do not rub the hands and cause breaches in the skin surface which may afterwards become infected? If the machine has indicators to tell the man or woman working it whether it is on or off, whether it is going too fast or slow or in what direction, then these too must be designed and placed for easy reading; and this at once raises the whole problem of the best way to display a piece of information to the human being. Many points here come to mind: What information is it necessary to display at all? Is it better to combine a system giving information both to eyes and to ears? Should the display be round like a clock face, or should it go up and down or from side to side? Is it better to use coloured lights, remembering that about 8% of men cannot distinguish red from green by colour alone, and that therefore indicator lights must have another clue, perhaps in their position or their spacing?

One of the great problems of interest in this whole field of the relationship of functional physiology to industrial design is how to plan and perfect experiments to give objective methods of assessment, and how to use the human being experimentally as a yardstick against which to measure the machine.

Service experience during the war was in advance of present civilian practice on this subject, and machines, like aircraft, were designed by a number of small committees composed of engineers, manufacturers, pilots, anatomists, and physiologists, so that at least an attempt was made to fit machine and man together. It may be thought at first that this method may be cumbersome and slow, but it is surely clear that if it was efficient enough to work in a war of such rapid evolution as the last it is efficient enough to serve civilian uses now.

The results of this type of work in the department, all of which is fairly long-term, with the year as a unit of time, will of course be made generally available to all concerned, and I should like to feel that it will represent the joint co-operation of employer, working man, and college—in short, of Tyneside as a whole.

In addition to the interesting problems already mentioned it is important to think of health, or lack of it, as a personal and individual state to be studied at the bedside in that relationship between doctor and patient which still contains all that is best in medicine; for when a sick person comes to see a doctor, what he wants is help, and not a learned statistical analysis of his condition. It follows therefore, that one of the fundamental difficulties to be faced in a department of this sort is how to combine the coldly critical scientific outlook of the laboratory with warm humanitarianism at the patient's bedside.

The Social Aspect

In the present way of practice in a hospital there tend to be two big gaps in our information which cannot adequately be filled by merely questioning the patient, and they can perhaps be indicated here by asking: What social influences have been acting on him in the past

before he came, and what is going to happen to him when he leaves? In other words, we usually have little detailed knowledge about his home or job, or about his progress on return. To provide this knowledge, a special type of visitor is needed, based upon the hospital and operating as a member of a team from a self-contained unit which has male and female patients, medical nursing, and social staff all in one small area and under unified control.

The duties of this visitor or social worker will be to bring information about the patient's home surroundings and economic background, and, if possible, about his industrial environment as well, and to follow him up on his recovery and return to work. But it may be that we must have a visiting team of two—one for the home and the other for the job.

There are a number of possible trainings which fit a woman for this job of social visiting—those of almoner, psychiatric social worker, or health visitor come at once to mind—but the ideal perhaps would be an almoner with a factory inspector's training in addition. Here personality precedes training in importance, and it is essential that she should work as a member of a team and consider the social information gained objectively under a number of defined headings. There is a tendency for some types of this work to become wordy, diffuse, and sentimental: it is proposed, therefore, that the worker in this outlined department shall spend part of her time upon a specific problem which will provide as a basis something concrete and scientifically planned.

Indeed, the time is now passing when the social work of a large hospital can be adequately performed by an autonomous department functioning without a well-marked chain of responsibility, either to the patient or to the patient's doctor. Moreover, this type of work at its best is time-consuming and personal to the patient or his relatives: surely the social worker should undertake it in direct co-operation with the physician or surgeon who is in charge, and she should act as a full liaison officer between the patient's hospital and home, and in addition should take her share in teaching.

Some of the patients will be suffering from industrial disease within the narrow meaning of the term, which will demonstrate the effect of job on health: but a small proportion will have general medical illnesses, thus linking our specialty closely to the main subject—medicine—and, at the same time, allowing us to study the relationship between returning health and the job.

The Ward as a Co-ordinating Point

The ward, then, will be the co-ordinating point where information from the patient's home and from his work is welded on to the impression gained by the usual bedside methods. This synthesis may well take the form of a small conference attended by representatives of the four groups of people having contact with the patient—the medical, nursing, and social staff and students—because each will have something to add and, in exchange, something to learn.

When, therefore, the patient arrives in hospital he or she will be examined by the doctor in the usual way, but in addition permission will be sought by the social visitor to go to the home, and also to the patient's job: information from both these will be added to his notes, which will also contain a statement on the progress made after he has left with special reference to such things as how long he takes to return to his full job, and whether he maintains it or changes to another. In this way it is hoped to link together the technical excellence of the teaching hospital with the social slant of the family physician and with the industrial slant which only the factory doctor on the spot usually can have, and so to permit the passing of knowledge from one medical compartment to another. This means three diagnoses—home, job, and patient—instead of one, together with a follow-up, in one set of patients' notes.

There will also be an out-patient department, working closely in conjunction with the ward, where people will be seen who are not ill enough to be in bed, and where they and their doctors can be advised about their illnesses. It is most important that a department which spends the greater part of its time upon research should keep its feet firmly on the ground of everyday medicine, and it should therefore share, even if only to a small extent, the hospital's daily work.

From time to time students and assistant doctors will accompany the social worker on visits to gain first-hand knowledge of home and working life, because it is clearly illogical that the first time that a medical student sees a patient in his own home (with the exception of a brief training in midwifery) is as a general practitioner after he is qualified; and the same is true of seeing the patient at his work, which he may never do unless he becomes an industrial doctor. It must never be forgotten that a man is the same man whether at his work or in his home, and, ideally, the same doctor should know about both parts of his life. It is important, moreover, that a university department such as this should attempt to practise and to preach that which is biologically true rather than that which seems at the moment to be administratively expedient, and that it should also try to do something to offset the increasing compartmentation which is spreading so quickly through medicine as a subject.

This conception is, of course, entirely experimental, and there are clearly a number of potentially weak points which will need watching: for example, the proportion of time spent travelling to homes and factories may prove too great; patients or their wives may resent a visitor intruding into houses already somewhat over visited, and the same may happen at the places where they work; but these are only stimulating difficulties, to be overcome with tact and the right approach.

The New Department and the Student

The laboratory in the new department will be used as a tool in the investigation of the more intricate and the more fundamental relationship between man and machine, and here also will be studied those problems in mechanical design already mentioned This has a practical as well as an academic interest. because it is directed towards better mechanical, control, less fatigue, and fewer accidents,

Now health, like charity, should begin at home, and in the future it may well be that the college student's health becomes the responsibility of this department. But care must be taken to distinguish between the detection of a disease and its prevention. One of the most important functions of any students' doctor will be to act as health adviser to the college. He must consider it as an industrial organization, have a good knowledge of the physical and psychological conditions of each faculty, and thus know something about the educational and other loads which press upon the various groups of men and women. He will then in time be able to advise upon such things. On the whole, good organization of work, play, food, and lodgings will prevent more disease than detective methods working relatively late; routine medical examination must of course be done only after it has been decided to admit the student, and the dulling effect upon the doctor of examining large members of normal young people must be considered. We know little about the liability of young men and women to disease, or how they spend their money or their time, and surely there is here an opportunity to combine both prevention and research.

You will no doubt have noticed that, apart from a few passing references, little has yet been said about teaching, and this is because from our departmental terms of reference it must stand second to research. Nowadays the layman rightly expects the doctor to have a wide intellectual horizon and more knowledge of the cause and prevention of disease, and a better appreciation of what is common and important and of what is uncommon and unimportant, however technically interesting the uncommon state may be; yet it may well be doubted in this case whether the customer really is getting what he needs. Mental flexibility is not encouraged by an overcrowded course which teaches too many facts that are of little use, and which does not stress enough the scientific method of their collection, and still less their orderly arrangement and rearrangement in logical argument. Reflective thought flourishes only when there is leisure and free informal discussion among small groups of people— and the medical student is at present allowed too little of either. Indeed, sooner or later the present method must be left behind whereby students are given a course in what is really gross clinical pathology of the museum type and then an attempt is made to undo the wrong with some sort of postgraduate technical diploma. The aim should be to produce the type of mind which can design a way of life instead of merely prescribing physic, which knows something about what is inside and what is outside the 'normal environmental range, and which thinks in terms of prevention rather than of so-called cure. Industrial health is not a specialty within the usual meaning of the term, but is a reorientation of the general subject, and it is highly doubtful whether in the future it will be wise to organize it as a narrow-minded special service. After all, most places of employment are small and could, and should, be looked after by the general practitioners in the area, with advantage both to doctor and to patient, since the doctor will have a wider type of interest and the patient will be cared for by a man who has a better chance of knowing both his job and his home.

How, then, in the light of these considerations should industrial health be taught? It is surely clear that it may perhaps one day replace in the general medical course some dead wood which must be cut away, and that it must not be made an additional subject to be loaded on the already groaning student. A game is learned best by those who play it, and it is proposed, therefore, that students should be allowed to co-operate in the experimental work, when they will learn something about the scientific method and about the application of physiological principles to practical problems. Again, visits to workplace and home should rank as part of the usual course in medicine, and it may well be that it should be compulsory for every student to attend a number of the small case conferences and clinical discussions already mentioned, so that he can see an attempt being made to paint the whole picture of a patient's health. The formal lecture will not rank high in our teaching plans, because in a course like this the need is not for facts but for food for thought, and this is best imparted informally to the smallest number possible. Much of the teaching of this subject will be oblique, using visual methods of display by photographs and other changing demonstrations. For example, there may well be staged, in some convenient place, a selection of protective industrial clothing. A miner, after all, wears a hat, a lamp, and sometimes kneepads; but few students know exactly why, and still less do they realize that these represent elementary steps in preventive medicine.

Staffing the Department

I have dealt to some extent with what this department has to do and now can outline briefly the staff needed to undertake the task. In the early stages of the bedside work full clinical responsibility should be borne by the departmental head; but later, as the work increases and plans mature, a competent clinician capable, if necessary, of bearing the full load must be employed. He should, moreover, have another interest in some investigation of his own. Under him would come two junior assistants, spending part of their time on clinical work and part on fundamental research, and part again in helping with the routine departmental teaching. These men or women will be at the stage of deciding whether, or how, they intend to advance themselves, and, if so, in which of the branches of activity displayed before them in the departmant; and one of them will join the social worker as a small combined team of two. Finally will come a house-physician of some previous medical experience who may one day become an assistant in his turn.

On the laboratory side it is most necessary to have a man who combines a knowledge of statistics with a social or biological outlook and who will perhaps in time develop a small subdepartment of his own; there are needed, too, a physicist or engineer who can plan and make machinery to study our problems of design, and a non-medical but biological assistant to use this machinery as a tool to answer the questions posed. Occasionally, but very rarely one man can do both of these; but usually the purer type of scientist has difficulty in dealing with the variability of response of human beings, and, vice versa, few biologists have the necessary technical

knowledge to design the apparatus used. Finally there must be, of course, ample help in computation and secretarial work, because otherwise much time will be wasted.

The "foreign policy" of a department such as this should be to maintain the closest contact with employer and employed, to eschew politics and compensation questions like the plague, and to avoid the role of expert witness. It should, moreover work in close connexion with the local department of public health, and with the sister—perhaps one should say the elder sister—Nuffield Department of Child Health.

Conclusion

To summarize the story, it can perhaps be said that an organization such as this should have five main duties: (1) to its patients, which it must treat as persons as well as members of an industrial or social group; (2) to its subject, which it may advance a little, chiefly by affording a seed-bed for the germination of potential workers in this field; (3) to the students, by reorientating their medical horizon; (4) to its college, by concentrating mostly upon research, and only slightly upon teaching; and (5) to employer and employed by maintaining a tactful, fair, and independent attitude in outside work.

May I now conclude with some words of John Dryden's which do, I think, foreshadow this new spirit in preventive medicine?

> "Better to hunt in fields for health unbought,
> Than fee the doctor for a nauseous draught,
> The wise, for cure, on exercise depend;
> God never made his work for man to mend."

Medical Organization in Denmark

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General Considerations

Conditions in Denmark have favoured the building of a sound medical system. Untouched by the first world war, and with confidence, in the protection yielded by the League of Nations, we seemed free to direct our attention towards social development. Furthermore, a small country like ours, with a uniform population of about four million—of which about 4,000 are doctors—offers good opportunities for planning and management. Last but not least, we feel that our long-established thoroughly democratic mode of living has been an essential basis for all the progressive work in this field. We were spared major devastations in the last war, and perhaps our need for rebuilding has not engendered an impulse towards social reorganization so powerful as that experienced in Great Britain. So far we have managed to return to the course steadily followed in pre-war days. Nevertheless there is a rising wave of political interest in the field of medical organization—as exemplified in the new Hospital Act of 1946—and though the efforts of the politicians are not at present so determined here as they seem to be in Great Britain, Danish doctors are on the alert and feel the necessity for establishing the medical profession in a position which enables us to control and co-operate in the development. From experience we feel confident that no administration can in the long run do without the expert guidance offered by a responsible representation of the medical profession.

Socialization of the medical profession has already been carried far by a gentle and slow yet steady process, mainly through our sick insurance scheme and communal hospital system. There is considerable difference between our condition and what is usually understood by "State medicine." Our system has important "safety valves," and the co-operation of the Medical Association has always been deemed necessary by health authorities. The medical profession does not react against a natural evolution of the organization necessary in order to secure for the population the best possible health service and medical care. It directs the attention of authorities to points where medical progress or changing social conditions call for reorganization of the system. On the other hand the profession is strongly and unanimously opposed to any measure not justified by real improvement for the population or bearing the hall-mark of political opportunism of experiment. The distance between our system and State medicine, with the doctor as a Civil Servant, may be covered step by step in future development if demanded by the general trend in social evolution. So far, however, there is no obvious need to advance further along this path, and in resisting any revolutionary step the profession feels in accord with the wishes of the people.

The Danish doctor has a good position socially. He is well esteemed, trusted and frequently beloved by his patients. His means are such that he can afford to give his children the best education available; and, if a general practitioner, he is pensioned through a special contract with panel institutions. In the capital he is freed from night calls by the organized nightwatch schemes, and holiday duty is arranged in turns. In the provincial cities conditions are somewhat less favourable, and in rural areas a real vacation is difficult to obtain, since a locumtenent is not readily found; in fact, several country doctors go on year after year without vacations.

The Family Doctor

The Danish doctor is also a very busy man. The general practitioner is regarded as the foundation stone of the campaign against disease, and so is engaged in health control and prophylactic measures besides his ordinary tasks as a family doctor. It is true that the amount of desk work which he is called upon to carry out, such as certificates, prescriptions, reports etc., threatens to leave him too little time for his patients, re-education and vacations; and there is much criticism of and fight against the "bureaucratic weeds" of a not always elastic administration.

Danish patients on the whole are reasonable and understand well the proper use of the medical aid offered to them. A few may be exacting in their demands, feeling they have a right to this and that, and admittedly some doctors spoil their patients by paying too many visits and the like in order to compete against colleagues. Most doctors, however, have quietly educated their clients towards a considerate relationship—if not to the docility known

by our fathers in the times when a doctor was a little king in his area. When complaining about thoughtless patients it is well to remember that you cannot carry on propaganda for medical examination with a view to obtaining early diagnosis of appendicitis, cancer, tuberculosis, etc., and at the same time blame the patients for troubling the doctor with what turn out to be trifling or ridiculous symptoms. More and more doctors manage to employ a female secretary, who assists in the consulting-room and with files and accounts; doctors' wives, however, must often function in that capacity. The organization of home nurses, supported by the communes and regulated by the Health Service, is advancing slowly at present, but home nurses already constitute a valuable asset.

On the whole it may safely be maintained that the health of the population is being well looked after. A watchful and conscientious corps of general practitioners, aided by laboratory, *x*-ray, and other facilities, contrive to keep the standard of their work at a high level. This excellence, as well as legislation, is mainly responsible for the fact that quacks are few and their activities almost negligible. The hospitals, jealously watched over by the National Health Service, are in good order, and hospital treatment is available to any patient in need of it. The public health service is extensive and modern in its control measures. Finally, the General Danish Medical Association is a strong body, with adequate means of keeping members within bounds (for example, panel contracts depend upon Association membership), maintaining the morale of the profession, and retaining its influence and initiative in medical organization. We do not regard our organization as perfect, but it at least has the advantage of having been proved through many years of practical experience.

Two main features characterize the hospital service of Denmark—so far at least as we look upon it ourselves—first, the country is uniformly supplied with serviceable and well-run hospitals, with modern equipment and efficient medical and nursing staffs; secondly, treatment in these hospitals is available to any patient in need of it, irrespective of his means and social position. Such apparently ideal conditions have been the deliberate aim of the National Health Service throughout the epoch of modern hospital development, and though of course many details are in urgent need of improvement, especially after the years of German occupation, the above statements hold good in the broad outline.

The desire for hospital treatment has increased steadily during the last decades, owing partly to the better chance of cure made possible by scientific and technical advances, and partly to the increasing difficulties encountered in home treatment as a result of housing and domestic problems. Thus in a recent ten-year period the number of days of hospital confinement per inhabitant rose from 1.7 to 2.1, or nearly 25%, although in the same period the average length of stay in hospital fell from 33 to 23 days per patient. The increase becomes even more conspicuous if expressed as the number of patients treated in hospitals per 1,000 inhabitants—namely, from 56 to 92, or over 60%. To-day there are 6.1 beds in general hospitals per 1,000 inhabitants for the whole country —a number inadequate to the present demand. The resulting crisis is only partly due to the factors impeding hospital building and extension in recent years; there has also been a tendency towards hospitalization of cases which might have been examined and treated elsewhere—if proper facilities were available. This has led hospital administrators to seek measures less expensive than the provision of hospital beds, such as better utilization of existing hospitals, while on the other hand the Medical Association points out that the conditions in general and specialist practice might be so improved that doctors could manage cases which to-day they must send to hospital.

Pattern of General Hospitals

More than 90% of the 154 hospitals proper are owned by the county and city communes. Three belong to the State, chief among them being the State Hospital in Copenhagen, which functions as a university clinic and receives patients for special treatment from the whole country. A number of hospitals, most rather small, owned by foundations, associations, and Catholic orders, have special tasks in their respective regions or for the whole country. Among the larger and more important are the Finsen Institute, radium centres, orthopaedic hospitals, deaconesses' general hospitals, and the Steno Memorial (Research) Hospital. Most of these receive panel patients on special terms as well as private patients, and are variously subsidized.

About 30% of the general hospitals (comprising 60% of the total number of beds) are divided into two or more departments (surgical, medical, etc.), while 60% (30% of beds) are smaller units, generally headed by a surgeon. Infectious diseases are treated in special wards attached to the regional hospitals and in six separate fever hospitals. There is a tendency to place the cases of infectious disease under the physicians in charge of the medical departments, since the beds and nursing staffs can then be used for general medical cases in periods when the incidence of infectious diseases is low. Venereal and skin diseases are admitted to the general hospitals, five of which have special departments and to two separate hospitals. There are in all nine special departments for obstetrics and gynaecology. Two lying-in hospitals, one in conjunction with a midwifery school, are run by the State. The general hospitals admit obstetric cases usually only when there are complications. Changing social conditions are creating an increasing demand for public lying-in hospitals. Special paediatric departments are few in number, and only two out of the existing seven lie outside Greater Copenhagen. In the remainder of the country children's diseases are treated in general hospitals, often in wards providing means for isolation, supervision, milk preparation, etc. Diseases of the eye are treated in eight departments, and those of the ear, nose, and throat in twelve; the country is fairly well covered. Five hospitals have special departments for neurology (two attached to the universities), and there are two centres for neurosurgery. There is a chest surgery centres in the State Hospital, and a special ward for the same is attached to a Copenhagen municipal tuberculosis hospital.

Apart from these instances specialization has not been carried very far. Several surgical departments specialize to a certain extent in, for example, urology or diseases of the alimentary canal, but they take good care that general surgery is not neglected. Places such as radium centres must specialize to a certain extent; it may be necessary at the present stage of organization, but it seems not to be a satisfactory solution from a psychological point of view.

Out-patient Departments

Polyclinics, or out-patient departments, are found almost exclusively in the metropolis, and, with a few exceptions, they are attached to the larger hospitals, either as extensions of departments or, more often, as separate departments with their own head and staff (they may even have a small ward of 10–20 beds). All the well-known specialities have their polyclinics, and all are crowded places, especially the clinics for venereal and skin diseases. Originally established for poor patients, the polyclinics have to a great extent usurped the function of the practising specialists; the best that can be said of them is that it has not hitherto been possible to find other ways of providing specialist treatment for the bulk of the metropolitan population. They are a menace to both specialists and general practitioners. We have learnt the truth of this from Sweden, where the polyclinics threaten to take away the consulting-room practice of the ordinary doctors.

Criticism is directed towards the following points: (1) overcrowding with consequent waste of the patients' time; (2) risk of superficiality and lack of individuality in the treatment; (3) difficulty in placing responsibility: (4) treatment is to large extent carried out by assistants who are not specialists (a serious objection); (5) many of the cases are not in need of specialist treatment. Evidently some regulation is needed, limiting the polyclinical activity within the scope of providing special treatment not otherwise available, and, at the same time, securing material necessary for teaching purposes. The Medical Association believes that many patients receive a better service from private specialists, and in recant negotiations with the panel institutions of Copenhagen an agreement has been made that greatly facilitates the reference of patients to specialists. This may be a step taken towards reduction of the polyclinics' dominance.

Outline of System

It is important to bear in mind that most of our hospitals are "communal." Counting the beds for surgical and medical diseases (including skin and venereal) we find that the county and city-communal hospitals provide 3.8 beds per 1,000 population, the State hospitals 0.3, and other hospitals 0.7.

There is a marked distinction between the hospitals of the capital and those of the country. In Greater Copenhagen the system is dominated by the large municipal, county, and State hospitals with a thousand or more beds. They are (or originally were) situated near the outskirts of the city, with convenient gardens. Planned as big units, their buildings have not been enlarged, but in the course of years extensions have been built on sites intended for that purpose. Three, among them a large fever hospital, have their wards split up into a series of pavilions—a system since abandoned—while the others consist of more or less closely grouped blocks. The single compact block is not seen here; however it is a main feature of the plans for rebuilding the State Hospital. The individual departments with about 150 to 200 beds receive some 2,000-4,000 or more patients a year. They cover most of the specialties, including pathology; as a rule each department runs its own clinical laboratory. However, the modern central laboratory, in Copenhagen found at the Finsen Institute only, is bound to play an important part in future development. All the big hospitals have buildings for office staff (generally inadequate), administration, catering, engineering, laundry (partly centralized), etc. Chapels are used for deposition and not, with some exceptions, for service. The State Hospital and all the large hospitals are used for teaching purposes, and they offer good opportunities for research work.

The provincial hospitals have changed considerably in the course of the last twenty years. Before this recent development began the strictly regional hospital was the commonest type. Counties and cities built hospitals where they found the need, with little or no mutual co-operation. The result was a series of rather small hospitals throughout the country, often placed in villages of, for instance, 2,000 inhabitants. Varying according to locality, a capacity of 50-100 beds was common, and most of these are still in existence. The principal provincial towns had larger units with 100–200 and more beds. The wards were all primarily surgical, though in the more important cities early hospitals were divided into surgical and medical departments. County and city seldom co-operated, and in some places there is still a county as well as a municipal hospital, each receiving patients from separate districts, rural and urban.

This state of affairs has changed considerably. The growing need of specialization, together with better transportation facilities has encouraged centralization of special treatment in units capable of maintaining the necessary special departments. The National Health Service has directed evolution along this channel, with the result that to-day all counties have established so-called central hospitals, often representing a close co-operation between county and city communes. The basic feature of a central hospital is the division into departments for surgery, medicine, and radiology. To this may be added various other departments—e.g., for diseases of eye. and of ear, nose, and throat. It is probable that a distinction, already discernible, will be maintained in future between central hospitals supporting several specialties and central hospitals consisting of the basic departments only.

In most cases it has been necessary to adapt pre-existing hospitals to function as central hospitals. This has been achieved through skilfully arranged extensions—such as the addition of blocks and sometimes of a "treatment centre" containing operating theatres, *x*-ray installations, physical therapy ward, etc. Often a charming mixture of old and new buildings, such provincial central hospitals are now well suited for the purpose, and their importance to the medical life of the country is rapidly growing as

they become centres for training and offer facilities for research work.

Central Laboratories

The central laboratories attached to central hospitals are new to the Danish hospital system. They have a dual purpose—first, to serve the sundry departments of the hospital, and, secondlly, to aid the general practitioners by placing at their disposal the technical facilities of a modern laboratory. Laboratories, like radiology, seem destined to emerge from their original basement-room existence and become important nuclei of the hospital arrangements. Most are still managed by the medical departments, but in a few hospitals they are separate departments with their own head. Experience indicates that in future more and more central laboratories will be under technical leadership, since medical biochemistry and clinical laboratory technique advance at such a pace that it is impossible for a clinician to keep abreast of the development. There is some dispute about the proper training for a central laboratory chief—biochemists, pharmacists, and even civil engineers claiming to be qualified. The arguments in favour of a pyhsician with supplementary special training seem to carry most weight, and recently an association of doctors specializing in this field has been formed with a view to getting the specialty authorized as such, working out plans for training, and gaining influence with health authorities. The laboratory routine work is carried out by a staff of female technicians. Their training has hitherto consisted in rather casual loboratory work, but a rational scheme is being started including a preparatory special course in a technical high school followed by a term of one year as pupil in a clinical laboratory (with possible additions). The beginning already made promises well.

The resources of the central laboratories are at the disposal of the general practitioners and specialists and to some extent, of other hospitals in the area. A doctor may send his patients or samples to the laboratory, where the tests required are carried out and a report made. The assistance offered by the laboratory is purely technical; no clinical examination takes place. The results are sent to the practitioner in terms of laboratory findings, the interpretation of which is left to the practitioner himself. The patients do not get the impression that they are being referred to a "diagnostician" because their own doctor is incompetent; they fully understand that a case may necessitate means of investigation available only in a special laboratory. It is important that the assistance of the central laboratories should be limited to those methods not practicable in the consulting-room; the practitioner might otherwise grow into the habit of sending his patients to the laboratory for simple routine tests, a procedure which, together with parallel measures, would threaten to leave him with a fountainpen for his whole armamentarium. On the contrary, the central laboratory aims at supporting the general practitioner by placing within his reach the means hitherto available only to hospital staffs and thus enabling him to take further responsibility for his patients. Hospital administrators believe that the central laboratories will lessen the pressure on hospital beds, since many patients may be examined and treated there without hospitalization. Whether they are right depends on the ability of practitioners to use the facilities offered. In the capital, where hospital laboratories do not receive ambulatory patients or samples, the gap is filled by the large and elaborate laboratory of the Panel Doctors' Organization and some privately owned laboratories. The panel institutions pay for laboratory tests.

X-ray Clinics

The *x*-ray departments of the central hospitals also receive out-patients for treatment as well as diagnosis. They are widely used, and they contribute materially to raising the standard of the work carried out by practitioners. Specialists are in charge, assisted by medical, nursing, and technical staffs. Practically all of even the minor hospitals have diagnostic *x*-ray apparatus, operated by the local staffs. As a rule arrangements are made for the chief specialist of a central hospital to pay regular visits to the hospitals of the county.

In the capital, again, conditions are rather different since the ambulatory *x*-ray service is not primarily a hospital affair but one which is largely in the hands of private specialists.

Other Features

Some hospitals have small scientific libraries of their own, but most depend upon the two State libraries. Increasing numbers co-operate with the local public libraries in order to meet the literary demands of the patients—a measure generally met with enthusiasm.

Most provincial hospitals are supplied by the local chemists' shops, but when large enough they prefer, as the large Copenhagen units, to run their own dispensary—a tendency which should be encouraged, since such institutions give valuable assistance to the staffs, besides being economical. A blood donor corps is attached to most hospitals and managed in co-operation with the State Serum Institute.

The need for social advisers is increasingly felt and more than a few are at work. Special training in this field is available. It may be practical to employ a social adviser in a group of hospitals as well as for special purposes outside—for instance, in the campaign against venereal disease.

Tuberculosis Dispensaries and Hospitals

As a result of recent developments Denmark is now well covered by seventy-one tuberculosis dispensaries. The majority of these are county-communal, some are city-communal, and a few are accounted for by the National League against Tuberculosis. Many are in new buildings with ingenious devices for mass examination. Co-operating with these diagnosis stations, often attached to them, and also mainly communal, are twenty-seven tuberculosis hospitals admitting severe cases or serving as a transition stage between the dispensaries and the thirteen sanatoria, most of which are owned by the National League. Besides these institutions for pulmonary tuberculosis there are sixteen seaside hospitals and sanatoria for surgical tuberculosis and tuberculous children. The number of beds available to tuberculosis patients amounts to 1.1 per 1,000 population. Thanks to this it is possible to remove cases of tuberculosis from

the general hospitals and put them under specialist care. About 200 of the beds are in nursing and convalescent homes.

Other Hospitals and Institutions

Mental hospitals, twelve in all, are distributed over the country in beautiful surroundings. Nursing homes are often attached to the hospital proper. The majority (about 70 per cent of the beds) are run by the State; the rest are municipal, with the exception of a single private institution. Together they provide 2.6 beds per 1,000 population. Asylums for the feeble-minded, with attached nursing homes, take care of 3.2 inmates per 1,000 population. Besides these institutions there are hospitals for epileptics, homes for inebriates, institutions for the blind, deaf-mutes, and cripples, and homes for children with congenital syphilis, etc. Many communal homes for the aged have nursing wards; in Copenhagen a special hospital is run in connexion with the Old People's Settlement. There is an Army hospital, and infirmaries are attached to military barracks, but on the whole the Forces depend on the general hospitals. Convalescent homes, municipal or owned by foundations and otherwise, play a part in alleviating the pressure on hospital beds; twenty-three among them are authorized to admit panel patients. Private clinics are few in number owing to the high quality of public hospitals. Most provide for gynaecology and obstetrics, a few for other specialities. A special sanatorium for rheumatic disease must not be omitted.

Certain groups of patients—particularly those with chronic incurable disease, functional nervous disorders, and chronic arthritis—are not quite adequately provided for and are being considered in planning future developments.

Administration and Finance

Emphasis must be laid on the part played by the communes, representing the local population. The great development outlined above has involved enormous expenditure which would have been hardly borne by tax-payers if local pride, enthusiasm, and the competitive spirit had not been at work. In any attempt at centralizing hospital administration this local interest should be kept in mind. It is somewhat doubtful whether the sums needed in the last few decades could have been provided by a State administration depending on Parliamentary grants.

The commune (country, city, or both) appoints a hospital board among the council members, usually including the head of the commune. A couple of of larger cities, including the capital, appoint a general director and staff. The chief physicians and surgeons, etc., are called in as advisers or choose among themselves an advisory representation. Daily routine management is carried out by an office superintendent and staff. In all hospital matters the National Health Service, constituting a department under the Ministry for Home Affairs, has hitherto acted as advisory authority. Partly as a confirmation of this state of affairs and partly to control future development a new Hospital Act was passed by Parliament on Feb. 15, 1946.

New Hospital Act.

In Chapter 1 of this Act it is stated, as did an Act of 1806, that provision of the necessary number of hospitals is incumbent on the communes in so far as the State does not satisfy the need. The communal administration is looked upon as indispensable, while problems such as extending beyond the country borders of the district served by a hospital must lead to close co-operation between several communes. All plans concerning hospital building, alteration, siting, etc., must be sanctioned by the Ministry for Home Affairs, and the same applies to hospital regulations, rates, and wages. In this way the Ministry is able, principally by veto, to control development and ensure that individual hospitals fit into the general scheme—as, for instance, by prohibiting an inexpedient extension of a small hospital. Private hospitals come within this clause. The hospitals are supervised by the National Health Service and district medical officers.

Chapter 2, treating the economic aspect, constitutes the main point of the Act and accounts for its somewhat precipitate passing. Since 1937 the communes have received an annual subsidy from an intercommunal clearing fund, from 1941 amounting to 17 million Danish crowns. During the war the running expenses of the communal hospitals increased from 50 to 80 million crowns, and it has been feared that the counties, depending widely on agricultural transactions, would adopt a policy of economy imperilling future development of the hospital system. By transfering a great part of the expenses to the State, that is, to capitation tax, the pressure on agriculture would be lessened and at the same time the alteration would allow increasing State control. Therefore the Act raised the annual subsidy from 17 to 40 million crowns. This contribution depends on the condition that the hospitals in question comply with the requests made by the ministry (through the National Health Service), and so this paragraph supplies the Ministry with a financial influence supplementing the more formal veto right.

An important feature of this new Act is that the contribution is related to the number of "sick days" of a hospital, and expenses arising from ambulatory treatment are refunded to some extent; further, contributions may be obtained for the establishment of special institutions for ambulatory examination and treatment. This paragraph of the Act encourages economy, through some form of out-patient departments not sharply defined, of the hospital resources and staffs in an endeavour to save hospital beds.

The planning of such institutions by a Ministerial commission, among whose members were no representatives of the medical profession, has surprised the Medical Association, which is working on its own scheme for the organization of medical practice. The immediate future will show how the Act is to be implemented and whether the medical profession can control this new relationship between the patients and the hospitals. The central laboratories, x-ray clinics, and tuberculosis dispensaries are examples of the way in which co-operation may be achieved between hospitals and practitioners to the satisfaction of all concerned. Building on similar lines in the

future, hospital authorities and the medical profession should be able to find common ground and coinciding interests.

Chapter 3 of the Act describes the establishment of a hospital council. Representatives from the Ministry, counties and cities, nine in all, from a council, which may be supplemented by expert assistance if necessary. In co-operation with the National Health Service the council should aim at carrying through the ordinary requirements of the hospitals in order to obtain a sound hospital service, proper use of individual hospitals, and co-operation between the communes. Means provided by the State are at the disposal of the council for the establishment of special hospitals or departments and for other purposes.

As a counterbalance to this Ministerial hospital council the Medical Association has established its own hospital council, which is a body of experts advising the Association in all hospital matters. Only recently formed, its policy has not yet emerged clearly, but it is hoped that by collecting material and investigating hospital problems this council will consolidate the position of our organization.

Payment for Hospital Treatment

What has been said above should give some idea of the financial basis of the hospital system. It will be noted that the communes, subsidized by the State, carry the big load of the expenses. The panel institutions, which in turn are also subsidized, contribute a smaller part, varying from less than 10 per cent to about 20 per cent of the actual cost of hospital treatment, which to-day amounts to 15-20 Danish crowns per "sick day."

Panel institutions as a rule pay for hospital treatment of members. Poor patients who are not panel members are paid for by their commune. The few patients who have to pay for themselves are charged about 10-25 per cent of the actual cost (some 50-75 per cent for a single room), and there are no extras such as fees, payment for skiagrams, etc. (This of course does not apply to private hospitals and clinics.)

Medical Staffs

About 1,500 out of Denmark's 4,000 physicians are employed in hospitals and allied institutions. The head of a department is appointed by the local hospital board. Applications are submitted to the National Health Service, which, after having consulted a judging committee chosen by and among members of the scientific society in question—e.g., the Society of Surgeons'—points out the applicants qualified.

As a rule the chief physicians and surgeons have ten to fifteen years of special hospital training behind them, together with a not inconsiderable amount of scientific work. All are authorized specialists, and many hold a university degree. A chief will usually stay with his department for the rest of his career, that is until he retires at 70. It is not part of the system that a chief should move or advance into a more important post because of special ability, as is the case in Sweden.

Beyond the running of his department he is not responsible for the hospital in general; the board carries the responsibility, and the chief physicians and surgeons are called upon only as advisers. Their influence varies, but on the whole it is true that their initiative, ability, and interest in hospital matters have been a power in hospital evolution and have gained for them a good reputation. Hospital planning and organization will have to meet important problems in the near future, and it is imperative the hospital chiefs, in their capacity as local advisers, through their organization, and aided by the Association's hospital council, share in the responsibility and establish their competence in matters of hospital running and development.

The central hospitals pay their chiefs about 20,000-25,000 Danish crowns a year (these sums and those mentioned below include all emoluments—£1=20 Danish crowns approximately) and often place a house at their disposal. Besides, they are allowed to practise as specialists (with limitations), but they must not receive fees from hospital inmates. The chiefs of small units are paid less but have ordinary practices. In Copenhagen salaries are low, and the chiefs depend to a considerable extent on private specialist (and general) practice.

A department's first assistant is a skilled and experienced doctor, often a recognized specialist. He is appointed for five years (with exceptions); his salary is about 15,000 Danish crowns, and he usually lives in the hospital. In the provincial hospitals he has little opportunity for private practice and generally insufficient time for research work. His Copenhagen colleague fares better in this respect, since the routine work is less and access to libraries and institutions is excellent. There may be no second assistant or there may be one, two, or even three. A second assistant is appointed for two years (with exceptions) and receives a salary of about 13,000 Danish crowns.

The number of house-physicians or house-surgeons varies according to the size and character of the departments; a team of three is generally found most convenient because of the twenty-four-hour watch duty which they do in turns. A varying number are appointed for one year (registrars), with a salary of about 10,000 Danish crowns. The others are recent graduates on their compulsory six months' medical and six months' surgical service, according to Ministerial regulations, with a salary of about 6,000 Danish crowns. Most of the house-men reside in the hospital.

All the subordinate doctors are members of a special younger doctors' division of the Association. With vigilance and zeal this organization has in recent years considerably changed and improved the conditions of the members employed in hospitals, and by obtaining a favourable, detailed, and elaborate contract with hospital authorities, has gained much for the profession and significantly established its competence and power.

Nursing Staffs

In larger units a matron supervises the nurses, sometimes assisted by a sister tutor and a house-sister. The number of nurses varies somewhat according to the work of the department in question, but as a rule

a sister deals with a group of 25–30 patients and is assisted by two nurses and four probationers as well as two maids. Probationers do a three-year course, with examinations, before they are passed as nurses. All the probationers and varying numbers of the nurses reside in a nurses' home. Recently nurses have been allowed to marry, and at the same time there has been a tendency for nurses to prefer living outside the hospital. Normally nurses work eight hours a day. Salaries are at present the subject of negotiations. Probably they will reach 5,000-6,000 Danish crowns a year for nurses and 6,000–7,000 for sisters.

As in other countries there is now a shortage of nurses in Denmark. This "nursing crisis" seems to be due to some extent to the general dearth of female labour, but there is little doubt that a more specific cause lies in the conditions hitherto offered to nurses. Reasonable salaries, proper dwellings, and sufficient freedom may succeed in attracting the necessary numbers to this noble profession; but one item is of outstanding importance—namely, the nurses must be called upon to do only the nursing work of a ward and so must be relieved of the various domestic duties properly appertaining to housemaids. In this respect sins of the past haunt the present. Treating the nursing profession as it deserves is the one way out of the nursing crisis.

Other Staffs

Hospital superintendents are responsible for the daily routine management. They qualify for the task through training on the office staff of a hospital, but no special training or examination is compulsory prior to this, and an academic career is exceptional. The hospital officials' organization does much to heighten their standard of efficiency as well as their influence—among other things by editing an excellent hospital periodical dealing with matters of organization, management and technicalities. The smooth working of a hospital depends largely on the co-operation between hospital office and other staffs and therefore the medical staffs are well disposed towards the administrative officials.

Other staffs need little comment, though a word may be said of that responsible for catering. Dietitians proper are extremely rare, owing presumably to the fact that a stewardess chosen from among the kitchen personnel and given a short special training provides a cheaper solution. Pressure from university and other quarters has been widely resisted, notwithstanding that Denmark has excellent and scientifically principled high schools for housekeeping and cookery. It is not yet felt that hospitals should add to their task of healing by educating the people on matters of hygiene and nutrition.

Co-operation with General Practitioners.

The vital contact between the family doctor and the hospital medical staff is maintained in several ways, more markedly in the provincial areas than in the capital. The laboratory, x-ray, and other facilities offered have already been mentioned. Another important connecting link is the report sent from the hospital on the discharge of a patient. Given adequate attention by both sides, such a report conveys a good deal of postgraduate education. From time to time many hospitals, arrange meetings where demonstrations are given and papers are read by members of the staff, with subsequent discussion. General practitioners display a lively interest in such measures, and with occasional conferences on individual cases they contribute to mutual understanding. Widening and intensifying this collaboration must be considered a means of improving the service.

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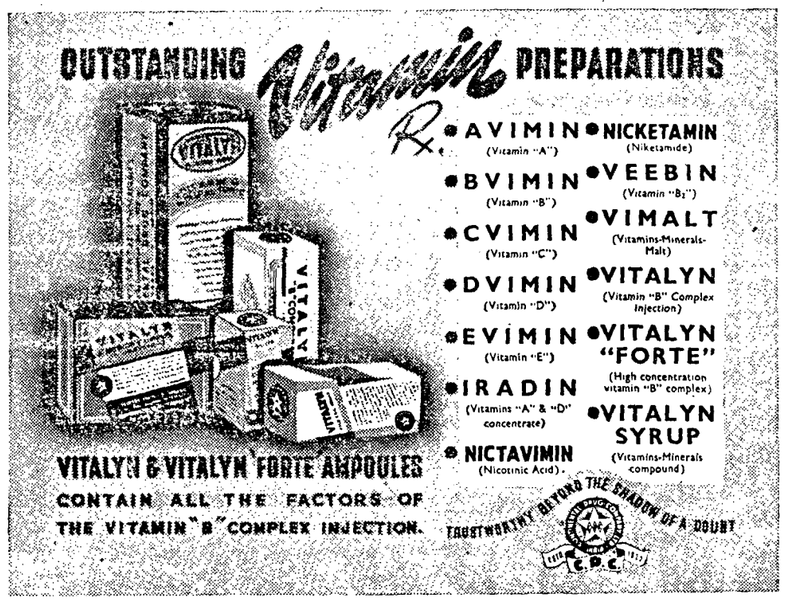
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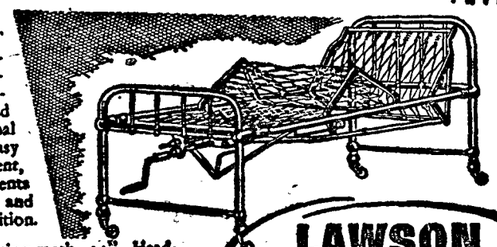
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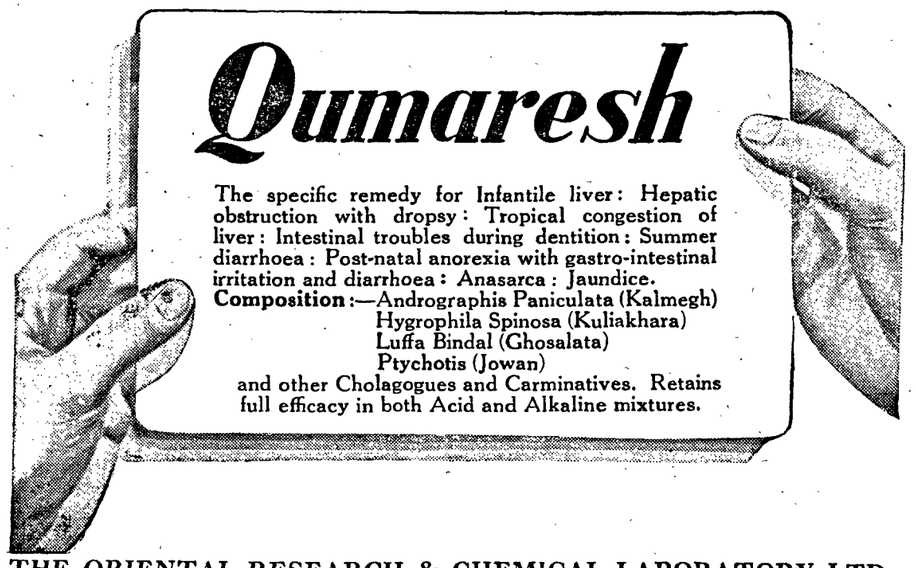
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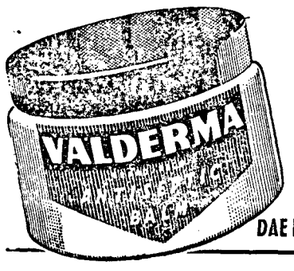
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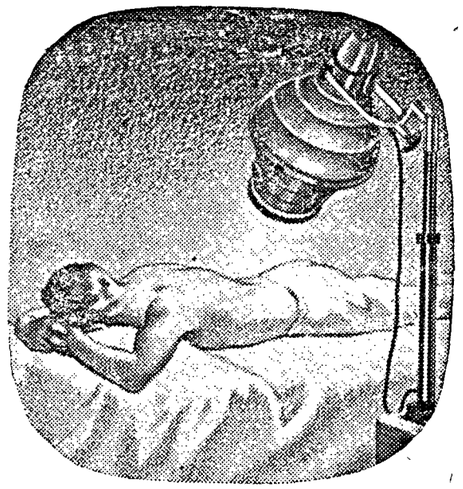
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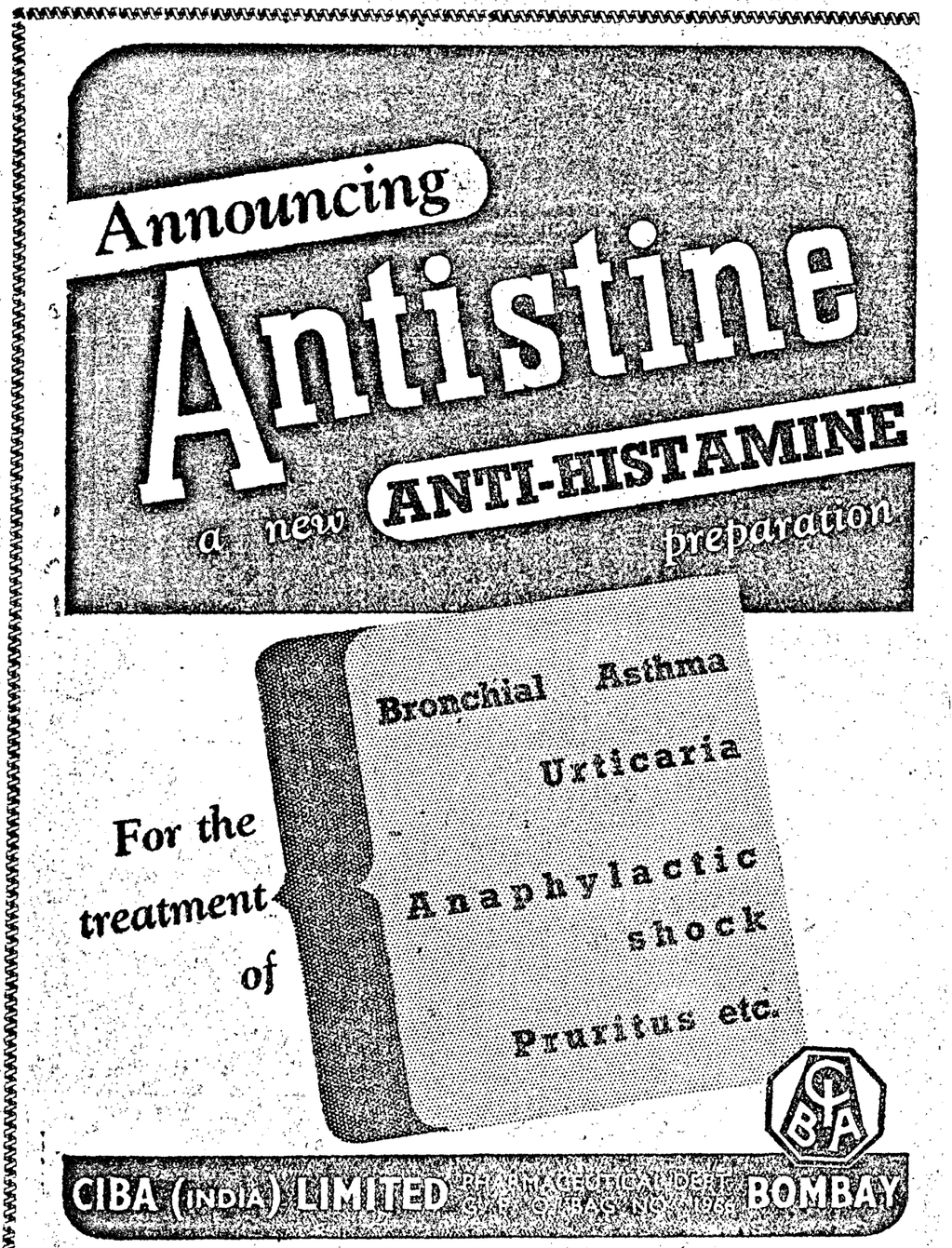
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(WITH MEDICO-POLITICAL SUPPLEMENT)

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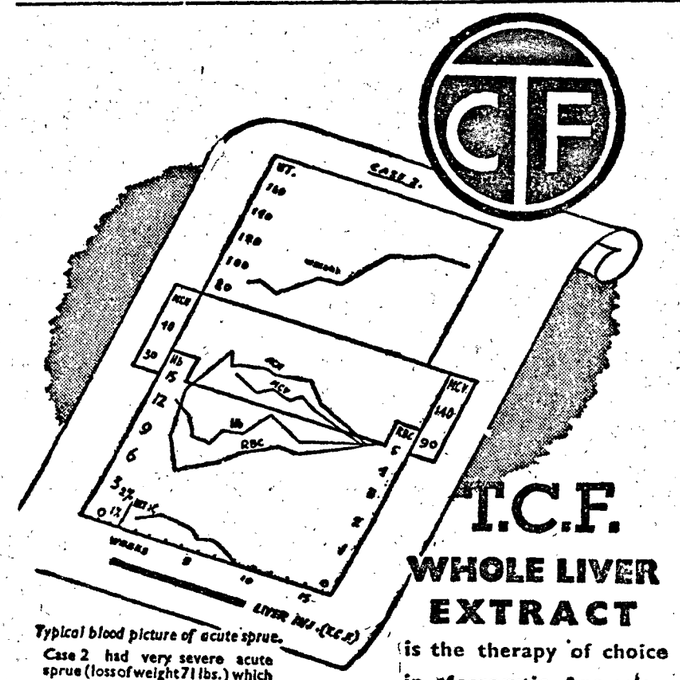
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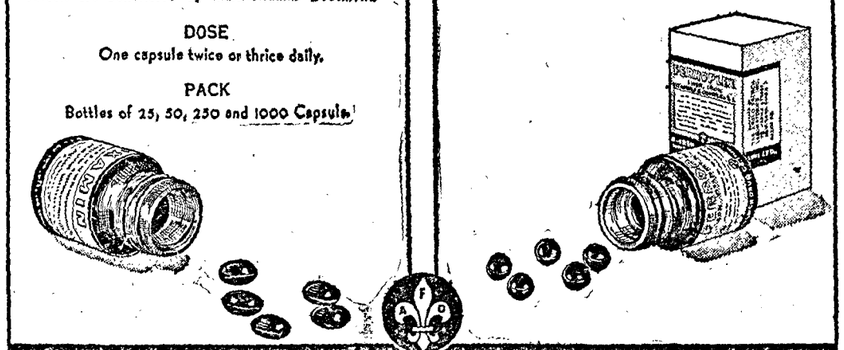
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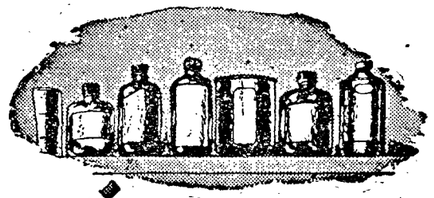
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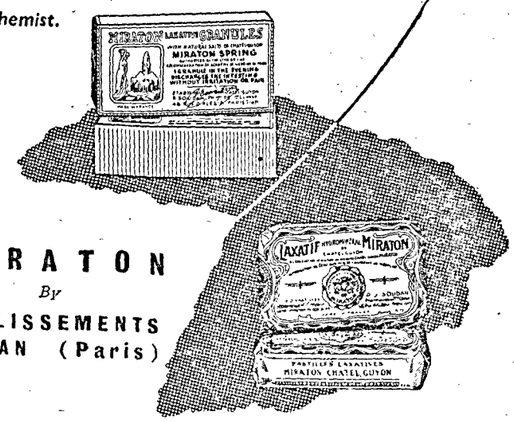
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* Colebrook, L. (1933) *J. Obstet. & Gynaec.*, 40, 977.

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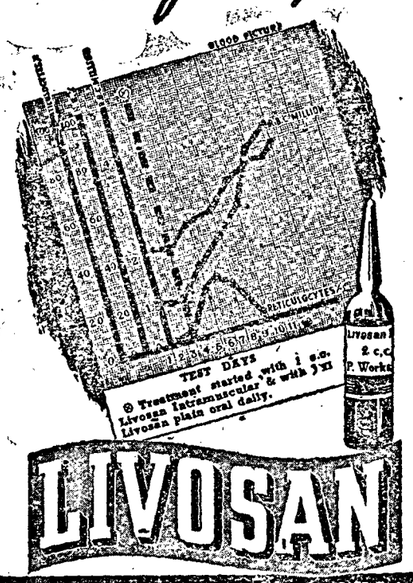
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("*Medical World*," *4th October, 1946.*)

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Indian Medical Journal
(Journal of the All-India Medical Licentiates' Association)

Vol. 41. Madras: October 15, 1947. No. 10

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Indian Medical Journal
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Vol. 41. Madras, October 15, 1947 No. 10.

IMPORTANT NOTICE

As the Treasurer of our Association, Dr. Khan Chand Wohra, is held up at Rawalpindi in Pakistan and as normal communication to him is not possible owing to disturbed conditions, all the members and subscribers to the Journal whose subscription has fallen in arrears are requested to remit the same to the Office of the Indian Medical Journal, 32, Sullivans Garden Street, Mylapore, Madras.4.

No V. P. P. could be issued, as is usually done, since all the records are with the Treasurer. We appeal to the members not to await any V.P.P. in recovery of their subscription, but to remit it voluntarily to this office. This is urgently essential in the interest of the Association.

All the Bills of the Branch Secretaries and other office-bearers, passed by the Finance Committee, will be paid by this office until further notice.

(By Order of the General Secretary)
A. VISWANATHAN,
Editor,
Indian Medical Journal
Madras, 4.

Changes of address should be sent to this office only and to none else.

Members are requested to quote their roll numbers while remitting their subscription or intimating change of address.

OUR MONTHLY SURVEY

Streptomycin:—It is one of the antibiotics which has recently come into prominence in the treatment of certain forms of tuberculosis. It is at present manufactured only in the United States of America and that too in short quantities—the Mayo-Clinic computes the American production at about 500 kg. each month. It has been tried in that country fairly successfully in the treatment of miliary tuberculosis and tubercular meningitis; in other forms of this disease there has not been much success with this drug. The daily dosage advocated is 1 g. at 4 hourly intervals intramuscularly and the average course lasts for about 100 days. Unlike Penicillin, the drug seems to produce a variety of toxic reactions, such as abrupt fall in blood pressure, anaphylactic reactions and irritation of kidneys. These are only illustrative and not exhaustive. Its greatest drawback is, perhaps, that it creates drug resistant strains of the tubercle bacilli. It is reported that it does not kill the tubercle bacilli in the lungs but only effects an inhibitory action on the bacilli and thus allow time for healing by fibrosis and hyalinisation. Till more positive evidence is forthcoming as to its good effects even in miliary tuberculosis or tuberculous meningitis, the practitioners should not rush to use streptomycin.

Benadryl:—It is one of the synthetic compounds, chemically known as beta-dimethylaminoethyl benhzhydryl ether hydrochloride, which has the property of counteracting some of the pharmocological action of histamine in addition to an anti-spasmodic effect. Since certain forms of allergic reaction are due to liberation of histamine in the human system, Benadryl has been recently used in counteracting such reactions. It has been successfully tried in vasomotor-rhinitis, hay fever, urticaria and angioneurotic oedema and bronchial asthma. Usually it is administered orally in capsules of 50 mg. each. Its intramuscular injection is painful, and intravenous route unnecessary. If intravenous administration is chosen, 30 mg. of the drug should be mixed in isotonic saline (50 c.c.) and injected slowly. The amount of the drug required will vary with the severity of the allergic symptoms. As it causes drowsiness one must avoid the concommittant use of any sedatives. In the treatment of bronchial asthma, it may be augmented by the additional use of ephedrine sulphate. Benadryl, it must be noted, does not give a cent percent relief of allergic symptoms, but a good number of cases respond favourably. After the relief of allergic symptoms, the underlying cause must be traced and treated.

Pregnancy and Dental Caries—There is a popular idea that pregnancy increases the susceptibility to caries. Day and Shourie* discuss the different views held on this subject. They hold that the theory of the withdrawal of calcium from the teeth during pregnancy has not been adequately established. They themselves have examined

* Indian Journal of Medical Research, April, 1947, pp. 101-108.

182 women, according to age groups and number of pregnancies, and published an analytical data. From their observations they conclude there is no support for the popular concept of a relationship between pregnancy and incidence of dental caries.

Intradermal Inoculation of Cholera Vaccine:—Panja and Das† report that the intradermal inoculation of cholera vaccine appears to be superior to the subcutaneous method on the criteria of (1) agglutinin production in inoculated persons (2) Pfeiffer's tests in guinea pigs and (3) protection tests in guinea pigs. Practical advantages of intradermal method are (1) economy of vaccine as only a fifth of the usual dosage is necessary and (2) less severe reaction. One disadvantage, they say, is that intradermal inoculation on a mass scale would take much longer time for each inoculation than the subcutaneous method. At present, the authors are not certain whether one intradermal inoculation alone would be a sufficient protection, as against two subcutaneous inoculations now usually followed. Further work on this subject is being done and we shall await the results with keen interest.

ADDRESSES AND ARTICLES

Barbiturate Poisoning*

BY

Dr. K. NARAYANAMURTHI, M.D.,

(*Hon. Physician Government General Hospital, Madras.*)

Patient K aged 21 was admitted at 9.30 a.m. on 16-6-46. in an unconscious condition in my ward in the General Hospital.

History:—The mother of the patient found the boy unconscious at 7.30. a.m. that day. She immediately sent for a doctor and when he arrived they discovered a bottle of Gardinal marked 100 but contained only 2 tablets of 1 gr. each, under the pillow. The patient was immediately brought to the hospital. The boy was in good condition of health before.

Condition on admission:—Patient was unconscious and the temperature was normal. No evidence of any injury over the body and head. Pupils fixed and markedly contracted, not reacting to light. No occular palsies noted and no tremors. Breathing deep and sighing-24 per minute. Pulse rate 68 per minute, regular, moderate volume and tension. Cornea insensitive. Knee and ankle jerks are absent; superficial reflexes are also absent. No rigidity of the neck. Sphincters not relaxed. Skin not sweating and no dehydration present. Slight distension of the abdomen was noticed. Liver and spleen not enlarged. No other evidence of other enlargements.

Heart:—Nil abnormal, except being slow.

Lungs:—Signs of consolidation in both bases of the lungs present.

Urine:—Turbid; no sugar and albumen and no acetone bodies.

Blood:—Smear nil abnormal.

Investigations Done:—

Lumbar Puncture was done with following results:—Fluid clear and under pressure. Quinkinstead's sign positive. No wet formation noticed in the fluid.

Bio-Chemical:—Total proteins within normal limits. No globulin present. Chlorides 670 mgs.

Pathological:—Few cells, lymphocytes mostly.

Bacteriological:—Fluid sterile. No organisms grown on culture:

Progress and Treatment:—

On 16-6-47—9-30 a.m. 2 cc of 1/100 gr. of Strychnine I.M. was given.

—9-56 a.m. Stomach wash was done and 4 oz of black coffee and 1 oz of castor oil were introduced into the stomach.

10—15 a.m. L. P. done—Fluid under pressure-clear about 35 cc of fluid drawn.

11—15 a.m. 1/50 gr. Strychnine intra-muscularly was given.
Rectal Glucose Saline was started—it was rejected—pupils slightly dilated reacting sluggishly to light. Patient still unconscious. Pulse and respiration are not satisfactory.

1—30 p.m. 14 cc of Picrotoxin (1 in 1000) given I. V and 2 cc. Coramine I.M.

1—45 p.m. Patient cyanotic—0, started by nasal method.

2—10 p.m. 10 cc of picrotoxin given I. V. Pupils contracted again and sluggish. Saline enema—no result.

3 p.m. 1/50 gr. Strychnine subcutaneously given.

3—20 p.m. 10 cc Picrotoxin given I. V.

4 p.m. L. P. done-30 cc. of clear fluid was withdrawn-not under pressure.

6—45 p.m. 10 cc Picrotoxin given. Patient resisted with great muscular power of left arm where the injection was given.

10 p.m. Bladder catheterised. 36 oz. of slightly turbid urine drawn.

10—30 p.m. L. P. done. 7 cc. of clear fluid drawn-not under pressure.
Pulse not so good in volume and tension.

11—30 p.m. 10 cc Picrotoxin given I. V. Pulse now good in volume and tension.

17-6-47: 7—45 a.m. Pulmonary oedema developed—pulse feeble—respirations hurried.

8 a.m. 2 amp. coromine with 1 cc. atropine given-pulse feeble.

8—10 a.m. Temp. rose to 106.8-blood smear taken-No. M. P. was seen.

10—45 a.m. An indurated area over back of chest. An erythematous rash over the trunk was noticed. Patient was still unconscious—not improved.

11 a.m. Deganea Sodium 2 grm. I. V. was given. Patient was pulseless. No beatings of the heart were heard.

11—15 a.m. Intra cardiac inj. of 1 cc adrenalin was given as a last resort.

11—20 a.m. Patient expired.

Post Mortem Findings:

1. Froth dried up at the mouth and nostrils-fine froth in trachea.
2. Conjuctiva pale.
3. Heart: Haemorrhagic spots on the surface of the heart. Left side chambers empty.
   Right side chambers contain thick, dark blood.
4. Pleura on both sides looked red and inflammed. Lungs are consolidated at bases. Cut pieces sink in water.
5. Stomach-contained 2 oz of clear but slightly blood stained fluid.
6. Bladder contained 10 oz of urine.
7. Liver weighed 4 lbs. 10 oz.—congested.
8. Brain 3 lbs. 32 oz. in weight; soft and congested. No haemorrhages.
9. Spleen 5½ x 4½ weight 4 oz. congested.
10. Kidneys congested.

Government Chemical Examiner reported the occurrence of barbiturate in the stomach content. The urine also contained barbiturate. The urine and the stomach contents sent for examination were not sufficient enough for estimation of the quantity of the barbiturates.

Points of Interest:

(1) The interest in this case is in that the patient died exclusively of acute barbiturate poisoning. Signs and symptoms are described and the post-mortem findings are recorded.

(2) Picrotoxin as an antidote in Barbiturate poisioning is of no value. Its usefulness is only in stimulating the relaxed muscles.

(3) In acute cases, as in the case reported, recovery is not the rule but an exception.

(4) In chronic addicts to this group of drugs, such as barbitone (Veronal) and phenobarbitone-barbituric acid derivatives—recovery is the rule when the drug is withdrawn. Administration of any anti-dote is not necessary.

† Ibid Jan. 1947, pp 3-6.

* A Paper read by the author before the Indian Science Congress, Delhi, 1947.

Leucoderma*

BY

G. PANJA, M.B. (CAL.), D. BACT. (LOND.), F.N.I

Aetiology Age.—The disease commences at any age but the onset is extremely rare after 60. In a series of 260 cases, 7 were congenital. The incidence-frequency rises from birth to the 10th year, the highest being between the ages of 5 and 10. Then there is a gradual fall till the age of 45 is reached, after which the incidence steadily diminishes. Such a conclusion was arrived after studying 1118 cases. So once the age of 45 is passed, there is very little chance of acquiring the disease.

Sex.—Males are about three times more often affected than females. In private practice, the affection is seen commonly amongst unmarried young girls for the obvious reason of difficult marriage problem.

Race and Religion.—Hindus, Mahomedans, Christians and men belonging to other religions are all affected. Europeans in Europe as well as here are also affected but much less commonly.

Heredity.—The disease is neither hereditary nor contagious. Out of 700 cases, 52 only *i.e.*, 7·5% gave history of hereditary incidence. Out of those 700 cases, 109 were cases of syphilitic leucoderma. If these cases are excluded, hereditary influence in ordinary simple leucoderma appears negligible. Several members of the same family are rarely affected. In one family, parents were unaffected but the son and two daughters were both affected. The three sons and two daughters of the above daughters are free but one grandson only has the disease, on the otherhand the son's offsprings are free. In another family, two brothers and one step-sister are affected but parents are free. Such familial occurrences are extremely rare. Many cases of extensive leucoderma either in husbands or wives are known but other members are entirely free from the disease in spite of intimate contact.

The conclusion after study of a very large number of cases is that a boy or a girl can safely be married to a girl or a boy affected with leucoderma without any fear of contracting the disease and transmitting it to the family.

Diet and General Health.—No relation can be established with and nature of food taken and general health. Meat-eaters and vegetarians are both affected. The disease is seen in many persons possessing excellent health.

Septic Foci.—In many of my cases, a history of past or present bowel troubles in the form of dysentery, diarrhoea, dyspepsia or marked constipation is found. There are several instances of the disease occuring after or during an attack of chronic dysentery. In 188 cases studied carefully, 48, *i.e.*, about 22% showed some sort of disorder of the bowels. In unselected 300 cases, an examination of stools showed in 54 of them some abnormalities which are not so frequently found in the normal population. Either *Entamoeba histolytica* or giardia

* Excerpted from the author's Presidential address to the Medical Section of the Indian Science Congress,, 1947

cysts or blastocysts or lactose-non-fermenting or para-colon organisms were found. It is probable that such an abnormal gut condition favours the development of poisons which may get access into the blood stream and give rise to the disease.

Treatment of abnormal gut conditions has resulted in improvement of the disease in some cases. A persistent bad tonsillar infection has sometimes preceded leucoderma of lips and neck. About 10 percent of cases showed some septic foci either in the gums or tonsils or in both. It is difficult to correlate such findings with the disease.

Infectious Diseases:—In the majority of cases, no history of such diseases can be obtained. In 7 cases out of 188, there was a history of enteric fever either just prior to the onset or several months before the onset of leucoderma. In one case an attack of measles was followed by the disease and in another an attack of diphtheria and so on.

Syphilis:—In most cases, W. R. and Kahn tests for syphilis are negative and no history of syphilis is obtained. In a recent study of 188 cases, 7 cases only were syphilitic from clinical, serological and therapeutic standpoints. Clinically such cases are distinguishable from vitiligo.

Other Causes:—(*i*) Sudden and extensive leucoderma is known to occur after a severe shock.

(*ii*) A striking relation has been seen in many cases between neuro-dermatitis and leucoderma. In many of my cases neurodermatitis (a papulo-squamatous dermatitis) showing distribution along cervical or lumbar outflows of the autonomic has been followed by leucoderma at the same sites. The appearance of depigmentation without any evidence of apparent scarring or sensory or motor changes and its peculiar nerve distribution strongly suggest that the disease may be caused by some dysfunction of the autonomic nervous system. This important observation will be dealt with later on.

(*iii*) Vasomotor disturbances in one arm characterised by redness, vague pains and burning have been followed by the appearance of leucodermic spots in the same arm.

(*iv*) In many cases, redness, oedema, burning, itching, exfoliation and fissures on the neck, cheeks, lips, palms and sides of the soles of feet etc., have been followed by the onset of leucoderma without any evidence of scarring.

(*v*) Alopecia areata is sometimes followed by leucoderma and leucotrichia. Alopecia areata on one half of the scalp and leucotrichia on the other half, both appearing simultaneously on the same person have also been seen. Relationship of alopecia to vitiligo has been shown also by Brown (1929).

(*vi*) In several cases, leucoderma has been seen to start around pigmented moles or naevi. Moles retain their dark colour but typical leucoderma spreads round them.

(*vii*) Lupus erythematosus and leucoderma have been seen to coexist on the same site without any evident scar-formation. In several cases, the presence of violaceous margin only helped to diagnose the condition as lupus, otherwise leucoderma would have been diagnosed. Lupus erythematosus associated with leucoderma has been seen on both sides of the waist where the loin cloth presses most.

(*viii*) It has been reported by Edward *et al.* (1940) that an antioxidant (monobenzoyl ether of hydroquinone) used in rubber causes temporary leucoderma.

Pathology:—A micro-section of a piece of depigmented and pigmented skin side by side shows that in the depigmented area there is no deposit of melanin in the basal layer of the epidermis but chromatophores containing pigment are seen in small numbers in the dermis and occasionally close to the basal cells. Round cell infiltration, dilatation of capillaries and immigration of polymorphonuclear leucocytes are not seen indicating thereby that the disease is non-inflammatory in character. On the other hand, in the pigmented area melanin is seen in the basal layer in the columnar cells and also in the dendritic cells called melanoblasts and chromatophores containing pigment are also seen in the dermis. In most sections, a gradual transition from nonleucodermic area to the leucodermic zone is seen. When frozen sections of such skins are immersed in a solution (1 in 1000) of dopa (3 :4 dihydroxyphenylalanin) and kept at 37°C for 3 to 5 hours, washed in water and then examined, the deposit of melanin is well seen. Such a reaction is called *dopa-reaction* of Bloch (Bloch, 1917) and it is positive in non-leucodermic area in the epidermal basal cells but negative in the leucodermic area. Melanoblasts with dendritic processes are well seen with this reaction. The absence of pigment in the basal layer of the leucodermic skin may be due to one or more of these factors:

(*i*) The pigment is destroyed as soon as it is formed by the melanoblasts.

(*ii*) The melanoblasts are not forming the pigment.

(*iii*) The basal layer is affected in such a way that it fails to act as an efficient filter or adsorbent for melanin granules.

Regarding (*i*), we do not as yet know any agent that can so quickly destroy a stable iron-free substance like melanin. Bleaching creams may cause slight temporary depigmentation but that is due to desquamation produced by the creams. Such a desquamating effect causing partial depigmentation is seen also in pityriasis versicolor and psoriasis.

With regard to (*ii*) there are two possibilities, either there is a deficient supply of aromatic amino-acids such as tyrosin, the precursors of melanin or the melanoblasts are not functioning. To understand such possibilities, it is necessary to know how and where melanin is formed. The precursor of melanin is melanogen, which is closely related to adrenalin. Melanogen is represented by 3 : 4 dihydroxyphenylalanin or dopa and this is readily oxidisable by tyrosinase (a dopa-oxidase) to melanin (Raper, 1927). It is also known that tyrosinase acting on tyrosin forms melanin which closely resembles natural melanin.

In artificial tissue culture of pigment forming epidermal cells, melanogenesis is seen in the epidermal basal layer and if the dermis be injected with dopa, no pigment is seen to appear in the epidermis. It is also to be noted that when the pigment first appears in the human skin shortly before birth, none is seen in the dermis. The same happens also in higher vertebrate animals (Peck, 1935).

Dawson (1925) holds the same view and states that the amoeboid pigmented cells are of epidermal origin and that in embryonal life, pigment is found in the epidermis and not in the corium. He further states that the dopa reaction is positive in all the basal cells of the epidermis, hair bulbs and follicles and true branching melanoblasts that have wandered into the corium. The reaction is negative in the branching chromatophores that transport pigment into the dermis. The phenomenon of Meirowsky (1905, 1907) *i. e.*, the production of pigment in the basal cells in tissue sections exposed to atmospheric oxygen confirms the above view. The same phenomenon has also been produced by Sharlit (1945) in isolated epidermal sections in an atmosphere of nitrogen. The presence of melanin pigment in oral mucosa, pharynx and inner surface of prepuce and its absence in the oeshphagus (Becker, 1927) lend support to the ectodermal origin of the pigment. It may be mentioned here that Smith (1925) was able to distinguish between an epithelial type of pigment cell in the basal layer from a connective tissue type of pigment cell in the corium by noting that the pigment granules in the former were of the same size and evenly distributed throughout the cell whereas in the later the granules were in masses and varying greatly in size.

All the above facts lend support to the view that melanogenesis takes place in the epidermis and such an epidermal mode of pigmentation is highly developed in man whereas in lower animals mesodermal mode of pigmentation is predominant. Masson's (1926) work shows that Langerhans cells that lie in the basal layer are identical with the pigment-forming dendritic cells. These are neuroglial cells possessing non-medullated nerve fibres and showing nuclear enlargements along the course of nerve fibres. These fibres are possibly the post-ganglionic nerve fibres of the autonomic nervous system. This leads us to the view that probably the parasympathetic post-ganglionic fibres that are anabolic and cholinergic are concerned with stimulation of pigment formation, whereas the post ganglionic fibres of the sympathetic that are catabolic and adrenergic are associated with inhibition of the process. That the sympathetic inhibits pigmentation has also been stated by Sezary and Pende. Clinically I shall show later on that it is the autonomic nervous system that is chiefly concerned with pigment metabolism of the epidermal dendritic cells.

Now let us consider that question whether the melanoblasts are not forming the pigment in leucoderma. If the supply of aromatic amino-acids that are obtained from our food is lacking, then, how is it that the supply is deficient in the leucodermic areas and present in the neighbouring pigmented areas although there are no signs of capillary damage in either of these areas? If there were actual deficiency in the supply of the percusor of melanin, there would have been generalised leucoderma in all cases. That the melanoblasts are present in the leucodermic area but functionless is proved by the fact that spontaneous recovery and recovery after treatment do occur in many cases provided that the melanoblasts are not regarded as wandering cells. These epidermal dentritic cells or melanoblasts are devoid of their function, because some dysfunction or damage of the parsympathetic or sympathetic or both is probably present. Clinical proofs for such a hypothesis will be given later on. Interesting experiments on skin grafts in animals (Lewin *et at*, 1941, Fessler, 1941) show that a pigmented graft implanted into a denuded depigmened area survives and retains its pigmentation up to three years whereas a depigmented graft put into a pigmented area is largely cast off, new epidermis forms underneath and pigmentation returns from the margin. These important experiments indicate that it is the integrity of the epidermal melanoblasts that is mainly concerned with formation of pigment and therefore an isolated pigmented graft carrying functionally active melanoblasts does not lose its pigment when transferred into a non-pigmented area. If a central cause of depigmentation be still operating, then it is likely that in time, the pigmented graft will be non-pigmented again when the melanoblasts are exhausted in their function. Such experiments require repetition but in view of the fact that in animals depigmentation is a fixed affair from birth, experiments in man where vitiligo is acquired and progressing will be more interesting and illuminating. Skin grafting experiments were done in man (Gupta, 1938) but elaborate experiments and confirmation are necessary.

With regard to (*iii*) that the selective power of the basal filter for adsorption of melanin is deficient, the idea may be true especially where leucoderma or hypo pigmentation is secondarily caused by local causes, such as lupus erythematosus, eruptions in measles, dermatitis, antioxidant used in rubber, dermal leishmaniasis, macular leprosy, etc. Even if this theory of selective adsorption is taken into account, the idea of temporary cessation of function of the melanoblasts cannot be ignored. If the view of mesodermal mode of pigment-formation is accepted, then the adsorption theory can stand alone on that view point. But melanoblasts of mesodermal origin are seen only in Mongolian spots and blue naevi. In the majority of cases, the disease cannot be attributed to any local cause and adsorption theory cannot stand. In a section stained by Levaditi's method, pigment granules are not only seen in the basal layer but also seen scattered throughtout the whole epidermis. As the area of pigmented normal skin approaches the leucodermic area, granules become scarce both in the basal layer as well as in the layers above. In the leucodermic area practically no granules are seen in the whole of the epidermis. How is it then that the granules are all at once scarce in the prickle and horny layers if adsorption is deficient in the basal layer? If there be no adsorption there, it is expected that some pigment granules would still be present in the upper layers of the leucodermic area.

There are other factors also in pigment-formation which deserve our consideration. It is known tha deficiency of adrenalin in Addison's disease and deficiency of ovarian hormone cause hyper-pigmentation. Hyper-pigmentation is also seen in pituitary hyperfunction and in thyroid dysfunction of Graves' disease. In 6 out of 20 cases of leucoderma, a hypopituitary condition has been reported (Fiarer, 1925). It is also known that a melanophore hormone is present in the pituitary gland. Robert (1941) found a distinct rise

in basal metabolism in 10 out of 20 cases of vitiligo and thyroxine injection in rabbits leading to vitiligo. He thinks that an increased activity of the thyroid leads to impaired utilisation of oxygen at the periphery and consequently the dopa-oxidase being labile is destroyed and no further melanin forms. It is however difficult to understand how a single isolated patch of vitiligo forms and remains stationary for years if a thyroid dysfunction is the underlying cause.

Hyperpigmentation has also been reported in vitamin A and C deficiency (Tolmach *et al*, (1942). An excess of vitamin D and B-complex appears to contribute to the formation of melanin. Allison (1945)and Hathaway (1945) have found vitamin B-complex useful in vitiligo.

Thus vitamin A and C, folliculin, insulin, adrenalin, excess of sugar and starch are usually contra-indicated in leucoderma whereas, vitamins D and B-complex have been found useful, and efficacy of pituitary in leucoderma is extremely doubtful.

I regard leucoderma as a trophoneurosis affecting the adreno-autonomic nervous system, particularly the latter. The reasons that the autonomic nervous system is involved are as follows:—

(*i*) In a very large number of cases, leucoderma is seen along the distribution of nerves. As there are no sensory and motor changes in vitiligo, it is very likely that when the cranial and thoracic outflows are involved, the disease appears either on one side or both sides of the face, neck and upper extremities. Leucoderma of exactly half of a face, half of the chest or half of face, neck, upper chest and corresponding arm and nowhere else, leucotrichia of half moustache on one side only these cannot be explained unless some autonomic nerve affection is taken into consideration. Leucoderma along a supraorbital nerve, intercostal nerve, in a band form on one half of the chin and neck, on one arm or leg, around the neck like a collar or necklace and in a band form completely encircling the waist have been seen. Such occurrences can be explained only by the theory of nerve distribution. When the lumbo-sacral outflow is involved, leucoderma on the waist, lower abdomen, genitals and legs are seen. When both the upper and lower outflows are affected, the disease is seen scattered all over the body. There is a remarkable case in my record showing small patches of leucoderma located at the sites corresponding to the apertures for nerves in the sacrum. Vascular distribution cannot explain such an occurrence.

(*ii*) Melanoderma, a condition opposite to leucoderma, is sometimes seen to have a similar outflow or nerve distribution.

(*iii*) Association of leucoderma with neuro-dermatits has been seen. In some cases leucoderma follows the unilateral or bilateral distribution of neuro-dermatitis but in some, both conditions are co-existent. In other words, there is not only leucoderma but the skin also is thickened and irritable. In some cases, numerous hypo-pigmented patches with diffuse margins develop at the same sites after an attack of neuro-dermatitis following some plexus distribution. Although these are cases of secondary leucoderma, there are no evidences of scar-formation or changes other than depigmentation alone. In same cases, neuro-dermatitis is followed by melanoderma or hyperpigmentation with or without thickening of the skin and this is again followed later by depigmentation. This can be explained by the exhaustion theory of Schein which assumes that an increase of stimulus causes pigmentation but a further increase of the stimulus leads to the exhaustion of cells and consequent depigmentation. In some cases of leucoderma, itching appears first and this is followed by scaliness and later leucoderma while in others no scaliness and depigmentation occurs directly after the itching stage. Some patients complain of itching, burning and pricking sensation in leucodermic areas although there is no visible sign of redness or thickening of the skin. These symptoms strongly suggest that there may be some nerve condition underlying the disease.

(*iv*) In many cases of leucoderma affecting lips, palms and soles of feet, back of neck, etc, some vasomotor disturbances characterised by redness, oedema, fissures, exfoliation of the skin, itching, burning and pain precede the onset of leucoderma. In no cases, depigmentation is due to any apparent scar-formation. Such clinical conditions suggest some affection of the autonomic nervous system causing vasodilatation, oedema, etc. In other cases, vasomotor disturbances characterised by pain and burning only are followed by the appearance of depigmented spots.

(*v*) In some forms of macular leprosy, there is no redness or oedema, hypopigmented patches only are seen. Sensation remains intact in the early stage but no sweating occurs. Absence of sweating is due to affection of sympathetic nerves supplying the area and hypopigmentation can be explained only by assuming that sympathetic nerve fibres are affected. Hence from analogy it is possible that in leucoderma also such nerve fibres are involved.

(*vi*) Leucoderma developing around pigmented moles has often been seen. In the pigmented moles or naevi, naevus cells carrying melanin pigment are seen. These cells originate from the epidermis as well as from nerve-endings. Hence it is quite possible that vitiligo has some connection with sympathetic nerve cells or fibres otherwise why should it appear particularly around moles in some persons. Exhaustion theory of Schein may be applicable here also to explain the depigmentation following exhaustion of the cells after over-stimulation. Now the question arises whether leucoderma is due to a local cause or to a systemic central cause. Local causes, such as bacterial, protozoal or fungal, have been thoroughly investigated but always with a negative rsult. There are good reasons to believe that the condition is caused in most cases by a central cause. The reasons are as follows:

(*i*) Leucoderma is very often a symmetrical disease,

(*ii*) Acquired universal leucoderma like albinism has been met with. Such a condition is not likely to be due to a local cause.

(*iii*) Treatment of intestinal and throat conditions alone has produced favourable results in some cases.

(*iv*) In some cases of leucoderma, the body system is in such a state that any scratch, cut or injury is followed by the onset of localised leucoderma. A

remarkable case was seen in whom the disease appeared exactly on the sites where a strong sandal paste used to be applied by the patient for religious purposes. Later, of course, patches appeared at sites irrespective of application of the sandal paste suggesting thereby that the sandal paste was only the exciting cause at the beginning.

(*v*) Local treatment with the oil of *bouchi* seed (*psoralia corylifolia*) may cure a patch of leucoderma but on discontinuation of the medicine, the depigmentation may reappear. Simultaneously with the cure of a patch by such treatment, fresh patches may also appear at other sites suggesting thereby that the systemic cause is still operating.

(*vi*) Leucoderma appearing after severe shock has been seen. Spontaneous cure also may occur and relapse may take place. In the absence of any demonstrable local cause, such manifestations are likely to be due to some systemic cause.

(*vii*) Lastly, all local causes have been investigated as for as possible but always with a negative result.

Besides the systemic cause local causes may also be sometimes responsible for the disease. Secondary leucoderma arising after measles, papular allergic dermatitis, lupus erythematosus, Hebra's pruriigo, dermal leishmaniasis, wearing of rubber gloves, etc. have already been mentioned. Pigmented graft implanted on a nonpigmented area survives and retains its original colour to some extent showing thereby that the cause of depigmentation may be located in the epidermis. A localised patch of vitiligo may be cured completely by application of the oil of *bouchi* alone. No recurrence of extension may be seen for years.

Nature of the Central cause:—This is unknown. It is probably of the nature of a toxin absorbed either from some septic focus or formed from some abnormal metabolism. Such a toxin appears to possess selective affinity for the autonomic nervous system.

Prognosis:—Leucoderma is a progressive disease. Spontaneous recovery may occur but is rare. Age of a patient and site of the disease largely influence the prognosis. The disease appearing in an advanced age is not readily amenable to treatment. Leucoderma affecting lips, palms, fingers, soles of feet, toes, malleoli, prepuce and vulva responds very slowly to treatment. Marriage, sexual life and pregnancy usually influence the disease favourably. Early cases often readily respond to treatment. Cases complicated with leuco-trichia are more difficult to cure. If the skin of a depigmented area is damaged to scar-formation, the disease is rarely amenable to treatment. Prognosis is generally favourable in cases where patches become gradually red on application of the oil of *bouchi*. Chances of recovery are greater if the treatment is continued for one to two years. Leucoderma covering large areas may not be refractory to treatment and has been cured.

Treatment:—Blood should be exmined for W.R. in only those cases showing melano-leucoderma and hyperkeratosis especially, affecting the palms and the soles of feet. A search should be made for septic foci in tonsils and bowels and if any be found, appropriate treatment should be given. In any case, emetine hydrochloride ½ to 1 grain intramuscularly twice a week for three to four weeks does good (Panja, 1923). It acts probably by stimulating the oxidative process in the epidermis and improving the detoxicating power of the liver. Gold stimulates the melanoblasts to activity (Yang, 1940), hence intradermal gold injections have been found useful but intravenous and intramuscular injections are less beneficial. Intestinal antiseptics in the form of Liq. Hyd. Perchlor. and Enterovioform tablets have been used with some measure of success. Vitamin B-complex in big doses given over a long period does some good. Diluted hydrochloric acid 10 to 20 drops should be given twice a day after meals at the same time the vitamin B-comlex is given to ensure full action of the latter. Allison (1945) recently reported achlorhydria in 10 out of 29 cases of vitiligo. Of late, para-aminobenzoic acid 100 mgm. 3 to 4 times a day by mouth for 6-7 months has been reported by Sieve (1945) to yield good results but I have not been able to try the drug. Glucose (25%) 25 to 50 c.c given intravenously daily is found to check further progress of the disease. It probably helps by augmenting the oxidative processes in the skin. Vitamin D also is found sometimes to favourably influence the disease. Thyroid and pituitary have been found to be of no use. Good results have followed after prolonged use of small doses of quinine which probably acts as an equilibrator of the autonomic nervous system.

Locally:—Application of the oil of *bouchi* (*psoralia corylifolia*, has been found extremely useful (Panja, 1923). The action is purely local. Only those patches that are treated with the oil show improvement; untreated patches do not. In resistant patches, an intradermal injection of the diluted oil (Panja and Maplestone, 1940) with 4% pure creosote should be given fortnightly. The volatile principle of the oil is the active ingredient and it acts by producing a marked vasodilation and possibly specifically stimulating the melanoblasts. Vasodilators other than the oil do not produce such good results. The oil does not activate the dopa-oxidase. Some skins are markedly sensitive to the oil and even one application may set up an acute dermatitis. Hence an initial care should be taken while applying the oil. Some skins are resistant and in such cases the oil is to be rubbed for 15 to 30 minutes and then the parts should be exposed to the sun for about 10 minutes. Generally 2 to 6 weeks after application of the oil, islets of pigment appear mostly around hair follicles in the peripheral parts and also encroaching from the margins of depigmented patches. Such a method of restoration of pigment suggests that functionally active melanoblasts that are present in the depths of hair follicles and at the margins of leucodermic patches are stimulated to drift into the depigmented area. Healing never takes place by the appearance of a uniform sheet of pigment or diffuse pigmentation. If the oil had enhanced the action of dopa-oxidase or supplied the precursor melanogen, then a uniform method of healing would more likely be expected.

Ultra-violet light fails to darken vitiligo patches but it helps to enhance the action of the oil of *bouchi*.

Sometimes a patch of vitiligo after being completely cured by the oil, becomes depigmented again in course of time when the oil is discontinued. This leads us to think that the autonomic nerve supply or its function being deficient, the newly imported melanoblasts lose their function after sometime.

It is necessary sometimes for the sake of concealment to apply paints on depigmented patches. 10% silver nitrate solution, tar dermament (P. D. & Co.), lead or carbon pencil, ichthyol 1 to 5 parts in 3 parts of each of pyrogallic acid and alcohol—these are the paints found usually useful.

Diet :—Regarding diet, hot foods rich in chillies, acids, onions and meats have been found harmful. Vitamin foods containing milk, eggs, cheese, vegetables, fruits etc. are helpful. Germinating gram (*chana*) and pulses appear to be beneficial.

A further study on the disease is in progress.

The Effects of Wars on the Evolution of Surgery*

BY

DR. S. B. GADGIL, B.A., F.R.C.S., L.M.S., F.C.P.S., *D.P.H., Bombay.*

This Association represents the only post-graduate body of the practising Surgeons in this country. We have come here with a desire to learn from others their experiences and at the same time make our own work known, maintain and tighten the bonds of unity, amity and esteem as members of one profession and of one nation at its great renaissance. This has been made possible due to our use of one common language as a medium of communication for our thoughts and ideas in social, political, economic and scientific atmospheres, not only in this country but also in the international world. Let us not be in a hurry to abandon this English language until we have developed our own Hindustani so that every person from Peshawar to Cape Comorin thinks it as essential to know Hindustani as it is now to know English. English is at present best suited for scientific expression of ideas in international world on account of its precision, terseness and richness of its vocabulary, the last of which I consider is not possessed at present by Hindustani. I also consider it somewhat ungrateful on our part to abandon in a hurry the help this language has given us and made us acquainted with world thoughts on Democracy, Socialism, Fascism, Nazism, Bolshevism and other isms and their subtle differences. It is through this language that a Punjabi, Tamilian, or Maharashtrian has learnt to feel that our culture is the same and as such our nationality should be the same. For advancement of science it would be a retrograde step for the present to teach scientific subjects like Medicine Surgery, Chemistry, Zoology, Philosophy by books translated in Hindustani with an altered nomenclature based on Sanskrit, Persian or Arabic for current scientific words, It is the lawyer politicians who are ultra political but infra scientific who ask you to sing this hymn of hate against the English language. Even now the Russians, English, French and Italians insist on their students to know thoroughly one of these languages in addition to that which is their mother-tongue and why should we discourage its teaching in such a hurry The late Justice Ranade had once remarked that it was providential dispensation that brought us in touch with the English people and their language ultimately to be of benefit for the people of this country, and he was right no doubt from what we are seeing at present. I will dilate no more on this subject except to say "Do not drop this pilot in a hurry as far as scientific progress of this country is concerned, and follow the Irish people on this point."

Leaving this question of language aside I come to the question of wars which as you are aware are condemned by everybody. Are we Surgeons as men of science entitled to do so? Have these wars done nothing for the evolution of Surgery and thus become useful to humanity? Plato has wisely said that the world is really foolish in not understanding that men are always at war with each other. Mintaogne states that wars are considered always the greatest and most magnificent of human actions. This is proved at the present time by Surgeons, who have returned from the last war after performing some military duties, sticking to their military ranks as Captains, Majors, Colonels, and Commanders as if their important work consisted not in aiding humanity in their misfortunes by their kind attention as healers of wounds, but in holding certain ranks in fighting units of the army.

If they really abhorred wars they would never have used their military ranks in civil life but would have considered a greater honour to be called merely "Doctors". They will never do that. The pomp and circumstances of wars have captivated the human mind so much so that its horrors are deliberately minimised, and conquests made after battles have more attention paid to them than those gained by Satyagraha and Ahimsa. Even accepting things as they are, man who dominates nature so much decends at times below the level of an animal to wage a relentless war on his own species as we find in Calcutta, Behar, Noakhali, Bombay and South Africa in preference to turning his immense knowledge gained from nature against the most potent of his enemies, viz., bacteria, ignorance, bigotry and religious intolerance. These have caused more deaths than powder and bullets. This is due to the savage instinct or virtue which comes to the top in case of disagreement to decide "Can I kill thee" or "Can you kill me". This makes wars necessary till we have conquered this savage beast in our own self. I must say we are still in the infancy of civilization.

Because of the lack of knowledge of an average surgeon in historical matters it seems appropriate to give you here a brief resume of the evolution of Surgery due to wars of different periods, advantages gained by humanity and the prestige the Surgeon has acquired as observed from records of authentic history.

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*Presidential Address delivered at the 8th Annual Conference of the Association of Surgeons, India—Courtesy: Ind, Jr. of Surg., March—June 47.

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Surgery has been rightly called the Queen of Medical Art though a sub-committee of Association for alterations of the rules and regulations of this Association would like to call it a science of Surgery and not an art. Its history is coeval with the history of mankind. The first surgical operation was probably that of extracting arrows received in combat and healing of wounds received in hunting wild animals. The term Dhanvantari in India probably meant a man proficient in curing people injured by Dhanushya. He represents Aesculapius of Indian Medicine.

There was fair amount of Surgery in ancient Egypt 5,000 years ago as found by researches carried out on Egyptian Mummies. In South America a collection of Peruvian skulls shows distinct signs of their being trephined apparently for headaches also in prehistoric period with surgical instruments fashioned from stones. In Greece, Surgery found a fertile soil to flourish 2,000 years ago due to constant waging of wars there among the tiny local governments and against Persia, when Greece became Imperialist and wanted to conquer the whole of Asia. Fifty years before the birth of Hippocrates, Surgery is said to have flourished in Greece. Hippocrates treated with success diseases of bones and joints, fistulas and trephined skulls and repaired defects left by nature in completing its job. He removed stones from bladders and treated haemorrhoids. His achievements in surgery no less than in medicine placed medical science on sound basis. It is stated that Polemy was killed while being trephined after his fall from a horse on the battle-field.

Arabs carried the torch of medical science during the period 800 A.D. to 1350 A.D. They translated the work of Hippocrates and Galen and made some original researches in drugs derived from mercury and sulphur. They built big hospitals in Bagdad, Damascus, Mansur hospital at Cairo and at Cardova in Spain. Albucacis in 1013 wrote a book on Surgery. Avazoor (1113 to 1193) found the cause of Scabies. Paul of Agean was a surgeon who treated diseases and foreign bodies in ear, nose and throat and invented tracheotomy operation. In 1190 they were able to get permission to do dissections on dead bodies to learn Anatomy, one body being allowed to each physician every five years. Upto that time it was considered by Christians and Muslims both an unholy act to dissect a dead human body. Dissection of animals was also considered to be a low occupation not to be followed by a respectable profession. Knowledge of Anatomy became more accurate due to the sudies of one Peter of Avano studying at Padua and Arnold of Villa Nova of Mantpelier Universities respectively in 1250 A.D. Medeno of Bologna commenced his researches in finding drugs to cause sleep in patients before operation. Lucca made some additions to these drugs in 1258 A.D

The science and art of Surgery in India can be traced to the same period as that of Hippocrates if not earlier. Atreya was a great physician at Taxilla University and Shushruta a surgeon at Kashipeeth of the ancient Benares University. Both of them flourished before the 7th century B.C The Physician Charak was at the court of the Buddhist ruler Kanishk in 100 A.D. Shushruta long before had described the Anatomy of the human body as studied on human cadavers and has given a list of surgical instruments needed for major and minor surgical operations. Indian Medicine and Surgery flourished till the 12th century A.D. when the chief surgeon at the court of Muhamad Ghory was a Hindu Physician the father of Wachaspati who had summarised all the medical and surgical literature exisiting at the time *i.e.* 1250 A.D. The art of printing not in existence the copies of such books were scarce.

Eye diseases were studied at Nalanda in Behar and ninety-four diseases of the eye have been described in the various Sanhitas.

According to writer Arrain Greek soldiers accompanying Alexander the Great in 327 B.C. thought very highly about the abilities of the physicians and surgeons in India at that time. But for all this it is a pity that these Unani and Ayurvedic methods of treatment of diseases based not on the knowledge of Anatomy, Physiology and Pathology as we now understand but based solely on empirical bases should be encouraged after a hibernating period of eight hundred years in this century, instead of leaving them for research by medical graduates for obtaining a post-graduate degree and thus obtain for us all the useful knowledge to be found in those systems.

We owe to the Romans the foundation of Ambulance work. It was the Roman General Labianus who made arrangements for his wounded to be carried in waggons drawn by swift horses to Admentium, a seaport, for surgical treatment in North African Wars, with attendant male nurses.

We also read that Saladeen, the Muslim conqueror after his conquest of Jerusalem allowed the Christian Knight Templars to look after the wounded crusaders about the year 1200 A.D. The wounded used to be looked after first by women and then by the surgeons, This was the real beginning of the St. John Ambulance Service. Arabs were at the height of their scientific attainments at this period.

Due credit for the proper establishment of the ambulance service goes to a lady. Queen Isabella, the Catholic Queen of Spain, who established Ambulance and Military Hospitals on modern lines in the years 1483 to 1487 in Spanish wars against the Moors. Tent hospitals for the sick and wounded furnished with attendants and medicines were established by her at her own expense. There were 400 ambulance waggons with her when the victorious Spanish troops entered Granada. Four large hospital tents with careful provision of all kind was a sight worth seeing. Wounded as well as the diseased were taken care of and the order, diligence and supply of all articles necessary and useful were as complete as in the best hospitals of Milan at that period.

The Queen herself went round the hospitals to talk to the patients and when advised to keep away from them said. "Let me go to them for they have no mothers. It will soothe them in their pains and weakness to find that they are not uncared for." Here we find an example for ladies of our country to visit hospitals more frequently after calamities causing serious injuries resulting in deaths more frequently. Improvement in military hospitals and ambulance service continued as one war succeeded another, as the

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number of fighting men increased from thousands to millions. As the quality of brutality, maiming and mutilation got more and more refined, thanks to the advance of science in war, the surgeons also became more and more efficient in the treatment of such cases with the help of the same progress in science.

An International agreement was signed by several European powers in 1863 where it was agreed to treat medical personnel and severely wounded cases as neutral due mainly to the efforts of a Swiss gentleman Henri Dunant who had seen the good work of Florence Nightingale and had visited the battle-fields of Crimea and Salferino, where the wounded were left on the battlefield unattended for several days without food or water. Dunant lost his whole fortune working for 25 years in this philanthropic work and had to live in obscurity from 1867 to 1901 when his merit was recognised. He received the Nobel Prize and further honours. To honour the country whose national flag was a white cross on a red ground the red cross flag was instituted with a red cross on a white ground. This is the origin of the Red Cross movement. I am unable to state why the red crescent was adopted for such work. Conditions as regards treatment of the wounded before this time was very bad indeed during the Napoleonic wars. We read about this from the account written by the great surgeon Ambrose Pare. He went to a stable in Milan after the French entered that city to keep his horses and found there, four dead soldiers and three dying propped up against a wall on grass strewed on the floor. They neither saw, heard or spoke. Their clothes were smouldering where gun powder had burnt them. While Pare was observing this an old soldier comrade walked in and asked if there was any hope of saving them. When he heard that there was no hope, the soldier went and gently cut their throats. When remonstrated he replied I hope I will find some kind person to do the same to me under similar circumstances. It seems these stables were more safe to the wounded than the military hospitals which were not free from enemy attacks in those days, though no fire could be lit there to keep the place warm on account of grass lying on the floor.

Non-existence of any trained personnel to look after the wounded in the armies of the Indian States with their wars with the British and French must have been one of the causes of the wholesale desertion of the soldiers after a crash on the battle-field resulting in their defeats, though their armies always outnumbered those of the British and the French.

In my opinion these constant wars among the nations of Europe and the experience gained there has been the main spring for the improvement of health and morale of the population there. The people there have improved physically and mentally. We have equally degenerated being robbed of our initiative, manhood and pride of race. It will be a great day for this country if we gain experience by military training in all our schools for the want of which much irregularity, indiscipline and want of team work are noticed at present in all our activities.

With this training, one can be of greatest use to humanity, in places where large gatherings of populations such as jatras, melas, uruses take place and where sanitary arrangements, supply of food and clean water and preventive methods such as vaccinations, inoculations and first-aid measures after accidents are to be carried out. The efficiency of all these depend upon the regulated experience made on disciplined material mobilised for wars or some other similar purposes.

To resume our subject viz,, the evolution of Surgery. After Hippocrates comes the name of Galen of Alexandria. His contribution to Surgery consisted in ligaturing of arteries, suturing of nerves and other operations on brain and spinal cord which were made all in the wars of the time. He also wrote a book on Human Anatomy.

Bruno de Langoburg helped to clarify the meaning of the term Surgery in his book Chirergica Magna in 1252 A.D. He stated that the essentials of Surgery consisted in bringing separated parts together, separate those that had gone united together and extirpate those which have got superfluous.

Lanfranc was also a surgeon of the 13th century. He was for abolishing distinction between medicine and surgery.

Henri de Modeville was his pupil. He was not at all satisfied with the Surgery of his time. He said that surgeons of his time know how to cause suppuration than how to heal a wound.

Taglia Cozzi made rhinoplasty operations for repairing noses popular. They were often cut off by the order of the Pope for sins considered to be mortal in this period of ignorance and religious intolerance.

Guy de Chaliac was the first in those days who started using extension apparatus for fractures in addition to splints. He also used moulding by bandages soaked in white of egg as a hardening agent where we now use plaster of Paris.

Ambrose Pare was a great surgeon at the time of Napoleon. His experience was gained at Hotel Dieu in Paris and as a military surgeon he treated with success wounds caused by swords, pistols and firearms of the time. He described different varieties of fractures including those of skull. He was the inventor of artery forceps, artificial eye and various other surgical instruments. He first drew attention of the relation between syphilis and aneurysm. He introduced ligatures instead of boiling oil to stop haemorrhage after amputations and this saved many valuable lives.

William Salicets is another name to be honoured. He distinguished between Arterial and Venous haemorrhages. He tapped hydrocephalus by cautery points and made other researches.

Wars have been of benefit to the progress of Surgery but I do not mean Surgery would not have progressed and remained stagnant without wars. The discovery of ether as a general anaesthetic by the dentist Morton in 1846 was not made under war conditions. This year is the centenary year of this great discovery and ether is still holding its own as a general anaesthetic. For 500 years previous to this discovery, a powder made from mandigora, opium hyoscyamus and camphor was used for inhalation when soaked on wet sponge. Hugh of Luce was its inventor. He insisted on cleanliness in Surgery. Pre-Listerian Surgery advanced due to the discovery of ether as an anaesthetic but it was characterised by

the presence of Pyaemia, Septicaemia, Erysipelas and Hospital gangrene.

Researches of Pasteur leading to the discovery of the cause of fermentation made Lister think that a similar phenomenon by minute organisms was the cause of suppuration. His studies to prevent the growth of such organisms in tissues in cases of compound fractures at Glasgow made possible the use of carbolic acid for dressing compound fractures and resulted in diminishing sepsis from the wards of that hospital. He was able to convince the great men of Surgery of that period of the efficiency of his method. Thiersch and Volkmann from Germany, Billroth from Vienna and Lucas Championere from Paris were impressed with his results and the position of antiseptics in Surgery was thoroughly established.

Brain operations were tackled with more and more confidence. The first operation for removal of the Gasserian ganglion successfully was performed by Sir Victor Horsley using antiseptic technic. I have had the fortune of watching this great ambidextrous surgeon performing brain operations while a continual douche of antiseptic lotion was being used to keep the parts free from blood and now 10 per cent of brain tumours are found amenable to Surgery. There were some tragedies on account of the over use of antiseptics. They were used not only for dressing of wounds or for disinfection of materials used at operation but also for saturating the air of the atmosphere of the operation theatres with carbolic acid vapour with disastrous results. Lawson Tait came on the scene at this period. He performed ovariotomies and other abdominal operations under aseptic conditions with success. Rubber gloves for the use of surgeons came into general use in the beginning of the present century.

Though this advance and progress in Surgery was not due to war conditions, the present period of war has made such progress that the medical history of the future will have to say of the last two wars more than any of the preceding ones for giving Surgery a powerful stimulus for its advancement as you will presently notice.

It was the South African war which opened our eyes to the fact that only 8,000 people were killed by bullet wounds while 14,000 died from Typhoid, Dysentery and other bacillary diseases and the importance of incoulation and vaccination as a prophylactic was established due to the researches of Sir William Wright, Haffkine and other scientists.

In the Russo-Japanese war, which took place soon after, the Japanese took full advantage of these discoveries. Inoculations against typhoid and tetanus were carried out resulting in the lowest death-rate during that war by these diseases.

We now come to the 1st Great War of 1914-1918 where machines and mechanics of destruction were still more developed. There were hardly any cases of Typhoid or Tetanus in this great war worth making a special report for improvements in the treatment of these diseases.

A great deal of work by Crite and others was carried out in America regarding treatment of Shock. Stress was laid on Anoci association and loss of fluid from general circulation. During this war shock was treated with saline solutions and also with gum acacia solutions given intravenously. Transfusion of blood was used though rarely and use of prepared plasma for transfusion was practically not known.

Wounds commenced being treated with Dakin's solution given continuously by Carrel tubes inserted in the depths of wounds when very septic and Bipp paste was often used to pack wounds with, to keep them free from contamination and also for its antiseptic value with good results. In later stages of the war, debridement of wounds with primary suture came into vogue, all with still improved results.

Injuries due to shrapnel, mines and bombs were extensive resulting in crippling of human beings. Sir Robert Jones recognised the number of such wounded disabled by compound or simple fractures and took it as a challenge given to surgeons to bring them back as useful members of society. With his exceptional skill and knowledge combined with marvellous capacity and ability for organization he met with success which is well known. He established the first military hospital for Orthopaedic Surgery with 200 beds leading to 33,000 beds for such cases in England and America.

Plastic Surgery for injuries to face and jaws with their hideous deformities were successfully dealt with by surgeons like Gillies and progress in this art now is phenomenal.

Coming to the present war it is now possible with an air of finality to survey the progress in Surgery and Medicine during the last six years. Scientific progress made in war enabled patients being carried from India to England supplied with artificial breathing apparatus. Air transport for taking patients from the battle-field to hospitals across the sea was freely used. Problems physiological and psychological in persons left in atmospheres they were not used to live have been attended to and solved.

The development of resuscitation therapy for the prevention and treatment of shock, replacement of fluid therapy for the maintenance of blood pressure in seriously wounded men has also been an interesting chapter of this war. On the base of knowledge gained before the war as regards the properties of blood plasma and serum in the prevention and treatment of shock it was deemed advisable to select dry plasma as the agent of choice for use in resuscitation of the seriously wounded and hospitals were supplied by authorities with the necessary quantity of plasma for use in the beginning.

During the war it was found that plasma while valuable as a first-aid measure in combating shock did not give favourable results, compared to those noted following the administration of whole blood in severely injured cases. This observation made the British organization feel the need of whole blood for transfusion. Units to provide adequate amount of whole blood were started actually in the theatres of war.

Americans soon arranged for blood banks in the different hospitals from donors on active service and supplied the needed amount of blood. By the middle of 1944 on account of the realization by the services the value of the whole blood as a therapeutic measure

lead to the development of a programme which provided shipment by air of large quantities of whole blood from U.S.A. both to Europe and Pacific battle fronts in containers kept at 40° Fahr. of such blood. About 86,000 pints of blood were supplied to the Pacific region alone. I have no doubt, blood will be needed in large quantities and would be ready in the next war as plasma was kept ready in the last war unless some other fruitful discoveries are made to replace some other fluid instead of blood. The values of serum albumin and fibrin ferment products is a further development. Serum albumin has been found useful in severely burnt cases to reduce oedema after salines have been given intravenously.

Only 25 grammes of serum albumin gave results corresponding to 1 unit of plasma, i.e. 300 c.c. Thus serum albumin was found to be superior to prepared plasma in such cases. Fibrin ferment foam has been found useful for arresting haemorrhage.

Sulphonamide and other sulpha drugs though useful when given in adequate doses by mouth in preventing infection of wounds seems to have very little influence in preventing sepsis when applied locally, notwithstanding that one hears glowing accounts concerning the value of sulphonamides thus used in preventing infection on such cases.

As regards Penicillin, not only the antibacterial quality of this drug discovered by the researches of Florey and Flemming has been confirmed by the extensive use made against the pathogenic bacteria and cocci of all varieties, but credit has to be given to the pharmaceutical, chemical and distilling industries of America for producing this drug in quantities, which in pre-war time would have been thought fantastic and incredible.

Properties of Penicillin and similar products like Streptomycin in saving life and limb and its role in the care of wounded must be considered in conjunction with other adjuvants of surgical therapy such as Plasma, Serum Albumin Amigen products, whole blood and sulpha drugs given intravenously.

The death-rate among the wounded in this war has been 4·4 per cent compared with 8.25 per cent in the war of 1914-18 among the Americans. It is interesting to know that the death-rate among the Germans wounded 10 per cent in the first four years of war, while they were winning all their battles. This has been mainly due to pre-operative, operative and post-operative improvements in the treatment of the wounded by the Americans and English Surgeons.

To demonstrate how the ingenuity of surgeons assisted by researches in science has been able to cope with wounds of lower extremities involving the main blood supply, viz., the deep femoral or the popliteal artery. This resulted often in amputation of the limbs. All attempts to save the limbs by ligaturing the torn vessels or by arteriorrhaphy failed due to firm oedema of the muscles rapidly causing structural alteration that was hard and unyielding. This prevented collateral circulation and generally ended in gangrene of the limb. Some success was obtained in the last war when the French Surgeons used Tuffiers vaselined silver tubes to carry on the circulation and Germans did the same by end to end anastomosis by Carrel sutures or by bridging the gap by a venous graft.

Americans have contributed to this Surgery devising venous lined sutureless Vittalium tubes. But these tubes are not always available in emergencies.

The following case reported in the American Journal of Surgery is interesting as to what could be attempted in such cases. The patient reported after injury to the deep femoral after a great loss of blood with blood pressure of 50 m.m. mercury instead of 125 m.m. 2,500 c.c. of blood was given by transfusion. This raised his B.P. to 104 m.m. and the injured ends of the divided vessels were tied. Lumber Sympathectomy was now carried out as the extremity still remaned cold and gangrene was threatened. The result was that the B.P. came down again to 67 m.m. from 104 m.m. but the extremities remained warm. Another 1,500 c.c., i.e. 50 ounces of blood was transfused. This resulted in establishment of the circulation and saved the life and limb as well, of the patient. 4,000 c.c. of blood, i.e. 135 ounces or 6¾ pints was needed for the purpose of this treatment for the want of which many of the early deaths in the hospitals due to exsanguination must have taken place. This treatment has come to stay and would be successful if blood banks have been established in hospitals all over the country.

A great deal was learnt in this war as regards the technic in the treatment of compound fractures and in cases suffering from burns avoiding discomfort to the patients by daily dressings. The horizon of work of the surgeons is enlarged due to experiences in treating results of destructive effects of explosive shells, fragmentation of bombs, torpedo attacks, buried ground mines and grenades. Attacks came from not only land but also from sea and air. The surgeons have thus gained experience in remedying and reducing the mortality caused by visceral wounds besides wounds of extremities.

The early education of a surgeon is in character merely an apprenticeship which leads to some dogmatic views. The sharing of experiences with surgeons from other schools of thought from different continents, when working together in properly supervised theatres of war has exerted a broadening influence on the intellectual growth of surgeons. Recognition of distinguishing qualities in persons not of their country or colour, when working on similar injuries and accidents or diseases moderates racial pride, breeds tolerance, and often creates esteem and respect for people of other nations and colour.

This list of the benefits rendered to the humanity by wars will be incomplete unless a statement is made in short of the other equally important benefits given to the civil population now that the war is over, though Surgery may be interested in them only indirectly. Dusting the bodies with D.D.T. powder for delousing purposes has made people so dusted immune from Typhus when living in the midst of a population suffering from Typhus epidemic. D.D.T. is a personal and environmental insectiside presents one of the most advanced preventatives not only against Typhus but when used as a spray, it has been able to control flies, mosquitoes and their larvae which are destroyed by its use. Needless to say that has prevented all diseases whose germs are spread by the mosquito agency, such as malaria and yellow fever.

The rat despite all old methods has multiplied and has become destructive all over the world and a constant menace to health. Two effective agents likely to replace all others have been developed during the five years of the war. One is known by Antu and the other Sodium fluro acetate. Both are acceptable to rats and are rodenticides without causing injury to higher animals.

The discovery of quinacrine, a drug superior to quinine, was made by Germans due to monopoly of the Dutch Cartels, which controlled the world market of quinine. When Germans found difficulties to obtain sufficient quantity of quinine in the last world war they discovered chloroquin which causes abrupt termination of the clinical attacks of malaria in only a day or two. Further development gave us Atabrine or Quinacrine, Pamaquin and Paludrine.

The drug B.A.L. British Antileusite was also discovered during this war. It is a therapeutic agent against the local and systematic action of certain arsenical war gases and arsenical poisons. It is found useful in the treatment of Dermatitis and Encephalitis caused by an overdose of maphersan.

Considerable quantity of Gamme Globulin is produced in the preparation of serum albumin. This globulin is found to be useful in amelioratinġ the attacks of measles and protects against infective hepatitis.

A formalized vaccine against influenza has also been discovered which confers immunity against this dreaded disease which carried away millions of people after the last war.

Glycol vapour from 1 gramme of the drug has been found highly effective in sterilization of several hundred millions C.C.S. of air from pathogenic bacteria attacking respiratory passages and could be used in hospitals by a proper oiling of floor mixed with the drug and thus prevent the dreaded pneumonia and other respiratory diseases.

A new era of physical science has developed by the discovery that atom, hitherto believed to be indivisible, has proved to have a structure of electrical components held together by a complex force. It has an external electronic atmosphere and an internal nucleus which has been explored leading to modern knowledge of atomic energy.

With the electron microscope and ultra centrifuge hopes are maintained that significant information will be available regarding the ultimate constitution and fine structures of living matter and a new era for the ultimate control of life processes is not far off.

By strongly irradiating the germinating seeds by X-Rays a new type of tobacco plant with a 13 ft. long leaf has been produced. Ovums thus irradiated are likely to have great alteration of some of the genni resulting in change of the biological character of the offspring of such an ovum.

Machines of a million voltage are comparatively recent developments. X-Rays produced by machinery of lower voltage by their attacks on the cathodes have been used for 30 years for treatment of superficial cancers, but their penetrating power is low. Rays of a million voltage are to be used not for creating X-Rays by attacking the cathode of metal but by making diseased tissue act as a cathode.

Cathode rays of electrons produced by five million volt machines are liable to penetrate the body when exposed to it to a depth of one inch, where they produce their maximum results. It is hoped that electrons thus produced will be useful in treating deep seated cancers.

I have said nothing so far about the researches made by Russian scientists and surgeons in this war. They concerned mainly in grafting of tissues obtained from healthy soldiers recently killed in battles on other individuals deprived of the same most successfully. Eyesight is improved, contractures of limbs prevented and functions of organs have been restored by these researches.

The last two wars have been distinguished by more humane considerations for the rehabilitation of men of the fighting units. Nothing was done for them in the wars of early centuries except granting them a miserable pension.

The medical profession has always heartily assumed the responsibility placed upon it and discoveries and advances have been made to maintain the humane objective of alleviation of pain and suffering and restoring men as rapidly as possible in order to retain their services as trained men. But no one can deny that the records of the success in providing assistance towards a satisfactory adjustment to civil life for those who are discharged for physical disabilities from the army are still very poor. No encouragement has been given to such men that though they are handicapped they are not disabled for life. In the past rehabilitation of such men was left to men themselves, but now the problem of readjustment of such men has been accepted by Governments of the various victorious countries. The rehabilitation starts while the patient is in the military hospital, while under treatment and is complete when he is ready to leave the hospital.

This programme consists of physical therapy, occupational therapy, physical training and vocational education useful in civil life to discharged men not able to carry on their original occupation and confidence is created in them that they can take a useful place in the community in which they live.

Who can say after all these facts that wars have contributed nothing for the good of humanity or it is a wind that blows nothing but evil.

Short Notes on A Few Sulphonamides Based on Personal Experience

BY

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At the very beginning of writing these notes, I like to make it clear that I shall give my experience in the use of only a few sulphonamides in my practice in the rural areas in the treatment of common diseases.

Sulphapyridine (M. & B. 693), Sulphadiazine, Sulphathiazole, Sulphaguanidine and Sulphanilamide are the preparations which are commonly used by me; and among these I use sulphapyridine, sulphadia-

zine and sulphaguanidine frequently, sulphanilamide and sulphathiazole are used occassionally only.

1. **Sulphapyridine** is very effective in Pneumonia, Bacillary Dysentery, Gonorrhoea, Gastro-intestinal troubles etc. I think it is an antipyretic too. That is, it reduces febrile temperature.

In Pneumonia sulphapyridine with soda bicarb and an alkaline mixture are used alternately.

(1)	Sulphapyridine Tabs.	8
	Soda Bicarb (monton)	dr. 1
	Nicotinamide Tabs.	8

F. P. divide into 8 powders. For the first dose 2 powders, then 1 powder every 4 hours for the first 24 hours; afterwards one powder every 6 hours.

(i)	Soda Citras	gr. 20
	Pot Citras	gr. 20
	Spt. Chloroform	m. 10
	Vin. Ipecae	m. 5
	Syr. Basak and Tolu	dr. 1
	Liq. ammon. acetatis	dr. 1
	Aqua ad	oz. 1

One ounce to be taken every 4 hours alternately with the powders for the first 24 hours; later, every 6 hours alternatively with the powders.

Formerly I never prescribed Nicotinamide. In some cases persistent vomiting compelled me to discontinue the drug. Addition of Nicotinamide is being made in anticipation of preventing nausea and vomiting. Whether Nicotinamide can satisfactorily serve the purpose of preventing nausea and vomiting, I cannot boldly say. In every case of Pneumonia sulphapyridine does not cause nausea and vomiting, and in spite of addition of Nicotinamide with Sulphapyridine in some cases nausea and vomiting occurred.

In one case of Pneumonia treated with sulphapyridine complete suppression of urine occurred and lasted for 2 days. Catheter was passed in vain. Free intake of glucose, alkaline mixture and copious drinking of water produced diuresis.

In cases of Pneumonia treated with sulphapyridine, when alkaline mixture and intravenous injection of glucose were given no vomiting occurred; most probably it is due to anti-ketosis action of glucose. Glucose serves the purpose of food too. So, I think intravenous injections of glucose should be given in all cases of Pneumonia treated with sulphapyridine. But in rural areas, for many causes, in every case of Pneumonia, giving of intravenous glucose injections is not practicable. Oral administration may be encouraged, but oral administration is not so effective as injections.

For the prevention of the bad effects of the sulphonamides I do not advocate the use of Nicotinic acid in pneumonia for fear of fall of the blood-pressure as a result of vaso dilatation.

In cases of Pneumonia complicated with nausea or vomiting I do not use sulphapyridine, and if during the course of sulphapyridine nausea or vomiting occurs, it is discontinued and sulphadiazine is administered instead; and from the mixture vin ipecac is dropped.

No stereotyped mixture is prescribed—the combination of the mixture is always changed according to the requirement of the particular case.

In the treatment of Broncho-pneumonia sulphapyridine is useful but not so effective as in lobar Pneumonia. In Broncho-Pneumonia I advocate the use of an alkaline mixture containing some stimulant expectorants.

It is to be remembered that the auxiliary treatment of cases which are being treated with sulphonamides should be in the same line as was before sulphonamides were available.

In fever complicated with diarrhoea, dysentery or other intestinal troubles the administration of sulphapyridine checks these symptoms with immediate fall of temperature. This may be true with other absorbable sulphonamides also. Hence I conclude that sulphapyridine is also an antipyretic. Though very effective, the field of sulphapyridine will gradually be narrowed because of untoward side effects. But at the present stage of my knowledge it is rather difficult to check the temptation of prescribing sulphapyridine in Pneumonia inspite of the probability of untoward side effects.

In bacillary dysentery the use of sulphapyridine is very effective. The only drawback is the probability of occurrence of vomiting—in some cases vomiting becomes so troublesome that the administration of the drug becomes impossible.

Agranulocytosis, anaemia, cyanosis and other toxic reactions never occured in my cases. Therefore I am not mentioning them in this article.

2. **Sulphadiazine**:—It is very useful in Pneumonia, Gonorrhoea, Bacillary Dysentery and other intestinal troubles. Though sulphadiazine is said to cause nausea and vomiting in some cases, no such complication has arisen in my cases up till now. In bacillary dysentery it acts very satisfactorily.

I think all the sulphonamides have the property of curing Bacillary Dysentery more or less. The selection of the preparation however is of paramount importance for securing quickest result without untoward side effects.

3. **Sulphaguanidine**:—It is used in bacillary dysentery and colitis. It is not absorbed and it does not circulate in the blood as is the case with sulphapyridine and other sulphonamides. For this, the administration of sulphaguanidine does not produce nausea and vomiting. In gastro-intestinal disorders which require the use of sulphonamides and where local action is called for sulphaguanidine is the drug of choice.

In Bacillary Dysentery all the sulphonamides are effective more or less but sulphaguanidine is the best because it is most active and at the same time innocuous. In all other gastro-intestinal troubles it may be administered with the good hope of getting satisfactory results. I have found good results by administering sulphaguanidine in diarrhoea, dysentery and mild cases of cholera.

No case of acute attacks of dysentery proved sulphonamide resistant at my hand. I have used sulphonamide preparations in amoebic dysentery also with success. I like to draw the notice of my readers to this particular point and await their opinions.

4. **Sulphathiazole**:—It is effective in pneumonia, gonorrhoea and staphylococus infections. In comparison with sulphapyridine its action in pneumonia is mild. It is easily absorbed and quickly eliminated from the system. So it required more frequent repetition than sulphapyridine and sulphadiazine. For these reasons I do not advocate the use of sulphathiazole in pneumonia. The most outstanding feature of sulphathiazole is its usefulness in staphylococus infections. In the absence of Penicillin it is the drug of choice. In abscesses, boils, carbuncles, injuries etc., sulphathiazole is extensively used with good results.

In injuries sulphathiazole powder is used. Cibazol Antiseptic powder (Ciba) is very effective in septic injuries but it is costly. I frequently use it and it is my favourite medicine in all injury cases.

In gonorrhoea sulphothiazole is effective. Injections of milk preparation and oral administration of sulphathiazole produce good results in gonorrhoea. Recently I treated a few cases of gonorrhoea by the above method. 50 per cent of cases were apparently cured and 50 per cent of cases were relieved to some extent. So absolute reliance cannot be placed on sulphathiazole in combating gonococcal infections. In the absence of Penicillin, of all sulphonamides, sulphathiazole is the drug of choice in gonorrhoea.

Recently I treated two cases of erysipelas with Sulphathiazole (Thiazamide) with good result.

5. **Sulphanilamide**:—It is said to be effective in many conditions. I usually use it in puerperal sepsis and in dressing injury cases. It seems a little inferior to Cibazol antiseptic powder (Ciba) in combating sepsis but it is very cheap and so its extensive use is possible. In all other conditions where sulphanilamide may be used, it is not prescribed as better preparations are available now.

6. **Succinal Sulphathiazole and Phthalyl Sulphathiazole** are new preparations. I am not in a position to make any comment on their usefulness, as I have not so far used them.

"Truth Drugs"

BY

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"Truth drug" means the drug under the influence of which confessions are extracted from a person.

The Latin proverb "*In vino veritas*" suggests that all the spirits were known to the ancient as truth drugs. The Romans used to make their prisoners drunk when they wanted to extract confessions from them; that of course is no proof that alcohol is a truth drug. On the other hand, the drug may minimise the mental faculties, bring the person to a state in which he cannot realise what he is talking about, and will readily agree to any suggested crime, if it is put to him that he has done it; naturally the moment he is sober, he will deny it. Or the alcohol may exalt a person in his own estimation and under its influence he will brag of deeds he lacks the courage to do when sober.

Next we have the famous drug of the East, the *Hashish*. This is an extract from a plant known as Canabis Indica. One of the great Mohammadan leaders in the past-Hasani-Sabhah-used *Hashish* as his weapon to extract confessions from his victims and friends alike; under the influence of *Hashish* victims will confess to crimes or pretend to have done deeds out of vain-glory which they feel under its influence. Here again it is practically impossible to decide whether the patient is telling the truth or just imagining things suggested to him.

In the same order we can class all the opium products such as Morphine and Heroin or Cocain and Hyocine. All these are extract of plants, and all are more or less widely used by addicts. As in the case of *Hashish*, it is difficult to ascertain whether a Morphinist confessing to a crime is telling the truth or not.

Under the third group come the Anaesthetic drugs. Even Sir James Young Simpson, the father of anaesthesia, was surprised to hear, his usually tacit wife and friends talk freely, confessing their past deeds, when he persuaded them to inhale a small amount of chloroform. There is, in fact, plenty of evidence that anybody under the influence of an anaesthetic will tell the truth or at least will say things that he or she has neither read or heard, pretending that they are their own deeds. But the moment they are sober, they have forgotten all that has occurred.

Finally there is pentothal—a derivative of barbituric acid used as an anaesthetic in intravenous anaesthesia. This drug is the English equivalent of the continental drug "Evipan" which is also a barbituric salt. It has been reported that Pentothal had been used as a "truth drug" in the examination of an alleged criminal under its influence when the prisoner confessed what he had done to his victim on the night he intended to kill her.

Medically, these products of barbituric acid are the only drugs that might be called "Truth Drugs." They are slowly injected into the vein in solution form.

The drug is so potent that if injected into the vein it produces pronounced painless sleep for about 15 minutes. If however, the drug is injected slowly drop by drop, there comes a moment when the patient is not asleep but feels drowsy and talkative. This is the moment when all inhibitions are released from the human brain and deep secrets from inside come to the fore.

But a person cannot be drugged all the time and it is impossible to keep a man permanently under the influence of the so called "Truth Drug".

SELECTED ARTICLES

Choice of Drugs in the Treatment of Duodenal Ulcer* :—BY A. H. DOUTHWAITE, M.D., F.R.C.P. *Physician to Guy's Hospital* (*From the British Medical Journal, july* 12, 1947)

Much has been written during the last quarter of a century on dietetic control of duodenal ulceration, whereas the rational use of drugs has been to a great extent ignored. It is on the latter therapeutic measure that I present the following observations.

Belladonna

The use of belladonna in the treatment of duodenal ulcer has been practised widely for 25 years. Experiments on animals, and later on human beings, led to the belief that the drug caused a considerable reduction in acid output by virtue of a paralysing action on the vagal nerve endings. Thus Bennett (1922) emphasized the value in this respect of washing the stomach with a dilute solution of atropine before meals. It soon became standard practice to give belladonna or atropine, usually 5 minims (0.3 ml.) of tincture of belladonna before alternate twohourly feeds (Ryle, 1923) and 1/100 gr. (0.65 mg.) of atropine sulphate hypodermically at night. Ryle stated that belladonna given in this way would cause dry mouth, relaxation of the pylorus and thus reflux of duodenal contents, and modification of the gastric acidity more than that produced by alkali. Schick (1910) declared that its chief value lay in overcoming pylorospasm, and Crohn (1918) refers to the transient and poor effects of atropine on gastric acidity.

No serious criticism of the use of belladonna as an acid depressant arose until in 1938 Davidson and Nicol communicated to a meeting of the Gastro-Enterological Club the results of experiments which showed that even toxic doses of atropine had no constant or marked influence on gastric acidity. Later Nicol (1939) published a paper reiterating that atropine failed to influence gastric secretion and that its value lay in its antispasmodic action.

If belladonna has in fact any action in reducing gastric secretion it can only be by virtue of its paralysing the vagal terminations. It follows, therefore, that only reflex secretion would be abolished, whereas the more important and lasting humoral secretion would be untouched. On theoretical grounds one would expect some diminution in acid output to be produced by belladonna, the degree of change being influenced by the character of the food—appetizing or monotonous—the personality of the subject, and the period of time following ingestion of food. It would be inconceivable that a therapeutically effective reduction of acidity could be produced by belladonna in any dosage.

In order to confirm Nicol's work I investigated the effect of *l*-hyoscyamine on the test-meal curves of 25 patients with hyperchlorhydria and duodenal ulcer. It will be rememberd that the action of belladonna is largely due to atropine, and that atropine is racemic hyoscyamine. Furthermore, the peripheral effect of atropine is almost entirely due to its *l*-hyoscyamine component. As it is this action which concerns us, and as the central stimulant effect of both *d*-and *l*-hyoscyamine is unwanted, the latter drug was clearly one of choice. Hyoscyamine sulphate, 1/80 gr. (0.8 mg.), was given by mouth night and morning for three days. On the fourth day, an hour after the morning dose had been taken, the test-meal was given. It will be appreciatad that this is high dosage, equivalent in alkaloid value to 36 min. (2.1 ml.) of tr. bellodonnae per doses, Within 36 hours it produced persistent dryness of the mouth, thirst, and dilation of the pupils. Duodenal ulcer pain, if previously present, disappeared as soon as these signs were manifest, yet it will be seen that the effect on acidity was so slight that it is highly improbable that it would have influenced the pain. Although in a few instances the depression of acidity was more than that shown in the graphs, in no case was it great or prolonged.

If, then, it be agreed that the effect of belladonna on gastric acidity can be disregarded, why is it that it does in fact relieve pain? Of such action there can be no question provided that adequate quantities be given. No benefit is derived from belladonna unless persistent dryness of the mouth is produced by it. The customary dosage is therefore useless. In practice it will be found that 30 min. (1.8 ml.) of the tincture of belladonna, 1/100 gr. (0.65 mg.) of atropine sulphate, or 22 min. (1,3 ml.) of liquid extract of hyoscyamus given four-hourly will be effective. Yet more efficacious is 1/120 gr. (0.54 mg.) of *l*-hyoscyamine twice daily (Douthwaite, 1939).

It is well known that the belladonna alkaloids have a pronounced effect on the motility of the gastro-intestinal tract, especially in the direction of quelling abnormal contractions. It is also usual to note excessive gastric peristalsis, often combined with pyloric spasm, in patients suffering from duodenal ulcer. Furthermore, rapid emptying of the stomach is common not only during the active phase but also during periods when healing of the ulcer seems to be established. Numerous observers have noted how this hypermotility is abolished by full doses of atropine. It can be demonstrated radiographically, and was noted by Wolf and Wolff (1943) in their experiments on a patient (Tom) with a gastric fistula. They showed, furthermore, that atropine resulted in a great prolongation of emptying time.

If it can be accepted that the pain of duodenal ulcer is due to abnormal contractions of muscle fibres in the stomach or duodenum, or both, the benefit conferred by belladonna can be understood. There are two schools of thought in regard to the pain-producing factor: the one favouring muscular contractions and increased tonus, resting on the observations of Bolton (1928), Christensen (1931), Hurst (1911), Ryle (1926), and Poulton (1928); the other stressing the importance of acidity, based on the work of Palmer (1926), and recently of Bonney and Pickering (1946). The evidence derived from careful clinical experiments by the latter school certainly presents convincing grounds for the belief that a certain level of acidity, varying from case to case, will, if reached, be directly responsible for ulcer pain. This does not,

* Based on a communication to the Brighton and Sussex Medico-Chirurgical Society on April 3.

however, exclude the possibility that the muscular contractions may also cause pain or, in fact, may be the usual excitant of pain production. An argument often put forward is that if an intragastric balloon fails to record a rise of tension coincident with pain, increased muscular tonus cannot be incriminated. Such a conclusion is not justified. Only if an increase of gastric tonus as a whole should occur would one expect it to be registrable manometrically. Localized spasm could not possibly influence the tension within the balloon, yet it might well give rise to pain.

The "acid hypothesis" fails to explain certain common features of pain in uncomplicated duodenal ulcer—namely: (1) Its occurrence at 2-3 a.m. and its spontaneous subsidence even if no food or alkali is taken. The chart of gastric acidity taken during sleep shows it to be lower at 2 a.m., which was the hour when pain usually wakened this patient. (2) Its spontaneous subsidence before meals if the meal is postponed. (3) Its lessening or disappearance within half an hour of lying down. (4) Its relief from the application of heat to the abdomen. This is known to inhibit gastric and intestinal peristalsis (Bisgard *et al.*, 1942). (5) Its rapid relief by CO_2—producing antacids, whose effect on acidity is transient as compared with the non-gas-producing antacids such as trisilicate. (6) The invariable relief afforded by full doses of belladonna alkaloids.

It is reasonable also to assume that the pain of gastric and duodenal ulcer has the same mechanism of production; yet in the former case gastric acidity is usually within normal limits and there may, in fact, be no free hydrochloric acid throughout digestion.

Finally, a positive argument in favour of the muscular tension theory is afforded by radiographic observations. The radiographs of the stomach of a sufferer from duodenal ulcer were obtained within 24 hours of each other. Continuous pain was being experienced in a case in which a series of peristaltic waves are seen. In another, gastric tone and motility are strikingly lessened as the result of 1/80 gr. (0.8 mg.) of hyoscyamine sulphate. The patient was entirely free from pain. Numerous observations have shown the same sequence of events. It follows from this that the operation of vagotomy for duodenal ulcer is wholly unjustifiable. Belladonna can achieve all the good results claimed for such surgery without the danger and permanent mutilation it entails. It is probable that two factors produce pain in peptic ulcer—abnormal muscular contractions, and a chemical stimulus provided by hydrochloric acid. The justification for the use of belladonna is thus established. We have now to consider the control of acidity.

Antacids

No matter what views are held on the mechanism of peptic ulcer pain production, it is common ground that free hydrochloric acid is of great importance in preventing the healing of the ulcer. It is reasonable, therefore, to seek to neutralize this acid so long as an ulcer is present. Once healing has been secured the need is far less, if indeed it exists at all. It should be noted here that Ryle and Bennett (1937), from a follow-up of 100 students subjected to test-meal analysis in 1921. concluded that there was no association between degrees of gastric acidity and the development of dyspeptic troubles.

In point of fact all the drugs commonly used to neutralize gastric hydrochloric acid have such a transient action as to be valueless. The fleeting action of sodium bicarbonate, calcium and magnesium carbonate, and tribasic phosphates is too well known to require further emphasis. Experiments carried out by E. B. French and myself on patients with peptic ulcer (Douthwaite, 1939) showed, furthermore, that aluminium hydroxide gel and magnesium trisilicate when given hourly failed to neutralize hydrochloric acid for more than a quarter of an hour. The former when given by continuous drip, 1 oz. (28 ml.) hourly, was likewise ineffective. It is true that in a long series one meets with instances in which one or other of the antacids appears to have a prolonged action, but it is the effect on the majority which is of importance.

One of the reasons for the transience of antacid action in cases of duodenal ulcer is that the stomach empties so quickly. The same conclusion was reached by Nicol (1939) in respect of the fact that hourly feeds of milk fail to produce neutralization. He also showed that neither hourly nor two-hourly feeds of milk foods, vegetable puree, eggs, and fish, in conjunction with carbonates, would cause lasting depression of gastric acidity; in fact, two-hourly feeds containing more protein are more effective than hourly milk meals.

The only satisfactory way to neutralize gastric hydrochloric acid for days on end is to give milk by drip-feed through a Ryle's tube passed into the stomach. Five pints (2.84 l.) given in 24 hours may be completely effective. The patient is seldom intolerant of this treatment, especially if the tube be passed through the nose. It is withdrawn and cleaned twice a week, and the drip can be discontinued at the end of three to four weeks. When such treatment is impracticable the next-best measure is to give 1/2 oz. (14 ml.) of olive oil (this delays emptying and reduces acid utput) and 1/2 oz. (15,5 g.) of magnesium trisilicate in 8 oz. (227 ml.) of milk two-hourly, between two-hourly main feeds. These should consist of porridge, egg, milky foods, bread-and-butter, fruit juices, puree of fruit and vegetable, fish, and chicken. In fact, if chemical irritants—for example, mustard, spices, vinegar, and alcohol—are avoided and if other food is free from gross roughage, all the common foods may be safely taken from the beginning of treatment. If a milk-drip is used, then three meals a day may be given in addition to the milk.

Anxiety

After considering hypermotility and hyperacidity, our third and last problem is the control of anxiety, the effects of which are inimical to healing. This has already been done in part by blocking vagal impulses with hyoscyamine. The choice of a suitable cerebral sedative is not a matter of great difficulty. Phenobarbitone answers the purpose in the majority of cases. It may, however, prove unsuitable by causing skin rashes, fever, giddiness, and in coordination. More commonly it produces intense depression of spirits and disinclination to co-operate in the full treatment of peptic ulcer. Yet again, it may

completely fail to relieve anxiety and restlessness unless given in excessive doses. If 1 gr. (65 mg.) thrice daily fails to produce the desired effect it is wiser to change the drug than to increase the dosage. It should be borne in mind that phenobarbitone is an indifferent hypnotic, and that at night it is usually necessary to give a more potent soporific—for example, "sodium amytal," 3 gr. (0.2 g).

When phenobarbitone fails a state of mental and muscular relaxation can be achieved by the use of cannabis indica. This drug has fallen into undeserved disrepute because of the danger of addiction, and even more because its preparations are often inert. The former risk is very slight when cannabis is used therapeutically for a limited period. It is certainly far less than that entailed by the use of opium and its derivatives. Taken by a patient resting in bed, and thus removed from any suggestion of conviviality, it produces a languorous state and sense of well-being, without the flights of imagination for which it is taken by the addict. Furthermore, it does not cause constipation, and the appetite is unimpaired. In fact, it may lend enchantment to the dietary.

Extractum cannabis (*B.P.C.*) is the preparation of choice; the tincture has a most unpleasant taste, and its resin is precipitated by the addition of water. The recommended dose of 1 gr. (65 mg.) is too small to be effective. Four times this amount should be given in capsules four times daily. The frequency of administration is adjusted to the result. It will allow of continuous drip feeding in patients who would otherwise be intolerant of it. It is seldom necessary to give the drug for longer than two weeks, and a supply should never be left in the patient's charge. I have used the physiologically tested extract and have found it to be active, but it is as well to procure only a small stock at a time and to keep it at a low temperature—10° C. The effectiveness of the drug in inducing, presumably by central action, relaxation of the stomach is well illustrated. Symptomatically this patient suffered from pyloric obstruction, yet the emptying rate, determined radiologically, was rapid. The second radiograph taken after treatment with cannabis at the same time, after a barium meal, shows that the rapid emptying was the result of hyperperistalsis and that true obstruction was present. This was confirmed at operation.

Harmful Drugs

In conclusion a brief reference to chemical substances which may aggravate symptoms of ulcer should be made.

Tobacco.—Experimental evidence favours harmlessness of smoking to patients with chronic ulcer. Neither rate of emptying of the stomach nor acidity can be shown to be appreciably affected. As against this it is a spontaneous observation of countless sufferers from duodenal ulcer that the pain, in the active phase of the disease, will always be produced or, if present, aggravated by the smoking of a single cigarette. Again, on inquiring into change of habits preceding a relapse, how often does one find that the only prophylactic measure which has lapsed has been abstinence from tabacco. It may well be that direct irritation of the gastric and duodenal mucosa is set up by pyridine, furfural, and acrolein, which are present in tobacco smoke and which are swallowed in saliva. I have no doubt that smoking should be limited—a pipe after breakfast and another after dinner—throughout the life of the patient.

Mustard, vinegar, curry, and strong alcoholic drinks and the like are chemical irritants and should clearly be avoided. For the same reason chloral hydrate is an unsuitable hypnotic for the sufferer from peptic ulcer.

Aspirin.—The possibility that aspirin might act as an irritant to the gastric mucosa, and thus cause melaena, was raised by me some years ago (Douthwaite, 1938). Later, Lintott and I (Douthwaite and Lintott, 1938) carried out gastroscopic observations to determine whether this was in fact the case. We were able to show that an inflammatory reaction developed around particles of aspirin lying on the lesser curvature in 80 per cent of subjects. The greater-curvature mucosa failed to show this change, no doubt because it is more protected by mucus. The failure of Wolf and Wolff to produce an aspirin reaction in the mucosa of Tom may be attributed to this fact or to their subject's belonging to the 20 per-cent resistant group. Since our communication on this matter confirmatory evidence has been plentiful. We were able to show that calcium aspirin in solution was entirely free from harmful effects. When the drug is indicated it is this form which should be prescribed.

After-treatment

Drugs have but little place in therapy once the ulcer has healed. That is to say, after two months of thorough treatment it is seldom necessary to add drugs to the advice we give for the regulation of the patient's habits. Adequate time for meals, thorough mastication, extra food between meals, avoidance of chemical irritants, nine hours in bed nightly, and the refusal to attend to the telephone during meals or at night are far more important than dietary schemes, which are unnecessary, and drugs.

We know that the high gastric acidity persists and that the exaggerated peristalsis often subsides if the patient is free from worry and stress. The first sign that it is returning is usually that of vague discomfort before food or of waking in the night for no apparent reason. I believe that this gastric unrest precedes duodenal ulceration. If I am right its prompt control should prevent the relapses which hitherto have been a reproach to our therapeutics. Therefore, when such early symptoms are noticed, or again during periods of mental fatigue, worry, and stress, the administration of belladonna alkaloids should be resumed and be continued until the patient has been symptomless for a week. It is especially the night dose which is of value. Alkaline or antacid preparations have no place in therapeutics at this stage: they mask symptoms and encourage relapse.

Summary and Conclusions

The value of belladonna and its correct administration in treatment of duodenal ulcer are described. The relationship of ulcer pain to acidity and hypermotility is discussed. The use of antacids is considered. The value of phenobarbitone and cannabis indica is described. Reference is made to certain substances in common use which aggravate peptic ulceration.

Belladonna reduces gastric and duodenal spasm and the emptying rate of the stomach. It does not affect acidity. To be effective the dose must be large enough to cause persistent dryness of the mouth. The operation of vagotomy is unjustfiable. Alkalis and other antacids have such a transient and variable effect on gastric acidity that they might well be discarded as of little value. If given they should be combined with the administration of olive oil. Their danger lies in the masking of symptoms while the disease progresses. Continuous milk-drip-feeding often completely neutralizes free hydrochloric acid in the stomach Cannabis indica is a valuable sedative for use in the acute phase.

The cannabis indica used in these experiments was kindly supplied by British Drug Houses, Ltd.

Which Squints Respond Best to Orthoptic Treatment?*

EDITH ROTH, *Chicago, Illinois* (*From the American Journal of Opthalmology, June, 1947*)

The determination of the squints responding best to orthoptic training is one of the most important problems confronting ophthalmologists and orthoptic technicians today. We feel compelled, therefore, to look back on some of our work and search the records for any findings of apparent significance. Every fact which may assist us in making a good prognosis should be brought to attention at this time for several reasons;

1. A correct diagnosis and good prognosis will determine whether the squint is amenable to active orthoptic treatment.

2. Accurate diagnosis makes it easier for the ophthalmologist to place the patient in the proper category and thus put the proper emphasis on the type of treatment to be carried out by the technician.

3. A correct prognosis will make it possible to judge the length of time necessary for treatment, which is an item to be considered when certified orthoptic technicans are so scarce and the demands on their time so great.

4. When the patient can be placed in the proper classification, after a correct diagnosis, the ophthalmologist is better able to determine if and when surgery is necessary. It also aids him in the choice of surgical procedure.

First of all then, let us consider some of the types of squint. It is apparently agreed upon by ophthalmologists and technicians alike that purely accommodative squints offer the best prognosis. The squints which have a large accommodative factor are responsive to orthoptic treatment and refractive correction if the angle of deviation is not over 30 to 50 diopters, depending upon the accommodative element. Needless to say, the state of fusion must be good.

Squints with a large convergence-insufficiency factor are almost certain to give a good prognosis with a few months of treatment. However, squints with a pure or even a primary divergence-excess factor must be turned back to the surgeon for a truly complete cure. It so happens that most squints show a combination of the two factors, that of convergence insufficiency being the most common.

We have found that the few convergent squints with a larger angle of deviation for distance than for near are often more difficult to train. However, out of seven such cases in the past three years, two have been discharged as cured. We do not believe that any nonaccommodative convergent squints over 25 diopters are very amenable to cure by orthoptic training alone. Such a course of treatment is only recommended by the doctor when the patient is strongly opposed to surgery and does not consider the time element of treatment important.

Paralytic squints seldom fall into the category of purely orthoptic cases. Some cases of recent paralysis are referred on occasion, but, as a rule, the doctors do not consider even a case of paresis to be receptive to treatment alone. It is certainly true that most cases with a paresis of a vertical muscle must eventually be turned back to the surgeon, as nothing is more difficult for a patient to overcome than the uneven images of a large or highly variable hypertropia. If the vertical deviation is within 6 or 8 diopters, the incorporation of prisms in the glasses is often adequate until some compensation has been acquired in everyday seeing.

In regard to amblyopic squints, only those patients with 20/50 vision or better, in the poor eye are considered for active treatment. There does not appear to be any contraindication to a good result when visual acuity has been improved or central fixation has been restored. Preferably, not more than one or two lines difference in visual acuity should be found. The age of the patient is, however, important in considering the improvement of vision or the establishment of central fixation by occlusion or flashing. When the patient has reached teen age, it is difficult to carry through a strenuous procedure such as complete occlusion and monocular homework.

The prognosis of the anisometropic squints is rather difficult to predict. If the anisometropia is not more than 3 diopters and an alternate fixation is established in a short period of time by active treatment and occlusion, it appears to us that there is a possibility of cure. The attempt, therefore, may be worth while. Usually occlusion and treatment must be quite prolonged, even after alternate fixation has been obtained. Our experience with this type of squint has not been adequate to enable us to make any definite statements or positive conclusions. Since it has been noted that a number of cases of anisometropia with suppression or even amblyopia have shown no deviation at any time, it might be that surgery would prove most beneficial.

Most patients with a dissociated vertical divergence appear to have a general nervous instability that in itself is a definite handicap. These cases are said to be neurologic in origin, which makes us feel that the improvement of the patient's general physical condition will, perhaps, be more beneficial than a strenuous orthoptic work-up or possible surgical intervention.

It will probably be inferred from this discussion of types of squint that there is already some selection of cases at the Milwaukee Ophthalmic Institute. This is true in that a trial series of treatments, consisting

* Read at the meeting of the American Association of Orthoptic Technicians, Chicago, October 14, 1946.

of about eight visits, usually weeds out those cases considered unco-operative, not amenable orthoptically, or perhaps not ready for active treatment at the time. Nevertheless, we are only too cognizant of the fact that a greater and better selection of cases is necessary; especially is this so when the element of the time involved in some treatments must be considered. We are only too aware of the fact that we are still groping for added information on many problems.

In approximately three years of work, 255 unselected cases have been studied. Only 146 of these have had any active treatment of any kind. Of this number, 16 have now been discharged as cured, and 53 as definitely improved. Seven patients were discharged by us when several series of treatments failed to give the desired effect, and a score or so of patients have dropped out for various reasons of their own. The remaining number are still on treatment, although some have been given short vacations by the doctor. Frequently, a leave of absence will help to determine a patient's ability to hold what he has gained, and many times it aids one in making a prognosis. Eleven of the 44 cured or improved cases had surgery, five preorthoptically. The length of treatment varied from 2½ months to as long as 2½ years in a few cases. The age of the patients ranged from 3 to 45 years. During the last three years, the lack of personnel has forced the doctors to suggest that we devote the greater part of our time to children, in the belief that by doing this we could accomplish the greatest amount of good. Most of the children have been 3 to 8 years of age.

Our statistics on the findings and results in the treatment of a few types of squint may be interesting, but you will readily concede that we have gained little of definite value in making a prognosis. We have all ascribed too many failures to certain abnormal physical conditions and too many successes to normal physical reactions. We may also attribute too much importance to the classifications of squint cases and to the statistical findings of such groups. There are certain handicaps to a successful result, we must admit, and these have been stated by too many ophthalmologists and technicians to bear repetition. When we try to sift out certain facts of apparent relevance, however, we realize that there are not sufficient data of statistical importance. Our leads do not *prove* anything; they do not even show much definite correlation. We can only reiterate the claims of others when we state that cases of rather late onset and short duration give the greatest hope of cure without resorting to surgery As previously stated, our cases of accommodative squints are usually treated without any orthoptic exercises; squints with a large factor of convergence insufficiency can almost certainly be cured with some supervised work and home training; those with a major divergence-excess element require surgery in most instances—that is just about the extent of our findings.

In the final analysis, it is apparently not so much the type of squint which is significant, as it is the type of squinter. One of the most important factors to be considered in the individual case is the fusion status of the patient at the beginning of treatment. Those patients with muscle pareses, mixed correspondence, marked anisometropia, pure divergence excess, or dissociated vertical divergence are all handicapped, but they certainly are not hopeless cases. When only a glimmering of diplopia or true correspondence, a constant alternate suppression, or a persistent, firmly fixed, abnormal correspondence are present, there is reason enough to question the advisability of active treatment. Certainly a trial period of 2 or 3 months with no result in the elicitation of simultaneous macular perception or fusion is sufficient to discourage the most optimistic technician.

On the other hand, patients with quick response to fusion and even a feeble attempt at voluntary control are reasons for encouragement, as they are rare indeed in our Clinic. It has been our experience that a good or poor fusion faculty can only be determined by a short trial period, since there are no positive points in the history of the case to denote this possibility. When onset of the squint is at 3 to 6 years of age with some intermittent appreciation of single binocular vision, we are optimistic. However, a history of squint from birth does not necessarily indicate a poor prognosis. This is especially true if, at some time, the squint was an intermittent one, or if the patient is young (yet co-operative), because the duration of squint is then short.

The exceptions in the cases of squints with poor fusion dating from birth, are too many to enable us to make any positive statements or predictions. There are also many cases with histories of late onset and short duration which prove bitterly disappointing. We do not know how much we can depend upon any history, since so many prove unreliable, Few parents know what caused the squint, whether it is constant or occasional, or whether the onset was sudden or gradual. The squint is usually noted gradually, and, when we make the provisional diagnosis of constant manifest strabismus, most parents tell us the squint is only an occasional one, although it is sufficiently great to be obvious even to the lay person.

In spite of the fact that much is said and written about the poor prognosis of cases with abnormal retinal correspondence, we do not find that most cases with a firmly established anomalous correspondence are much more difficult to treat than those with a persistent marked alternate suppression. Most of our cases show a marked suppression at the start making it necessary for us to treat them for a month sometimes, before coming to a definite decision concerning the prognosis.

Obviously we never diagnose the correspondence until some kind of actual binocular vision has been established; many cases of rapid alternate suppression simulate an abnormal sensorial correspondence, and the patient's answers, even in regard to the crossing of images, are unreliable. The cases of constant monocular esotropia with a rigid and moderate deviation are most likely to show a firmly fixed abnormal correspondence. Most of these cases, as well as most cases of marked alternate suppression, do occur in squints dating from infancy; that is, before three years of age. In fact, 71 out of 92 firmly fixed abnormal correspondence cases, which were studied, were apparently squints since infancy. It might be well to mention here that most of the cases dating from infancy also have a history of an inherited tendency. Out of the 255 cases studied, 109 cases had

an hereditary deficiency. Out of the 109 cases giving this history, 86 cases dated from infancy. If the truth were known, inherited fusion deficiency would be a factor in the etiology of many more cases.

Second in importance only to fusion as a prerequisite in successful squint training is the attitude of the patient—the personal desire for cure. At times we feel this to be the most important consideration in the case, which challenges us all the more. Our experience has taught us that seldom does poor fusion sense, or centers, prove too much of a handicap for the patient who is eagerly intent on improvement—not forgetting, for our part, that at times an apparently insurmountable handicap may discourage the most eager patient. However, we fully realize that, as in any teaching process, the proper stimulus will usually elicit both attention and interest. Our constant questions must be so worded as not to divulge what we may expect or wish as an answer; yet they must help the patient to scan the targets for details that will suggest enough information to elicit further information. In this way the imagination of the patient is stimulated. By constant questioning only are we able to assure sustained attention.

When we survey orthoptics in all its aspects, we must acknowledge that our success or failure depends upon the patient as an individual—as a person to be taught rather than treated. Certainly the patient who is physically and emotionally ready for teaching has the best chance for success. We, as technicians or teachers, must assess the needs of the individual. We must judge the advisability of actively stimulating the patient with a phlegmatic divergent squint by routing his success. We must consider the importance of passively stimulating by subtle suggestions of success a patient with a hyperkinetic convergent squint. It is this personal equation which truly spells success or failure.

On the Clinical Significance of Achlorhydria

BY PEKKA BRUMMER (*From Annales Medicinal Internae, Fenniae, Vol. 36, 1947*).

Following the introduction of the gastric tube by Kussmaul, Jurgensen and Ewald about the year 1870, a new phase began in gastrology. The quality of the gastric juice samples obtained after various kinds of gastric analyses became an important and indeed a decisive factor in the examination of gastric diseases. The hydrochloric acid content of the gastric juice has always been given special attention in gastric analysis. According to the content of hydrochloric acid in gastric juice, hyper-, hypo- and achylia were spoken of as separate clinical entities. Achylia in particular soon won general popularity.

The term 'achylia gastrica' originates from Einhorn 1888; however, already prior to him von den Velde and Ewald had attached attention to the absence of hydrochloric acid. The clinical features of achylia later were developed further by Oppler and Einhorn through the discovery of the so called gastrogenic diarrhea. Since then, the absence of hydrochloric acid has been designated by the more correct term of 'achlorhydria,' whereas achylia is employed to signify the absence of both hydrochloric acid and pepsin.

The clinical importance of achlorhydria has declined considerably of late. In general, British and American textbooks no longer mention it except as a symptom of gastritis, whereas in the European literature achlorhydria often still retains its position as a clinical entity.

In everyday clinical practice achlorhydria often continues to be the 'open, sesame' which fully accounts for the gastric complaints of the patient. To many physicians in the practice the establishment of an absence of hydrochloric acid in an individual gastric juice sample still constitutes sufficient explanation for the patient's digestive disturbances, which often may have lasted for years. Also, in the course of decades, the public at large has become trained to a firm faith in the decisive significance of hydrochloric acid deficiency and in the importance of trying to correct it by suitable substitution therapy, in most cases with hydrochloric acid. Characteristic of this belief is that most patients obtain, or believe they obtain, relief by taking a few drops of diluted hydrochloric acid during meals. Physicians also entertain just as firm a belief in this therapy. Even in scientific literature the opinion regarding the decisive importance of the absence of hydrochloric acid as a cause of gastric and intestinal disturbances still appears from time to time (e.g. Forsgren, 1946).

If the clinical literature on achlorhydria is studied more closely, a lack of critical thought and an adherence to old, already abandoned physiological ideas is conspicuous. Ever since Einhorn's and Oppler's time one finds the thought continuously presented that in the absence of hydrochloric acid so many different kinds of digestive disturbances occur, and without further consideration it is deemed that the cause of the disturbances established is achlorhydria, although there exist almost no investigations with control material as to whether the symptoms established are more general with achlorhydria patients than with persons with acid gastric secretions.

In considering the clinical significance of achlorhydria, the question can be viewed from three main aspects:

(1) The diagnostic importance of achlorhydria;

(2) The importance of achlorhydria from the standpoint of digestion;

(3) The share of achlorhydria in the causes of gastric and intestinal disturbances.

The term achlorhydria is used in the following to indicate complete achlorhydria and not the so-called pseudo-achlorhydria.

The Diagnostic Importance of Achlorhydria

The importance of establishing achlorhydria is indisputable in differential diagnosis between the addisonian pernicious anaemia and other macrocytic anaemias. In Finland, for instance, the physician may often have to differentiate addisonian pernicious anaemia from macrocytic anaemia due to fish tapeworm. If free hydrochloric acid can then be established in the patient under some conditions, an addisonian pernicious anaemia diagnosis can be totally rejected. As an example may be cited a patient recently under the author's care suffering from serious macrocytic anaemia which reacted well

changes be indicated, it is entirely erroneous to immediately assume that the changes would be of such a character as to reduce the intestinal vitamin B synthesis.

The Share of Achlorhydria in the Causes of Gastric and Intestinal Disturbances.

From a practical point of view the most important aspect in the clinical significance of achlorhydria is the part it plays as cause of digestive complaints.

The digestive symptoms appearing in achlorhydria may be categorized into ordinary, so-called dyspeptic distress, and tendency to diarrhea. On the other hand it seems far-fetched to separate from the dyspeptic distress group, as is sometimes done a special 'pyloric syndrome,' *i.e.* cases in which the symptoms resemble the epigastric pain connected with peptic ulcer.

It is generally stated in all text-books that a large part of the achlorhydria patients show no symptoms whatsoever. On the other hand I have been able to find in the literature hardly any information on the actual incidence of digestive complaints in achlorhydria. Eggleton establishes a tendency to diarrhea with only 11 achlorhydria patients of 100; with gastric patients he finds achlorhydria in only 10 per cent of the cases, which percentage does not differ from the general incidence of achlorhydria.

For the purpose of observing the incidence of digestive complaints in achlorhydria and particularly of finding out whether they are more general with these patients than with patients with acid gastric secretion, the Medical Department of the Provincial Hospital at Oulu endeavoured in the course of several months to perform a gastric analysis with all patients regardless of whether they complained of digestive symptoms or not. In these cases the first specimen was taken in the morning with empty stomach and a second after a Boas-Ewald test meal. If no free hydrochloric acid was established in the samples, an empty stomach secretion was taken in the evening four hours after the last meal. If free hydrochloric acid was not present even in this specimen, a further sample was drawn after a subcutaneous injection of insulin (32 units) administered with an empty stomach. Cases where no free hydrochloric acid was present in any sample were regarded as achlorhydria. No peptic ulcer or gastric carcinoma patients were included in the material, nor cases where the gall-bladder or bile ducts were found to be affected; also cases where tape-worm was the cause of symptoms were eliminated.

The material consists of a total of 364 cases, in 99 of which insulin-proved achlorhydria was established. The incidence of dyspeptic distress was as follows:

Achlorhydria cases ..... 16 per cent (16 of 99)

Other cases ..... 18 ,, ,, (48 of 265)

A tendency to an occasional, or most frequently a short attack of diarrhea, was found in the following cases:

Achlorhydria cases ..... 17 per cent (17 of 99)

Other cases ..... 14 ,, ,, (37 of 265)

As appears from these results, achlorhydria patients do not differ from other patients in regard to the incidence of dyspeptic distress and the tendency to diarrhea. In evaluating the results, due regard should be given to the fact that the investigation was carried out with hospital material, so that the true incidence of digestive complaints certainly is considerably lower. There is, however, no reason to assume that the material employed would affect in any way the relative incidence of these symptoms in achlorhydria cases. It can accordingly be regarded that on the basis of these results dyspeptic distress and a tendency to diarrhea occur with achlorhydria patients in not more than about 15 per cent of the cases, but in reality apparently considerably less frequently and that these symptoms are not more common with achlorhydria patients than with persons with acid gastric secretion.

The achlorhydria cases furthermore did not differ from the others in regard to the type of dyspeptic symptoms. In a material consisting of 50 patients who complained of dyspeptic distress and with whom achlorhydria was established and a control material of 50 dyspepsia patients with acid gastric secretion the symptoms immediately followed meals in 32 cases in the first group and in 26 cases in the latter. An hour or two after the meals the symptoms appeared in 7 and 12 cases respectively. In the remaining 11 and 12 cases the symptoms had no clear connection with meals. There was not actual pain in 15 cases in the achlorhydria material and in 12 cases in the control material.

According to the latest statistical information, complete achlorhydria occurs in various materials in 10 to 15 per cent of cases (Vanzant, etc., Polland, Bloomfield). The incidence of achlorhydria increases with age, being according to the aforesaid authors 25 to 35 per cent with persons over 60 years of age. With a view to comparing the occurrence of achlorhydria and of dyspeptic distress in the different age groups, the author has calculated the incidence of achlorhydria among the patients in the Medical Department of the Provincial Hospital at Oulu on the basis of investigations carried out during somewhat more than a year's time. All cases where a gastric analysis was performed are included in the material. A large part of the material consists of course of patients suffering from digestive diseases of various kinds, but in view of the fact that gastric symptoms, as has been shown above, are not more common with achlorhydria this circumstance can hardly be presumed to have any notable effect on the results. The incidence of dyspeptic distress, on the other hand, is calculated from material from the author's private practice, eliminating all peptic ulcer, gastric carcinoma, gall bladder and bile duct cases as well as those where the cause of the symptoms was found to be tape-worm. The material thus represents in a way the incidence of dyspeptic symptoms in polyclinical medical material. The results are given in Table I.

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to liver therapy. After insulin, free hydrochloric acid was established in the patient's gastric juice, but despite seven attempts no ova of Diphyllobothrium latum were found in the faeces. Anthelmintic was nevertheless administered, with positive results. The establishment of achlorhydria with anaemia patients does not, on the other hand, prove addisonian pernicious anaemia, as hydrochloric acid may be absent with patients suffering also from other macrocytic anaemias; indeed, this is often the case, at least transiently, where anaemia is severe. Also in combined spinal sclerosis diagnosis, achlorhydria is of similar importance as in pernicious anaemia.

Where peptic ulcer and especially duodenal ulcer is suspected, the establishment of achlorhydria speaks with fairly great certainty against a peptic ulcer diagnosis. However, this is generally of no great clinical significance, as an x-ray diagnosis alone generally suffices.

In gastric carcinoma, achlorhydria has no marked diagnostic importance, as it is established with these patients in only about 60 per cent of the cases.

An important problem is the relation between achlorhydria and chronic gastritis. Many authors entertained earlier the opinion presented by Faber and Konjetzny that achlorhydria is always a result of chronic gastritis and that the establishment of achlorhydria therefore justifies at the same time a gastritis diagnosis. The latest gastroscopic examinations of achlorhydria patients indicate, however, that in from 4 to about 20 per cent of these cases a fully normal gastric mucosa is found (e.g. Bonadies, Schindler etc., Carey, etc., Christiansen). In estimating these results it should be furthermore taken into consideration that the investigations were performed exclusively, or for the greater part, with patients who showed gastric symptoms, wherefore the figures presented above might have been different if the material had also contained achlorhydria patients with no symptoms, who, as the author will indicate later, form over 80 per cent of all achlorhydria patients. The importance of achlorhydria in gastritis diagnosis is also lessened by the fact that transient achlorhydria may appear in connection with various diseases, such as infectious diseases and severe anaemia. Summarizing the above it can therefore be stated that the establishment of achlorhydria makes a gastritis diagnosis probable, but not certain.

The Importance of Achlorhydria from the Standpoint of Digestion

Already the usual clinical experience that a considerable part of the achlorhydria patients show no symptoms proves that the secretion of hydrochloric acid is not—at least in every case—indispensable for the digestion. In considering more closely the possible effect of achlorhydria on digestion, the question can be viewed from three main points, viz., the effect of achlorhydria (1) on the chemical digestion, (2) on the gastric and intestinal motility, and (3) on the intestinal bacteria flora.

(1) The Effect of Achlorhydria on the Chemical Digestion

When the stomach is incapable of secreting hydrochloric acid, the action of pepsin also is abolished, for the pH optimum of pepsin is 1.5—2.0; already in a pH of 5 there is no peptic digestion. No great disturbances, however, are caused by this in the digestion of protein, for although the action of the proteolytic enzymes of the trypsin group is promoted by the protein first having been brought to the peptone stage, they can also attack native protein without difficulty.

Gastric rennin, the pH optimum of which is 6.0—6.5, is practically inactive at the pH of the gastric contents of the normal adult, wherefore its action is no weaker in the absence of hydrochloric acid. In general, rennin is of no great importance for adults and it can be fully substituted by the proteolytic enzymes of the trypsin group.

The significance of gastric lipase is so small that the absence of its action does not in any way disturb the digestion of fats. It is further to be noted that gastric lipase is inactive when the acidity of the gastric content exceeds pH 2.0—2.5, for its pH optimum is somewhere around 4 and 5.

On the other hand the absence of hydrochloric acid is favourable to the digestion of carbohydrates, for the action of ptyalin is then protracted, as it can continue in the stomach under much more favorable conditions than it can in normal acidity.

In addition to activation of the peptic digestion, hydrochloric acid as such has been regarded as having a directly softening and weakening effect particularly on connective tissue and on pectin between plant cells.

In test carried out by the author on the action of hydrochloric acid solutions of different strengths on bread and boiled meat, the dilution percentages used (0.5, 0.1 and 0.05 per cent) were not microscopically found to have had any more effect on bread in two hours than water had. On meat, on the other hand, a 0.5 per cent. hydrochloric acid solution had already in half an hour a disintegrating and dissolving action. In a hydrochloric acid content of 0.1 per cent. the action was not evident until after one-half to one hour, whereas 0.05 per cent solution was not found to have any effect even in two hours.

Although the hydrochloric acid content of pure gastric juice is 0.5 per cent, the corresponding hydrochloric acid content of the stomach during meals is not more than about 0.03—0.15 per cent. Taking also into consideration the time that the food remains in the stomach, it is evident in the light of the above experiments that the direct action of the hydrochloric acid on food has apparently no significant importance from the standpoint of digestion as a whole. In any case it is not so great that the other digestive processes would not be able to substitute it

Hydrochloric acid has also been considered to be of great importance as a stimulus to pancreatic secretion. However, in the light of recent research this does not hold true. The secretion of the pancreatic juice is controlled mainly in two ways, i.e, by vagus that impulse and hormonally by means of secretion. The vagus secretion was formerly considered to be of less importance than the hormonal. Mellanby, however, has indicated that the first mentioned, although smaller in quantity, has a very high ferment content. Hydrochloric acid naturally has no effect on the vagal pancreatic secretion, whereas it hormonally has a definite secretogogue effect on the pancreas. However, numerous other substances, such as meat extracts, fats, fatty acids, soaps, and water, produce a similar effect, and accordingly the absence of the secretogogue action of hydrochloric acid in achlorhydria apparently can be easily substituted. This is also indicated by the investigations of Betton and Pierangel, according to which the pancreatic secretion is fully normal in achlorhydria.

Theoretically, on the other hand, the conditions for the action of the pancreatic ferments are more favorable in achlorhydria than in the presence of hydrochloric acid, as the pH of the duodenum contents then approaches nearer to the pH optimum of the pancreatic ferments.

Closely allied to the question of the importance of hydrochloric acid to the chemical digestion is the problem of the relationship between achlorhydria and iron metabolism. It has been regarded that in the absence of hydrochloric acid the resorption of iron is impaired and that achlorhydria thus causes a deficiency of iron and tends to develop iron deficiency anaemia. However, nothing definite is so far known on this point. The importance of achlorhydria cannot be very great here, as the majority of achlorhydria patients do not develop anaemia It is indeed very probable that when both conditions are simultaneously present, achlorhydria is not the cause of the anaemia but a parallel manifestation or possibly a consequence. Also, the possibility of an exogenic iron deficiency is always to be taken into account, e.g. as a result of various kinds of 'achylia diets.'

(2) The Effect of Achlorhydria on the Gastric and Intestinal Motility.

In 1907 Cannon presented his well-known theory on the acid control of the pylorus, according to which the pylorus is controlled by the acidity of the gastric and duodenal juice, a high gastric acidity causing opening and a high duodenal acidity closure. On this basis was developed thereupon the theory of the rapid emptying of an achlorhydric stomach, which has occupied an important position in the evaluation of the clinical importance of achlorhydria.

According, to the latest research, however, this theory of the acid control of the pylorus is not correct. There is no isolated contraction of the pylorus, it being a part of the general motoric action of the stomach. When the gastric peristaltic wave reaches the pylorus, opening takes place, followed by closure. The emptying time of the stomach depends in fact on the general motility of the stomach and not on an isolated closure of the pylorus. Neither gastric nor duodenal acidity affect the emptying time (e.g. Ley, McClure etc., Baird etc.). The same is proved by general x-ray experience, according to which the emptying time of an achlorhydric stomach does not essentially differ from that of a normal stomach. The emtpying time of the stomach is in fact essentially dependent on other factors, such as emotional states, fat content of food, consistency of food, etc.; neither is the rate of progress of food along the intestine dependent on the hydrochloric content of the stomach (Egan). It can thus be held that in achlorhydria no great disturbances are to be anticipated in the motoric action of the alimentary canal due to absence of hydrochloric acid.

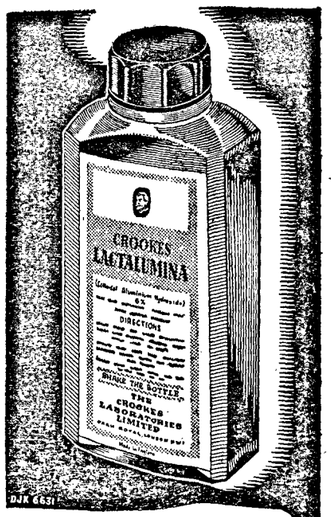
(3) The Effect of Achlorhydria on the Intestinal Bacteria Flora.

It has always been held that one of the functions of the hydrochloric acid is its bactericidal action. Indeed, in the degree of concentration in which hydrochloric acid is normally present in the stomach it apparently posses a strong bactericidal effect. Opinions to the effect that the gastric juice would have a bactericidal effect also independent of hydrochloric acid are likewise found in the literature (e.g. Sebastianelli), while other investigators deny it such action (Putkonen, Hood and Lloyd). The first-mentioned opinion is in some degree supported by the fact that the ascending of coli flora into the stomach is considerably more general in pernicious anaemia than in common achlorhydria (e.g. Becker), in which latter—contrary to the case in pernicious anaemia—this bactericidal factor thus would still be present.

On the other hand the effect of hydrochloric acid on bacterial flora in the intestines and above all in the colon is apparently of no significance. The pH of the duodenum contents varies between 5 and 6 with persons with normal acid secretion. As hydrochloric acid is able to so slightly affect the acidity of the duodenum contents, it is apparent that its effect on the acidity of the contents of already at least the lower small intestine and accordingly also on the later's bacteria flora is non-existent. The reaction of the contents of the lower small intestine, which is slightly on the acid side, is apparently due to organic acids resulting from the action of the intestinal bacterial flora.

The bactericidal effect of the hydrochloric acid is thus limited to the stomach and here acts destructively on bacteria entering with the food and possibly ascending from the intestines. The effect of the hydrochloric acid on intestinal bacterial flora would thus be significant only if bacteria entering with the food would have an effect upon it, which nevertheless is not probable, with the exception of pathogenic bacteria, in the destruction of which hydrochloric acid certainly is of clinical importance.

A new feature to the discussion on the clinical importance of achlorhydria has been received in very recent years with the discovery of the importance of intestinal bacterial flora in vitamin B synthesis. Opinions have been presented by different authors regarding intestinal bacterial flora disturbed by achlorhydria causing various types of B-hypovitaminosis. The study of this problem has only just been started and the allegations made, such as for instance the share of achlorhydria in the vitamin B deficiency of the aged, remain unproved for the present. The question requires unprejudiced additional investigation. As has been stated above, there is, however, theoretically no definite basis for the supposition that any notable changes would take place in the intestinal bacterial flora in achlorhydria. Even could such



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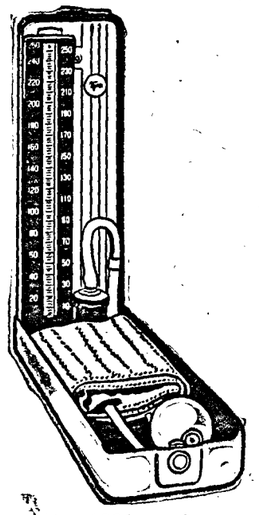
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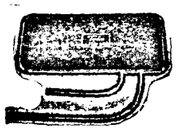
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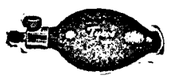
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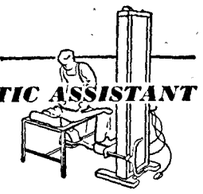
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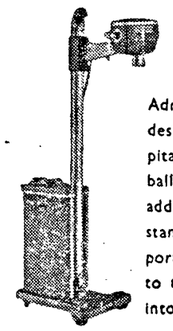
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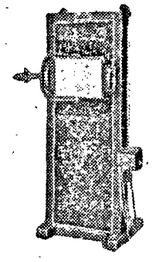
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in hydrochloric acid. As is known, there are numerous neurotics among gastric patients and they are grateful objects for psychotherapy It can easily be observed what splendid therapeutic results can often be obtained even in difficult cases by injecting saline, as the author did, before meals or during an attack of distress.

Futhermore, therapeutically used dosages of hydrochloric acid affect with some of the patients, at last during x ray examination, the motility of the stomach, frequently in a very typical manner (Brummer and Bundul), which also may explain the beneficial effect of hydrochloric acid on the gastric distress of some patients.

To summarize, it can be established that the acidity of the stomach contents cannot be affected by the therapeutic dosages of hydrochloric acid taken by the patient in connection with meals, and that hydrochloric acid treatment thus cannot justify itself as a substitution therapy, for the administration of dosages of such size as would be necessary in this connection is difficult already by reason of the unpleasant taste of the acid. The therapeutic results claimed to have been obtained with hydrochloric acid are partly of a psychotherapeutic nature; such dosages may furthermore have an effect on the motility of the stomach and thus also on the gastric distress. In no case do the 'therapeutic results' obtained with hydrochloric acid prove that it would be necessary for the digestion.

Discussion.

Based on the investigations described above it can be regarded as probable that the establishment of complete achlorhydria is of diagnostic importance, particularly in the diagnosis of addisonian pernicious anaemia. Its establishment also makes a gastritis diagnosis probable.

In chemical digestion, hydrochloric acid promotes the digestion of protein, but it apparently is not indispensable for it. The motility of the stomach and the intestines undergoes in achlorhydria at least no great disturbances. Also it does not appear probable that achlorhydria would affect the intestinal bacteria flora, and thus it has no effect on inter alia, the vitamin B synthesis occurring in the intestines; the latter condition, however, calls for additional investigation.

As has been indicated by the author, dyspeptic distress and a tendency to diarrhea are not more common with achlorhydria patients than with other persons. The slight significance of achlorhydria in the origin of dyspeptic distress is also indicated by the fact that these symptoms are more general between the ages of 30 and 40, while achlorhydria is found more often with aged persons. Neither do therapeutic results claimed to be obtained with hydrochloric acid prove that a deficiency of hydrochloric acid would actually be the cause of the digestive disturbance from which these patients suffer, for the dosages of hydrochloric acid therapeutically used have no effect on the acidity of the stomach contents when taken in connection with meals. Therapeutic results obtained with hydrochloric acid doubtlessly are of a psychotherapeutic nature in the majority of cases; therapeutically administered hydrochloric acid may also have an effect on the motility of the stomach and thus possibly also on the gastric distress.

This slight or entirely non-existent importance of hydrochloric acid as a promoter of digestion as a whole and a cause of digestive complaints, which also is proved by gastric resection results, is readily comprehensible if one takes into consideration that the principal function of the stomach probably is motoric. The share of the stomach in the chemical digestion is probably only a secondary one, and the importance of this digestion has apparently been overemphasized in the past 50 years. This opinion is also supported by the investigations carried out by Wegelius and the author, in which we have been able to prove that motility disturbances can be established with practically all patients complaining of dyspeptic distress, contrary to the case with healthy persons. These motility disturbances evidently are to be regarded as the direct cause of the symptoms.

Summary.

The author deals with the clinical importance of achlorhydria partly in the light of the literature and partly on the basis of his own investigations, and arrives at the following conclusions:

Achlorhydria possesses diagnostic importance in, inter alia, the establishment of addisonian pernicious anemia; its presence also makes a gastritis diagnosis probable.

Hydrochloric acid promotes to some extent the digestion of protein but apparently is not indispensable for it. No disturbances in the motility of the stomach and the intestines and also apparently not in the intestinal bacteria flora occur in achlorhydria.

Dyspeptic distress and a tendency to diarrhea are not more common with achlorhydria patients than with other persons; similarly the incidence of dyspeptic distress in the different age group differs completely from that of achlorhydria. Therapeutic results claimed to have been obtained with hydrochloric acid do not in any way prove that hydrochloric acid would be necessary for the digestion, for the usual therapeutic dosages of hydrochloric acid have no effect on the reaction of the stomach contents.

Achlorhydria thus is of no notable importance from the standpoint of digestion nor as a cause of digestive complaints, which is readily comprehensible when taking into consideration that the principal function of the stomach apparently is a motoric and not a chemical one.

Infantile Vomiting and Diarrhoea:—By G. H. NEWNS, M.D., M.R.C.P. *Physician, Hospital for Sick Children, Great Ormond Street* (*From the Post Graduate Medical Journal, July, 1947.*)

A classification of the chief causes of diarrhoea and vomiting in infancy is given below. Diagnosis of the cause of vomiting in infancy can only be arrived at after a careful consideration of the signs and symptoms.

Vomiting

I. *Obstructive*

- Congenital hypertrophic pyloric stenosis.
- Congenital atresia or stenosis of the intestine.
- Oesophageal stenosis.
- Achalasia of cardia of stomach.
- Intussusception.

II. *Non-Obstructive*

- Overfeeding.
- Due to aerophagy.
- Rumination.
- Habit vomiting.
- Allergic vomiting.

Vomiting secondary to infection (often associated with diarrhoea).

Vomiting and Diarrhoea

I. Gastroenteritis. Infection of the bowel with pathogenic organisms.

II. Due to dyspepsia.

III. Secondary to parenteral infection.

Obstructive Vomiting

Congenital hypertrophic pyloric stenosis

This is the commonest of all the congenital forms of obstruction of the gastrointestinal tract.

Although the hypertrophy of the muscle of the pyloric canal is present at birth, symptoms do not start immediately but appear after an interval of from 10 days onwards, and may sometimes be delayed for as long as six-eight weeks. There is no completely satisfactory explanation of the delay in the appearance of symptoms. Pyloric spasm is an important factor in the causation of the obstruction and this does not apparently occur immediately after birth. Symptoms disappear at about the end of the fourth month though the hypertrophy persists for many months longer.

Congenital pyloric stenosis has a much greater incidence in males than females—about ten to one—and it is much commoner in first-born babies. It occasionally occurs in more than one child in a family and it has been reported in both of identical twins.

The onset of vomiting is generally abrupt and the mother may be able to name the actual day of onset. Previous to this time the baby has gained weight and thrived. The vomiting rapidly assumes a projectile character, the vomit sometimes being thrown several feet. Fluid is often regurgitated through the nose. The child usually vomits after each feed though not all the vomits are projectile. The vomit is copious, contains undigested food but, no bile.

The infant is usually constipated because very little food is passing into the intestine. In some cases frequent small green stools are passed consisting mostly of bile and intestinal debris (so-called hunger stools).

Loss of weight may be considerable and varies with the severity of the obstruction. In the more severe cases the infant becomes very dehydrated.

Although this triad of symptoms, projectile vomiting, loss of weight and constipation, is almost pathognomonic of pyloric stenosis, confirmation of the diagnosis is essential. This may be done by observing visible peristalsis and feeling the pyloric tumour. The infant should be examined during a feed. Waves of gastric peristalsis can be seen passing obliquely from left to right. The pyloric tumour can be felt in all cases but considerable experience is required to detect it. It is only palpable when the pylorus is in spasm, and it may be necessary to watch the baby during several feeds before it can be felt. It feels like a small knob, of the consistency of cartilage, usually situated just beyond the edge of the R. rectus but sometimes high up below the edge of the liver. The tumour disappears as the spasm passes off.

In doubtful cases, where a tumour cannot definitely be felt, a barium swallow should be given. This will demonstrate distension of the stomach with marked delay in the emptying time.

(*i*) *Surgical Treatment*

This is the method of choice in most cases. It results in a rapid cure, and the operative mortality in skilled hands is low. It can be performed under a local anaesthetic. In severe cases with much loss of weight and dehydration operation is imperative. Before operation, dehydration must be treated by means of subcutaneous or intravenous saline infusions and the stomach should be washed out once or twice with normal saline (*not* with sodium bicarbonate, which may precipitate alkalosis).

There are many different regimes for feeding after operation but the principle of all is the same, viz., administration of dilute milk feeds in small amounts frequently at first, gradually increasing in strength and amount. Normal feeds should be reached two days after operation.

(*ii*) *Medical*

This is not new since it was perforce the only treatment (short of gastro-enterostomy) before the introduction of Rammstedt's operation. It was reintroduced on the Continent partly because operation was so often refused. Medical treatment should be confined to the cases where operation is refused, where skilled surgery is not available, and in the milder cases, which generally have a late onset and do not lose much weight.

The main lines of medical treatment are:—

1. Administration of small frequent feeds.

2. Daily gastric lavage with normal saline to reduce the gastritis which is always present.

3. Administration of an anti spasmodic to abolish pyloric spasm. Atropine was employed until recently but this often caused toxic symptoms. Eumydrine (atropine methyl nitrate), which is much less toxic, is used nowadays. It is given either in a 1 in 10,000 solution, 1,5 to 5 cc., or as lamellae (pylostropine) in 1/40° or 1/75° gm. doses. The

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TABLE I. Incidence of Achlorhydria and Dyspeptic Distress with Different Age Groups, the Former Based on Hospital Records and the Latter on Out-Patient Material.

	Age in Years					Total Number of Cases
	29	30-39	40-49	50-59	60	
Number of Cases Examined ...	197	154	182	120	99	752
Percentage of Achlorhydria	8.6%	12.0%	18.6%	32.7%	38.3%	20.9%
Number of Cases Examined... ..	377	335	320	194	144	1370
Percentage of Dyspeptic Distress	17.0%	32.8%	28.0%	19.6%	12.5%	22.7%

The incidence of achlorhydria in the material is somewhat higher than that presented in the literature, which apparently is due to the fact that the material emanates from North Finland, where chronic gastritis is encountered more than usually, due to lack of variety in the food. In comparing with each other the incidence of achlorhydria and that of dyspeptic distress it is observed that the former continuedly increases with age, whereas dyspeptic symptoms are definitely most common between the ages of 30 to 39 and then decline with age. Although these figures do not originate from the same material, they nevertheless for their part clearly indicate that achlorhydria apparently is of no marked importance as a cause of dyspeptic distress.

Hydrochloric Substitution Therapy in Achlorhydria

Among the most frequently presented evidences to support the opinion that achlorhydria in itself is a cause of digestive disturbances are the therapeutic results believed to have been obtained by physicians in the treatment of achlorhydria with hydrochloric acid.

Considering that the normal stomach secretes for one meal a quantity of hydrochloric acid which corresponds to several tens of millilitres diluted hydrochloric acid (35—40 ml. according to Koehler (Windsor), the hydrochloric acid dosages used for therapeutic purpose are insignificantly small. An ordinary therapeutic dose of diluted hydrochloric acid earlier was and still is in the practice of numerous physicians 10—20 drops; somewhat better, but even then not nearly equal to normal conditions is a dose of 2—4 ml. which recently has been recommended.

For the purpose of observing the extent of the effect of the hydrochloric acid taken during meals on the acidity of the stomach contents, the author administered to 20 achlorhydria patients 4 ml. of diluted hydrochloric acid during the meal, a sample of the stomach contents being drawn five minutes later. Free hydrochloric acid could be established in none of the samples. 12 samples were alkaline, and in the remaining 8 the total acidity varied between 5 and 15 units titrimetrically determined.

When hydrochloric acid was administered into an empty stomach, the stomach contents remained slightly acid for 10 to 40 minutes, i.e. as long as the liquid remained in the stomach, as established by using methylene blue as indicator. It may be mentioned in this connection that the rate of emptying proved exactly the same whether the liquid taken in by the patient was hydrochloric acid or merely water.

On the basis of these results it is evident that even a dosage of 4 ml. of diluted hydrochloric acid taken with meals has no effect on the acidity of the contents of the stomach. With an empty stomach, however, an identical quantity of hydrochloric acid is capable of transiently producing a slight acidity in the stomach contents.

The writer has also performed therapeutic experiments with 30 achlorhydria patients complaining of dyspeptic symptoms. It was explained to the patients than on alternate days four different kinds of medicine would be administered, and each patient was requested to state which medicine gave the best relief to his symptoms. The medicines used were (1) diluted hydrochloric acid, (2) soda, (3) strychnine and (4) saline. All substances were given with water, and a different order was observed for each patient.

Of the 30 patients investigated, three could not differentiate between the medicines used, 10 considered that soda gave the best relief, 11 that syrychnine was the most agreeable, and only 6 preferred hydrochloric acid, whereas none of the patients gave the preference to saline. In estimating the results consideration should be given to the fact that several of the patients had earlier used hydrochloric acid and knew its taste.

On the basis of these results it is evident that at least the dosages of hydrochloric acid usually administered with meals cannot affect the acidity of the stomach contents and that they cannot in the slightest extent promote the chemical digestion or act on the intestinal bacteria flora, wherefore the evidence accorded to therapeutic results claimed to be obtained with hydrochloric acid has no value in regard to the clinical aspect of achlorhydria.

Upon what, therefore, are based the good results which numerous physicians and patients assure they have obtained in achlorhydria with the use of hydrochloric acid?

A prime factor in this respect is the firm faith in the importance of hydrochloric acid which has been created in both physicians and laymen in the past 50 years by one-sided emphasis on the importance of the chemical digestion. There is hardly a layman among the civilized peoples who would not have a knowlege and conception of 'acid deficiency' as a special disease, and who together with his physician would not like to believe that the cause of his gastric trouble is definitely established when this deficiency is brought to light. This belief forms good soil for any psychotherapy whatsoever. If efforts are made to remove this psychotherapeutic factor, as was done in my therapeutic experiments, only one-fifth of the patients will believe he receives relief from hydrochloric acid, and even among these there are several who already earlier were trained into a belief

lamellae are placed under the tongue. Both preparations are given 20 minutes before each feed.

Medical treatment should be continued until the age of four months, when the symptoms spontaneously disappear.

Obstruction due to other congenital anomalies

Congenital intestinal stenosis or atresia may cause severe vomiting in the neonatal period and should always be borne in mind when severe vomiting starts soon after birth. The site of the obstruction may be in the duodenum or in any part of the intestine. The lower down the obstruction is, the later the onset of vomiting.

In duodenal stenosis or atresia the vomiting commences very soon after birth, is persistent and often projectile. The vomit, unlike that of congenital pyloric stenosis, contains bile. Visible peristalsis may be present. It is distinguished from pyloric stenosis by the earlier onset and the presence of bile in the vomit, and the absence of a pyloric tumour. A barium swallow will show the ballooned duodenum. Occasionally these infants have survived a gastro-enterostomy.

Similar symptoms are met with in intestinal atresia, which often extends over a considerable length of gut. The actual site is frequently determined only at autopsy.

Oesophageal Atresia

This is a rare congenital anomaly which gives rise to regurgitation when the first feeds are given. Choking and cyanosis are frequently associated symptoms. The oesophagus usually ends blindly above, the lower end being connected to the trachea by a fistula In one variety the upper end communicates with the trachea. In such cases the infant rapidly develops a fatal aspiration pneumonia.

Recent advances in thoracic surgery have resulted in cures following end-to-end anastomosis.

Achalasia of cardia of stomach

This is a rare form of obstruction in infancy but possibly commoner than is generally thought. Four cases have come under my observation in the past year. The condition is probably the same as that met with in older children and adults, and is due to a failure of relaxation of the cardiac sphincter.

The baby regurgitates food forcibly soon after it is swallowed and loses weight rapidly. Diagnosis is made by barium swallow. The oesophagus is dilated and the barium is seen to be held up at the lower end of the oesophagus.

Treatment consists in dilatation of the oesophagus two or three times a day with a mercury bougie. In the cases observed, gradual improvement has occurred.

Intussusception

In the common form of intussusception, vomiting is not as a rule a prominent symptom in the early stages, though later on vomiting may be severe, and faeculent in type. In the rarer enteric type vomiting occurs much earlier.

The infant typically has severe attacks of colicky pain with pallor and sweating. There is usually bright red blood in the stools. The sausage-shaped intussusception can generally be easily felt.

Occasionally in infancy intestinal obstruction may be due to congenital bands, volvulus, or strangulated inguinal hernia.

Non-obstructive Vomiting

Many babies regurgitate a small part of the feed, especially if the feed is rather large—it is a means of getting rid of an excess. Some infants are very prone to regurgitate, and the volume brought up may be considerable. They generally gain weight nevertheless. Improvement usually results when cereal feeding is introduced. In bad cases the feeds should be considerably thickened with a food such as Benger's or Savory and Moore's.

Overfeeding

Over distension of the stomach by too frequent feeding or too large volumes may give rise to vomiting in certain babies. It must not be assumed that babies who habitually vomit are necessarily overfed. Underfeeding with associated aerophagy is a much commoner cause of vomiting.

Vomiting from excessive air swallowing

This is the commonest cause of vomiting in early infancy. The vomiting may be occasional or very frequent; the amounts brought up may be small or large. Characteristically the baby vomits small quantities at intervals between the feeds.

Some babies are inveterate wind swallowers even when adequately fed. They are restless, irritable, hungry infants as a rule. The vomiting is usually associated with attacks of colic which make the baby still more restless. The vomit is never truly projectile though at times it may be explosive, since it is often brought about by a violent eructation of wind. If the baby is underfed constipation may be present or there may be green 'hunger' stools. Loss of weight may also occur for the same reason.

There may be a superficial resemblance to congenital pyloric stenosis but examination of a baby during a feed will reveal neither visible peristalsis nor a tumour.

It must first be determined whether the infant is underfed by a calculation of the correct amount based on the infant's expected weight * (2½ ozs. per lb. of body weight per day or 50 calories per pound). If breast-fed, the infant must be test-weighed for 24-48 hours.

An underfed baby will be so hungry that he will gulp down a large quantity of air during the first few minutes of feeding.

If the baby is underfed the amount of food must be increased to the required level, calculations of the amount being made on the expected, not the actual weight of the baby. In the case of breast-fed infants, complementary feeds must be given, each feed being a test feed. The hole in the teat should be large enough to enable the infant to take the feed easily without straining, in 10-15 minutes. A boat-shaped bottle is often better for this type of infant.

* The expected weight may be calculated by subtracting 10 from the age of the infant in days, and adding this figure to the birth weight. This holds good up to about the age of four months, after which the gain in weight is less than an ounce a day.

A sedative before feeds is very helpful. It makes the baby less restless so that the feed is taken more quietly. Chloral, ½-1 gr. may be given 20 minutes before each feed. Care should be taken to get up as much wind as possible after feeds.

Rumination. Merycism

Though not a common form of vomiting it may be very persistent and troublesome. It occurs in breast-and bottle-fed infants alike. The rumination has to be watched for carefully as the baby will not usually perform the act when the mother or nurse is present.

About an hour after feeds the infant is observed to bring up part of the feed, some being swallowed again, some spat out, while some of the food is held in the mouth for some time. The regurgitation is preceded by chewing movements of the jaws. The weight lost is not as a rule very great, generally it remains stationary.

Treatment is difficult. Thickening of the feeds with cereals so that it is of a porridge-like consistency is sometimes successful. A restraining bandage or cap with tapes tied under the chin, and kept on for 1-2 hours after feeds may prevent regurgitation. Sedatives may be of value.

Allergic vomiting.

Occasionally vomiting in infancy is due to allergy to cow's milk, very small amounts of which may give rise to severe vomiting. In the milder cases gradual introduction of milk to the diet will usually desensitize the infant. In the transition period the baby may be given such foods as Benger's, cereals and vegetables, etc., made up with water instead of milk.

In the more severe cases it may be necessary to give milks containing no milk protein. The basis of these milks is usually soya bean flour, with added fats, sugar and minerals. *

Vomiting in infancy may be due to meningitis or cerebral tumour or to toxic states such as uraemia secondary to severe congenital renal disease.

Vomiting associated with Diarrhoea.

Diarrhoea with vomiting is due to three main causes.

(1) *Dietetic*

Incorrect feeding or persistent overfeeding, excess of fat or carbohydrates will give rise to diarrhoea and vomiting. Excess of protein causes vomiting, especially due to excessive curd formation. Today, with the increase in knowledge of infant dietetics, severe diarrhoea and vomiting from this cause is uncommon. If neglected however, dehydration will occur and the infant may become as gravely ill as infants in the next group.

(2) *Infection of bowel with pathogenic organisms*

(epidemic gastro-enteritis)

This was the cause of the one-time summer diarrhoea so prevalent in the hot summers in this country. In this form it is rarely seen nowadays. Epidemics of gastro-enteritis still occur in new-born babies in nurseries. Many cases of diarrhoea arising in hospital wards are of this type and are due to cross-infection. Sonne dysentery is also prevalent in young children and may occur in infants. In hospital the disease may spread rapidly.

* There is, at present, no such food made in this country.

(3) *Symptomatic diarrhoea and vomiting due to parenteral infection*

Infection outside the bowel is a common cause of diarrhoea and vomiting in infancy. The mechanism is not properly understood. Pyelitis, otitis media, infections of the throat, to name only a few, will give rise to diarrhoea and vomiting, which may in fact be the presenting symptoms. The primary cause may only be discovered after careful search.

The symptoms vary greatly with the severity of the infection. The second group comprises the worst cases. In these rapid dehydration and prostration occur. The stools are watery with very little faecal material, and vomiting is persistent, even water not being retained. The mortality is high. Severe fatty changes are found in the liver at autopsy. Jaundice may occur before death.

In most of these cases no pathogenic organism can be isolated from the stools.

Treatment in the milder cases consists in withdrawing food for 12-24 hours, giving only glucose and saline in small amounts at frequent intervals. There is often a marked improvement within a few hours; the diarrhoea diminishes and the vomiting stops. Milk feeds should then be gradually introduced starting with a weak mixture and gradually increasing the strength. It is not as a rule necessary to give special feeds.

Where dehydration is present more vigorous treatment is required. These cases should, in fact, be regarded as a medical emergency. Parenteral fluid is essential, the only satisfactory route being the intravenous one. All fluids should be stopped by mouth and intravenous glucose-saline, or Hartmann's solution given by drip. This may be continued if necessary for several days. Sodium chloride must only be given in sufficient amounts to replace salt loss, otherwise oedema will occur.

After the vomiting and diarrhoea has stopped, weak feeds should be given cautiously, and gradually increased in strength. Lactic acid milks are especially useful and are well tolerated.

Drug therapy

Little success has been obtained with sulphonamides and penicillin in straightforward cases of gastro-enteritis, though sulphaguanidine appears to be of value in Sonne dysentery. Appropriate chemotherapy is, of course, indicated when there is a parenteral infection.

Other drugs are of little value. Purging with castor oil has been given up. Astringents such as bismuth and kaolin have little effect. Opium is a dangerous drug to give to dehydrated infants and is seldom used nowadays.

Penicillin Therapy in Acute Infections :— By RAO BAHADUR CAPT. M. G. KINI, M.C., M. B., M. Ch. (Orth.), F.R.C.S.E., F.R.S.E., *Surgeon and Superintendent, Stanley Hospital, Madras* and Dr. C. VYAGRESWARADU, M.B.,B.S., *Civil Assistant Surgeon, Stanley Hospital, Madras.* (*From The Indian Journal of Surgery, March and June, 1947.*

The progress of medicine with regard to the treatment of acute conditions becomes striking when the conditions prevailing in the past is reviewed. Time was when man in his desire to save himself from acute infections invoked spirits and practised incantations and sacrifices to appease them; later, when his intelligence improved and division of labour in the community occurred, a medicine man appeared on the scene, who in addition to invoking spirits, tried plasters, used infusions, decoctions and various other vegetable drugs. With the realisation that bacteria were responsible for the causation of acute conditions and not disturbances in the 'balance of power' of humours in the human body and as a result of the epoch making discoveries of Pasteur, Koch and others, many attempts were made to kill these organisms both *in vitro* and *in vivo* by antiseptics. It was, however, found impossible to kill these organisms without injury to the animal itself. This is well illustrated by what is commonly known as "Von Behring's Lament." He stated in the year 1880 :

"It can be regarded almost as a law that the tissue cells of man and animal are many times more susceptible to the poisonous effects of disinfectants than any bacteria known at present. Before the antiseptic has a chance either to kill or inhibit the growth of the bacteria in the blood or in the organs of the body, the infected animal itself will be killed. Therefore, anybody who pessimistically declares that disinfection in the living body is for all time impossible appears justified."

This despondency persisted for a long time until Ehrlich interested himself in the specific staining characteristics of certain aniline dyes in various tissue cells, based on the work of his cousin Weigert. Weigert stated that there were certain specific receptors within the cells which are capable of combining selectively with various chemical agents. Ehrlich's trypan red experiments on mice infected with trepanasomes were effective in mice, but proved to be ineffective in other animals so infected. The word chemotherapy was coined by Ehrlich; it literally, means "treatment by chemicals" and includes treatment by aniline dyes and various organic salts derived from them.

The discovery of Salvarsan in 1910 for the cure of Syphilis was a contribution in the direction of chemotherapy. Though a lot of work was done in between, nothing more was substantially achieved until 1932 when Domagk discovered Sulfanilamide for the cure of streptococcal acute infections. This new drug was synthesised and re-synthesised and many other new derivatives were found thus increasing the scope and range of usefulness of these drugs in controlling infections. Though there are certain dangers attendant on their adminstration yet, when administered with care, the bacteriostatic action of these drugs on organisms has been definitely proved. Much literature has accumulated relating to the advantages and disadvantages of this drug and allied derivatives in acute infections. These new drugs are more bacteriostatic than bactericidal.

The recent discovery of Penicillin is a realisation of the echo of Dubos. of the Rockfeller Foundation who, in 1940, visualised the use of remedies of plant origin. The discovery of Gramicidin, *allied* to *Penicillin* led to the discovery of many other antimicrobal substances produced by the lower plants, the bacteria and the fungi, such as, fumigacin, calvacin, streptothricin.

Dubos discovered that a bacterial species commonly found in the soil, Bacillus Brevis, produced a substance which kills other bacteria. He called the active substance Gramicidin in honour of Christian Gram,—one of the pioneers in bacteriology, who discovered the staining reaction by which all bacterial species are divided into two large groups—the so called gram positive and gram negative bacteria. As gramicidin acted on gram positive organisms, eh named it Gramicidin.

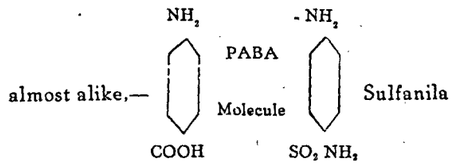
The peculiar bacteriostatic behaviour of Penicillin was first discovered in 1929, but was put into practical use for the benefit of humanity only in 1942 by Flory and his collaborators.

It has not so far been possible to establish the chemical composition of this wonderful chemo-therapeutic drug. A lot of experimental work has been going on to bombard the molecule and it is a pleasant thing to hear that the formula has just been found. It only remains to synthesise it in test tubes and when this is accomplished, it will be an important discovery in the domain of chemotherapy; such a test tube production replacing the present expensive and elaborate methods of culture and extraction will reduce the cost to a large extent and make it possible to be tried in a variety of acute infections on a larger scale.

Penicillin and Its Action :

Penicillin is a metabolic product, probably protein in nature, synthesised by the mould Penicillium Notatum. This, when purified, concentrated and dried becomes a golden yellow powder or a cake (recent experience of a manufacturer's product squibbs) called Penicillin. It is acid in nature and is quickly destroyed and therefore it is combined with alkaline salts of sodium, and calcium, for making it more stable. The sodium salt is more hygroscopic than the calcium salt but the latter is more stable and less irritating. This powder contains only 10 to 30 per cent of the active substance the rest being impurities which, luckily, are nontoxic. This drug is rapidly destroyed by alkalies and acids in concentration, by metallic salts, alcohol and oxidising agents and heat. Therefore it is necessary to keep it at a constant temperature of not less than 10 degrees Centigrade or 50 degrees Fahrenheit. It is also destroyed by the action of an enzyme called "Penicillinase" which is produced by the action of other organisms and therefore it will be less effective when employed in cases where there is mixed infection by organisms which are inimical to Penicillin. The action of this drug is purely bacteriostatic and works on the basis of the finding of Dubos of micro organismal antagonism.

The action of sulfanilamides as explained by Wood perhaps bears resemblance to the action of Penicillin. Wood has stated that, bacteria, for their multiplication, require and, therefore, absorb a lot of para-amino-benzoic acid. The molecule of para-amino-benzoic acid and that of sulfanilamide being



mide molecule—the bacteria in their inability to differentiate the difference in the molecule get easily fixed with the sulfanilamide molecule which instead of providing food for them, prevents them from multiplying. Macleod has the action explained by a pithy simile—just as the trout get easily baited and hooked by the fly on the hook being unable to differentiate between the fly on the hook and the ordinary fly which it is accustomed to swallow, so also bacteria get easily hooked to these sulfanilamide molecules being unable to differentiate between the para-aminobenzoic acid molecule and the sulfanilamide molecule. It is a notable feature that Penicillin acts even in the presence of a large amount of para-amino-benzoic acid in the wounds.

Chain and Duthie have suggested that Penicillin acts better on the dividing organisms by producing lysis. Cavilitto and Bailey have stated that Penicillin acts by interfering with the utilisation of the thiol groups by the growing cells. It is quite possible that it may form part of an enzyme system replacing the normal bacterial enzyme; thus the cell may become susceptible to the action of Penicillin at the time of division, or the Penicillin may become activated to produce anti-bacterial substances or the cell may become cooked in its own juice by the time it divides.

In recent times it has come to our notice that Penicillin is not a panacea for all acute infections and that its efficacy depends upon its extraction by the various cultural methods employed. It has been found that Penicillin cultivated and extracted from submerged culture called Penicillin G is the most potent in its effect on acute conditions. Therefore the therapeutic values depend upon the Penicillin that is used At present there is no information sent with the bottle regarding assay of potency or other factors relating to the particular product, nor is the method of production stated and therefore it is difficult in the present circumstances to assess accurately the therapeutic value of Penicillin. At present, purification and fractionation is being done by crystallisation and until the fractional factor is assayed and noted on ampoules put on the market it would be difficult to assess the value of Penicillin treatment. Till then in evaluating the results we are only considering the effects of crude Penicillin.

McIllwain has shown that the sulphur containing molecule of Pentythenic acid (Vitamin B) prevents, in experimental animals, the growth of the hemolytic streptococcus. This shows that slightly changed food factors can be used for bacteriostatic action as in the case of para-amino-benzoic acid.

Our present knowledge of the action of these drugs is meagre and still is in the domain of hypothesis and requires elaborate experimentation and biochemical investigations to substantiate these hypothetical concepts.

When Penicillin is injected, it is found that it is absorbed in about 15 minutes and is available to the tissues in fair concentration to carry on the bacteriostatic work against the gram positive bacilli and cocci and gram negative cocci which are susceptible to its use. About 58 per cent of Penicillin is excreted by the kidneys in the first hour and at the end of three hours it is cmpletely excreted and hence the necessity for 3 hourly administrations to keep the drug in fair concentration in the tissues for continued bacteriostatic action.

Penicillin can be administered locally as an insufflation, in combination, if necessary, with sulfathiazol for staphylococcus and sulfanilamide in the case of streptococcal infections, in the proportion of 5,000 units to 1 gramme and is useful in compound injuries when local application is indicated. Penicillin Sodium in powder form is irritating to the tissues and so has to be used in solution (250 units per c.c.) in severe infections. The calcium salt is tolerated and is more stable and can be used in powder form.

Oral Administration :

Oral administration of Penicillin is of doubtful utility though experiments are being tried and it is doubtful whether fair concentration in tissues will result from absorption from the intestines. It is well known that it cannot stand the acid tide in the stomach and even if this is circumvented, will inevitably succumb to the alkaline tide of the small intestines.

Necessarily, the best way to secure good results will be the parenteral administration by the intravenous, intramuscular and the intra-thecal or intraventricular routes. Penicillin is dissolved in pyrogen free distilled water or normal saline or 5 per cent Glucose or Plasma or even whole blood. Dry Penicillin in powder form keeps well but once it is dissolved it becomes unstable unless it is kept in a refrigerator at a constant temperature of 4 degrees Centigrade. In solution it can be kept without deterioration for 48 hours or longer, but it is always safer, under tropical conditions, to use the solution as quickly as possible after it is made.

The intravenous route, though the easiest method of administration, cannot be maintained for a long time due to the dangers of thrombo-phlebitis. The dilution suggested is 20 to 50 thousand units per 1000 c.c. It is to be given slowly at the rate of 20 to 30 drops a minute to control heavy infections. To avoid thrombo-phlebitis, a combination of Heparin with Penicillin would be a distinct advance and is being done in America. But due to the difficulty of obtaining this substance in India, this has not been practised. If the intravenous medication is to be given at stated intervals, 1 to 5 thousand units are dissolved in 2 to 5 c.c. of pyrogen free distilled water and given slowly. It has to be repeated periodically every hour as it is excreted rapidly by the kidneys and is the method of choice to initially control the heavy infections.

The safest and most sound method of administration is the intramuscular injection and the method

adopted is 15 thousand units dissolved in 1 to 2 c.c. of pyrogen free distilled water and given intramuscularly every three hours. This is the method adopted in the Stanley Hospital, Madras. Continuous intramuscular drip has been used like the intravenous and is adopted in heavily infected cases. This method cannot be carried on without discomfort to the patient and can be first adopted for a period of six hours delivering 5000 units every hour.

To promote prolonged action by this method, a mixture of Penicillin in peanut oil and bees wax is being tried, but this preparation is not available and works on the same principle as protamine insulin by slow absorption and will be a distinct advance as the number of injections would be minimised.

Intrathecal administration and intracerebral administration are indicated in cases of meningitis as only very small quantities are secreted in the C. S. F. if given by the intravenous and intramuscular routes. The method practised for intrathecal administration in the Stanley Hospital is to give 50 to 60 thousand units intrathecally in 5 c.c. of pyrogen free distilled water after withdrawing an equal quantity of C. S. F., This quantity is given once a day and appears to be effective when combined with intramuscular injections. It has not been possible with our limited staff to do elaborate examinations of the blood and the C. S. F., at periodical intervals and thus it is not possible to give a scientific dosimetric evaluation of this method. However, this method has given satisfaction in the cases treated and therefore is published.

Local application may be made for abscess cavities, empyema cavities and so on. In all these conditions, it is essential that if there is a lot of pus already formed it is necessary to empty it before using Penicillin and the quantity used depends on the size of the cavity—20 to 50 thousand Oxford Units in 30 to 40 c.c. saline may be considered ample for cavities of large sizes like empyema cavities.

Continuous intramuscular and intravenous administration of Penicillin have been practised in cases of burns. The method and dosage adopted is the same as in other cases.

Laderle Laboratories Inc. have now introduced "Penicillin Pills" suspended in oil and encased in gelatine capsules to prevent digestion by the gastric juice. It is stated in their report that the Penicillin is absorbed unaltered and without deterioration into the system and will obviate the disadvantages of parenteral administration; it is hoped however that the cost will not be prohibitive.

There are limitations to the usefulness of Penicillin:—

(1) Penicillin is unstable in solution and requires careful handling.

(2) Penicillin must be administered continuously as it is excreted very effectively, in about 3 to 4 hours time.

(3) Some of the sensitive organisms may develop resistance to Penicillin if given in small doses. Organisms become resistant to Penicillin by developing the enzyme called Penicillinase and such mixed infections may require Penicillin with Sulfanilamide to control the organisms which are not sensitive to Penicillin.

(4) In all traumatic conditions, *debridement* of the wound has to be done for the effective action of Penicillin.

(5) Penicillin will not find its way through thick fibrous walls and so is useless where such conditions exist unless the barrier is broken.

(6) In very heavy infections and when started late in the course of the disease, Penicillin may not give the dramatic results expected of it.

Complications of Penicillin Treatment

Penicillin may cause some reactions; the commonest recorded are thrombo phlebitis, urticaris flushing of the face, muscle cramps, allergy and pain at the site of intramuscular injections. These are however uncommon with the exception of thrombophlebitis which may occur in continuous intravenous therapy and can be averted by giving Heparin. There was only one case of dermatitis after intramuscular injection in a case of diabetes. The rash, however, was so alike heat rash that it is not possible to ascribe it definitely to Penicillin.

It is however a great strain for the general practitioner to administer this drug in private practice at 3 hourly intervals unless he has a nursing home or reliable nurses who can give the injections at stated periodic intervals.

Cases have come to the hospital stating that Penicillin also had been given to them with no effect and when enquiries are made it is found that 100,000 to 120,000 units have been given in three or four doses according to the convenience of the medical practitioner and it is needless to say that this method is useless for reasons that have been given while dealing with the action of Penicillin.

The experiences in 78 cases of acute infections in civil practice are described in this paper; the clinical results, though not supported by repeated scientifically based checks such as repeated bacteriological examination, testing of concentration of Penicillin in blood and excretion rate, etc. have been so good as to deserve enumeration as will be seen from the detailed list of cases appended to this paper.

Table showing summary of cases treated:—

Disease	Total No. of cases	Cured	Relieved	Died
1. Brain abscess	2	1	1	—
2. Meningitis	2	1	1	—
3. Eye cases	4	2	2	—
4. Sinusitis	6	2	3	1
5. Empyema	4	3	—	1
6. Lung abscess	6	5	—	1
7. Osteomyelitis	5	5	—	—
8. Compound fractures	3	2	—	1
9. Syphilis	1	1	—	—
10. Gonorrhoea-acute	7	5	2	—
11. ,, chronic	3	1	2	—
12. Cellulitis	6	5	1	—
13. Pyaemic abscess	8	8	—	—
14. Furunculosis	2	2	—	—
15. Impetigo	3	—	3	—
16. Cancrum oris	6	4	—	2
17. Carbuncles	5	5	—	—
18. Gas Gangrene	1	1	—	—
19. Tropical ulcer	1	1	—	—
20. Burns	3	3	—	—
Total ...	78	57	15	6

Pregnancy at Term Complicated by Ruptured Appendix:—(*From the Proceedings of the Mayo Clinic, April 1947*).

Robert W. DeVoe, M. D., Fellow in Obstetrics and Gynaecology, Mayo Foundation, Lois A. Day, M. D., M. S., in Obstetrics and Gynaecology, Section on Obstetrics and Gynaecology, and Deward O. Ferris, M. D., M. S., in Surgery, Division of Surgery: A review of the literature in the English language for the past six years shows a paucity of reports concerning pregnancy in the third trimester complicated by acute appendicitis. This and the fact that the condition must be borne in mind, as illustrated by the case that we are reporting, prompted us to investigate some of the material on this subject.

Pregnancy is a physiologic state with ordinarily little risk to either the mother or the fetus. Acute appendicitis is an emergent surgical disease which responds in a gratifying manner when treated promptly. However, the combination of these two relatively benign conditions is most dangerous, for the lives of two individuals are compromised. It is evident that careful surgical and obstetric care, and co-operation of the surgeon and the obstetrician are required in a high degree.

Incidence

Reports of the incidence of appendicitis in pregnancy vary from author to author. Twyman, Mussey and Stalker[1] reported that 2 per cent of women who have acute or chronic appendicitis are pregnant and that the majority of cases occur in the third decade. Cosgrove[2] in 1937 reported only eighteen cases in 25,000 live births, a ratio of 1 : 1,389. Smith and Bartlett[3] gave an even smaller ratio: twenty cases of acute appendicitis in 66,431 deliveries or 1:3,322. The greatest incidence, according to Johnson,[4] is in the second trimester, 80 per cent, and the incidence in labor is infinitesimal. Twyman, Mussey and Stalker, in their series of seventy-five cases covering all trimesters, found three cases in which the appendix perforated and one of these was in the third trimester.

Pathology

The majority of pregnant women who have acute appendicitis have a history of previous attacks. Baer, Reis and Arens[5] in 1932 pointed out the changing relationship of the appendix to the surrounding structures as pregnancy progressed. Using roentgenologic methods they found that after the third month the appendix was displaced upward, reaching the iliac crest at the end of the sixth month. It also rotated counterclockwise and became vertical in 60 per cent of their cases at the end of the eighth month.

In addition to upward displacement of the appendix, the cecum becomes compressed; an increased incidence of constipation leads to stasis and formation of fecaliths. With the advance of pregnancy the protection afforded normally by the omentum may be lost. An attack of acute appendicitis during labor or near term would probably not localize. The development of further complications is abetted by the physiologic increase of vascularity and by lymphatic dilatation.[6]

Symptoms and Signs

The symptoms are similar to those of nonpregnant women who have appendicitis. The most valuable single fact is the history of repeated attacks. The area of pain is higher and more lateral because of the elevation and rotation of the appendix. The area of cutaneous hyperalgesia remains over McBurney's region. If the appendix is ruptured the abdominal pain will be more diffuse but with care one may find more pain and hyperalgesia on the right side than on the left. The greatest dangers lie in attributing abdominal distress to the commonplace complaints referable to the gastrointestinal tract of the pregnant woman and in believing the patient to be in labor.

The leukocyte count may be of questionable value. A pregnant woman normally has leukocytosis, so that a count of less than 12,000 per cubic millimetre of blood is of little aid; however an increase of polymorphonuclear cells is helpful in diagnosis. The sedimentation rate is likewise usually elevated in pregnancy and is of little assistance. Fever, may be present or absent. The pulse rate is a better sign than fever, as it usually is high and out of proportion to the temperature.

Differential Diagnosis

A detailed discussion of the factors entering into the differential diagnosis is beyond our present purpose. The diagnosis is very difficult in the last two months because of uterine size, increased uterine tonicity and the upward and lateral displacement of the involved appendix. The presence of persistent pain may be helpful. The diagnosis of active labor is ruled out by the absence of intermittent labor pains, absence of bloody show, intact fetal membranes and lack of dilatation and effacement of the uterine cervix. Obstetric complications which must be considered are toxemia, acute hydramnios, rupture of the uterus, placenta previa and abruptio placentae. Urgent surgical conditions to be considered are intestinal obstruction, degenerating uterine fibromyomas, and torsion of ovarian cysts, uterine fibromyomas or even of the uterus itself.

Treatment

The treatment of acute appendicitis complicating pregnancy is surgical. Some who advocate conservatism in the treatment of appendicitis of nonpregnant women agree that it has no place if the patient is pregnant, as localization is unlikely. The uterus ought to be handled as little as possible and if drains are placed they should be placed with great care and gentleness. Some advocate emptying of the uterus if the appendix is ruptured and a Porro cesarean section

1. Twyman, R. A., Mussey, R.D. and Stalker, L.K.: Appendicitis in pregnancy: a review of seventy-five cases, Proc. Staff Meet., Mayo Clin. 15:484-487 (July 31) 1940.
2. Cosgrove, S. A.: Quoted by Zander, E. L.[6]
3. Smith, J.A., and Bartlett, M.K.: Quoted by Zander, E. L.[6]
4. Johnson, Bristow: Appendicitis in its relation to pregnancy. M. J. Australia 2:379-383 (Oct. 7) 1944.
5. Baer, J. L., Reis, R. A. and Arens, R. A.: Appendicitis in pregnancy with changes in position and axis of normal appendix in pregnancy. J.A.M.A. 98:1359-1364 (Apr. 16) 1932.
6. Zander, E. L.: Acute appendicitis as a complication of pregnancy. West. J. Surg. 50:360-364 (July) 1942.

against the advent of this scientific method under discussion, But no one cares to see that this so called Indian culture and civilisation has undergone various changes in the past and is still doing the same. It is really impossible for a student of history to put his finger on any one of them to identify it as the genuine Indian culture and civilisation. The subject of culture and civilisation is too vast, debatable and certainly much outside the dominion of the medical science to be discussed in a small article like this. But this much can be said with confidence by studying the ways and modes of life of Indian society in the days before the advent of the present science, that in the grand old days, when the great Bharatiya Yudhya comprising of 52 lacs of warriors was fought on the plains of Delhi, the heroes of that war i.e. Pandwas were all born of the Niyoga system. They had but one common wife amongst them and yet they were never looked down by others on that account. Nor was their great adversary Karna on the side of Duryodhan less worshipped, because he had a similiar origin. They were following the social customs and culture of Devas, a race superior to them, who had a system of group wives in vogue. Duryodhan and his 99 brothers were the progeny of the blind king Dhritrashtra who was an outcome of Niyoga system of marriage. These heroes are still worshipped by our people, who are asking us to condemn a certain scientific method, on the ground, that it will shatter the Indian culture and civilisation which was at its highest peak in those days and now absolutely fallen so low as to be dominated by a culture and civilisation of a comparatively low calibre harnessing the science for the destruction of humanity and all its good ideals.

A scientist need not be afraid of these imaginary obstacles to fulfill his apportioned role of curing sterility, even by resorting to the method of ultra-scientific fecundation in a genuine case. It is his bounden duty to spread bliss and happiness by the help of his science amongst the families treated by him.

P. H. SANT
Bilaspur

A Complicated Case of Ascariasis

On 17-6-47 I was called in to see a Madrasee girl of eight years. She had high temperature of 103° for 4 days, which used to come down to 101° in the morning; but used to go up after 12 noon, with slight chill. She had also severe colicky pain in the abdomen with liquid motions of 4 to 6 a day. She had severe headache and was slightly delirious. On examination: The temperature was 103°. Pulse and respiration were proportionate to temperature. Tongue was coated and dry. Spleen was slightly enlarged. Liver not palpable. Lungs were clear.

On suspicion of Malaria I sent her blood for examination and in the meantime I administered Quinine gr. V every three hours. The blood report was positive but inspite of continuing Quinine for two days the temperature did not come to normal but was steady at 101°. On the other hand the pain in the abdomen and diarrhoea worsened and delirium persisted. I was puzzled. But the next day her mother told me that the girl was feeling irritation in the nose and while blowing it a small round worm came out. I suspected Ascariasis and gave her two Bitter pills (East India Pharmaceuticals) at night. The next morning I was utterly surprised to know that at least 60 to 75 round worms came out in bunches. The temperature came down to 99°. Throughout the day she had passed worms. That night I again gave her another tablet. Next day another fifty came out. The temperature came down to normal with no pain in the abdomen. No delirium. Diarrhoea ceased.

I am greateful to Mr. K. Roy for his laboratory findings. Calcutta Pharmacy, Ranchi, Behar.

Dr. SUPRIYA CHAKRAVARTY.

BOOK REVIEWS

The Integrative Action of the Nervous System by Sir Charles Sherrington, published by the Syndicate of the Cambridge University Press, Bentley House, 200 Euston Road, London N.W.I Selling Agents: M/S. Macmillan & Co., Ltd., London.

Date of Publication: 25th July 1947, Price 25/- net

This is an excellent book on neuro-physiology, revised and edited very ably by Samson Wright. This is a series of lectures given by Sir Sherrington at the Yale University, dealing with co-ordination with simple reflex, interaction between reflexes, compound reflexes, physiological position and dominance of the brain and sensual fusion. It is a book which would be of great use and interest to the physiologists and we heartily recommend it to them.

Immunity Bulletin. Published by the Bengal, Immunity Research Laboratory, Baranagore, Calcutta. Date of publication, April 1946.

This Bulletion contains much valuable information, useful to research workers in the various fields of medicine as well as industrialists dealing with manufacture of drugs and chemicals. The information is given under six sections.

(1) Chemical Research
(2) Biochemical ,,
(3) Biological ,,
(4) Pharmacological ,,
(5) Clinical ,,
(6) Pharmacognostical ,,

It will amply repay close perusal and we cammend it to the attention of our readers.

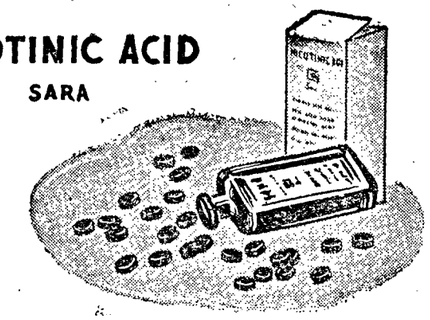
Corrigendum

In the article on "Thread Worm Infection" by Dr. R. N. Dey, published in our September, '47 Issue, please read "Thread Worms" instead of "Round Worms" occurring in the first and the last para of the article.—*Editor.*

Help Our National Government

We direct the attention of our readers to the Announcement by the General Secretary, A. I. M. L. A., on page 51 of this Supplement.

NICOTINIC ACID
SARA



Nicotinic Acid Sara is a white odourless crystalline powder, melting between 234°—237°C. It is non-hygroscopic and one gram dissolves in 60cc. of water at ordinary temperatures. It is stable in the dry state.

INDICATIONS: Nicotinic Acid is a specific in the treatment of pellagra and its administration in clinical doses produces striking results in clearing up the glossitis, stomatitis, gingivitis, pharyngitis, dermal lesions and mental stupor and depression of this deficiency disease.

Pellagra, indigestion, forgetfulness and insomnia respond to Nicotinic Acid Sara. Porphyrinuria, whether due to Pellagra or to the toxic effects of the Sulphonamide drugs is counteracted by Nicotinic Acid Sara. In association with liver extract, it gives good results in sprue and pernicious anaemia. It is also useful in the treatment of delirium tremens.

DOSAGE: Although optimal dosage varies according to the deficiency of the vitamin, oral administration of 500 mgms., in 10 doses of 50 mgms. each is safe and effective for the average patient with pellagra. Administration of 50 mgms., at one-hour intervals ten times a day is more effective than a single large dose.

In grown up children, the dosage varies from 50 to 300 mgms., and for children from 2 to 6 years, 25 mgms. are sufficient. Nicotinic Acid Sara is available as tablets containing 50 mgms., each packed in bottles of 25, 100 and 500 tablets.

REACTION: The absorption of this vitamin is followed by flushing, burning and itching. But these are harmless and disappear within a short time.

Note: This Vitamin—an important member of the Vitamin B Complex—is now prepared in India synthetically by Sarabhai Chemicals (Fine Chemicals Division).

Seava

SARABHAI CHEMICALS
(Pharmaceutical Division)
Baroda • • • Ahmedabad

SHILPI SC (Med) 4

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if the peritoneum or uterine wall is badly involved. Conservatism along these lines is probably to be more carefully considered than conservatism in emptying the uterus by cesarean section for if the patient is a young woman who has an adequate pelvis one section may lead to subsequent sections and a Porro procedure is a near calamity. If labor should ensue, delivery from below by a rapid method, after the cervix is completely dilated, is the procedure of choice. In the presence of pelvic deformity a low cervical or extra-peritoneal section may be the choice, with a Porro operation held in reserve for an older patient. A Porro operation may, however, be necessary for a young woman who has pelvic contraction if appendiceal rupture and formation of an abscess have occurred.[7]

If it has been decided at the time of appendectomy not to effect delivery, one should await the onset of labor. The condition of the patient should be carefully considered in regard to fluid balance and to acidosis. With the onset of labor adequate analgesia should be sought for and as conservative a management of delivery as is consistent with the patient's condition should be done.

Postoperative Course

The postoperative course of these patients in the past has been stormy. The treatment, however, is the same as for nonpregnant women in regard to relief of ileus, fluid balance and analgesia. In dealing postoperatively with as serious a condition as this the generous parenteral use of the sulfonamides and antibiotic agents is imperative.

Fetal and Maternal Mortality Rates

The mortality rate among these women and their fetuses has been high. Underwood in 1943 stated that the death rate of pregnant women who have suppurative appendicitis is 29.7 per cent. Marbury[8] in 1933 gave a similar figure, 26.4 per cent, among all types of appendicitis in the third trimester. In 1929 McDonald[9] quoted a 30 per cent mortality rate in cases in which appendicitis was complicated by peritonitis.

The incidence of fetal mortality in all trimesters of pregnancy is reported as being both high and low. Twyman, Mussey and Stalker reported three fetal losses in seventy-five cases, an incidence of 4 per cent, but in two of these cases the appendix was ruptured. These authors further stated that peritonitis is nearly always followed by abortion or premature labor. McDonald found that 72 per cent of patients who have peritonitis as a complication of appendicitis in all trimesters lose the fetus. Smith and Bartlett in 1940 reported abortion or premature labor in 80 per cent. The high rate of fetal mortality is due to the disease and to the delay in operation, which in turn is due to the difficulty of diagnosis, rather than to the operative procedure. The fetal mortality rate is also increased by the high maternal mortality rate, many patients aborting because they are dying.

7. Underwood, J. H. Appendicitis complicating pregnancy. J. M. Soc. New Jersey 40: 62-63 (Feb.) 1943.
8. Marbury, W. B.. Quoted by Zander, E. L.6
9. McDonald, A. L.: Quoted by Zander, E. L.6

Report of Case

The patient, gravida two para one, had an uncomplicated pregnancy until the onset of the present illness. Two days before admission, on arising about 5:00 a.m. she noticed soreness and tenderness in the epigastrium. About four to six hours later the pain and tenderness became sharp and continuous with localization in the right lower quadrant of the abdomen. About eighteen hours later she began to vomit and saw her local physician, who could not confirm a diagnosis of labor after a vaginal examinaion and sent her to the Clinic.

The patient was admitted to the Clinic fifty-four hours after the first symptom. She had vomited three times in the preceding eighteen hours, had taken nothing by mouth for forty-eight hours and had not had a bowel movement in fifty-five hours. She had slight dysuria but no hematuria or pyuria.

Physical examination disclosed a well-developed, dehydrated white woman in moderately severe pain, having respirations of the Kussmaul type, which accentuated her abdominal distress. The blood pressure was 112 mm. of mercury systolic and 80 diastolic. The temperature was 97.6° F. The pulse rate was 120. The respirations were 20. The tongue was dry. The heart and lungs were negative to percussion and auscultation. Abdominal examination showed the uterus to be tonic and of the size characteristic of a near term pregnancy. The epigastrium was tender to palpation. The abdomen was distended and silent. While the maximal point of tenderness was difficult to ascertain, it seemed to be in the right lower quadrant of the abdomen. There were some splinting of the abdominal muscles and rebound tenderness. A period of observation did not reveal rhythmic uterine contractions. The fetal heart rate was 140. Rectal examination showed the fetal head to be at the pelvic inlet and the uterine cervix to be partially effaced and dilated 2 cm.

The following laboratory examinations were done. A catheterized specimen of urine gave a specific gravity of 1.023, with acid reaction, albuminuria grade 1 and pyuria grade 1. Erythrocytes numbered 4,790,000 per cubic millimetre of blood and the concentration of hemoglobin was 13.6 gm. per 100 c.c. of blood. Leukocytes numbered 16,000 per cubic millimetre of blood with a differential distribution of lymphocytes 13, monocytes 4, segmented neutrophils 59, nonsegmented neutrophils 17 and eosinophils 7.

The family history and the patient's past history were noncontributory.

Menstruation had begun at the age of fourteen years; the interval between menstruations was twenty- eight to thirty days and the flow lasted for three days. The last menstrual period had begun October 28, 1945, and the expected date of confinement was August 4, 1946.

On the basis of the history, physical findings and laboratory examinations a preoperative diagnosis of an acute abdominal condition, probably appendicitis, was made.

A primary midline incision of the abdomen was made with the patient under nitrous oxide and ether anesthesia. There was generalized peritonitis with free purulent fluid throughout the abdomen. The appendix was gangrenous and ruptured. It was difficult to remove, owing to the friable nature of the adjacent tissues. Because oozing continued in the appendiceal bed after ligation of the main bleeding vessels, a Penrose cigaret drain was placed in it through a stab wound in the abdominal wall lateral to the primary incision. Ten grams of sulfathiazole were dusted into the abdomen. The abdomen was closed in layers using chromic catgut sutures.

The pathologist reported that the appendix showed acute purulent gangrenous apppendicitis with periappendicitis.

Postoperative course.—The patient was given morphine twice for sedation. A stomach tube with Wangensteen suction was maintained for five days. The patient was given 160,000 units of penicillin daily in divided doses. She also was given 5 gm. of sodium sulfadiazine per day intravenously for six days and was given 6 gm. daily by mouth for the ensuing five days. Eight hours after operation a test of carbon dioxide combining power showed 30.5 volumes per 100 c.c. of plasma. She was given a total of 600 c.c. of 5 per cent solution of sodium bicarbonate intravenously over a period of three days, at the end of which the carbon dioxide combining power was 76.8 volumes per 100 c.c. of plasma. She was febrile for three days with a temperature of 100.4° F. and a pulse rate of 136. After this the temperature dropped to normal and the pulse rate remained fairly constantly around 88. Fluid intake daily during the postoperative period varied from 2,000 to 3,000 c.c.

Obstetric procedures.—Twenty-two hours after operation the fetal heart tones were no longer discernible and the patient did not notice fetal life. Thirty-one hours after operation she went into rapid labor, having a first stage of thirty minutes and a second stage of twentyeight minutes. A macerated male fetus weighing 3,620 gm. and measuring 52.5 cm. was delivered spontaneously. The placenta and membranes were delivered intact spontaneously in twenty minutes. The postpartum course was that of the postoperative course.

Conclusion

The occurrence of appendicitis at term in pregnancy offers a difficult problem in differential diagnosis. This is due chiefly to the size of the pregnant uterus at term which obscures the signs of peritoneal irritation and to the increased uterine tone which may beguile the observer into attributing the abdominal distress to the onset of labor.

Attention should be called to the presence of acidosis in this patient as revealed by the carbon dioxide combining power of 30.5 volumes per 100 c.c. of plasma eight hours after appendectomy. This was undoubtedly an important contributing factor to the causation of the stillbirth. Had this condition been recognized at the time of admission and corrected the chance of fetal survival might have been enhanced.

LETTERS TO THE EDITOR

IS ARTIFICIAL INSEMINATION DEPRECATORY?

(A Rejoinder to I. M. J. Editorial, July 1947)

In the kind kingdom of mother nature propagation of the race is the strongest instinct inherent in living being. Man cannot be an exception to this general rule. This is nature's basal idea working through human sex instinct. A scientist cannot deny it. As an effect of this race-continuation instinct every normal woman is naturally anxious to produce children. Her role of life is not complete unless she is able to do it If for any reason or other, due to her own difficult physical defects or diseases or to those of the other party, she is not able to discharge this her all-important duty to herself as well as to her race, she ceases to take any interest in life. Her life becomes a burden to her own-self, to her family and to the society. Production of healthy strong robust children is the first-rate wealth of nation, and taking their proper care, the first sacred duty of a state. If these few glaring truths are seen face to face at their intrinsic values I cannot understand the shyness felt by many scientists to justify this production of children by artificial insemination, in cases where natural means have failed. Much fuss is made of moral and ethical issues invloved in ultrascientific method of fecundation. But if a scientist allows his views to be influenced by those of sociology and morality which are altogether different sciences evolved by man to achieve altogether different aims, he is no staunch and sincere worker of his own science which he professes to serve. And then, if medical science is not to be harnessed for material need of mankind, what does the science stand for? It is true that it should be, nay it ought to be harnessed for the welfare of humanity. No science must ever be harnessed for destruction. But making a childless and child aspiring couple to have this natural ambition fulfilled by the help of science is certainly not harnessing it for a bad purpose! Artificial fecundation cannot be done without the consent and cooperation of the parents. Otherwise it will land the scientist in the domain of crime which no well meaning practitioner of science will ever be anxious to enter as he is supposed to know his responsibility too well. Artificial insemination in special cases when it is needed fulfills the purpose of marriage institution much far from striking at its very root. Much is made of the spiritual basis of marriage as an argument against artificial insemination on the count that this scientific method of ultra-scientific fecundation will injure the spiritual aspect of marriage. But we all know too well to what stage this once extolled marriage institution has now reached. The marriage is no longer.

"A Golden Chain laid down from Heaven
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in any part of humanity. We find that 95 per cent of the marriages contracted by modern youths are either to satisfy their lure of beauty, to earn handsome dowry or property, to achieve friendly relations between two families, or to appease smouldering enmity and such other various mundane reasons, all outside the perview of spiritual advancement of the couple. How can artificial insemination mar spiritual significance of marriage thus contracted? And supposing the marriage institution has in some specially ideal cases retained its spiritual aspects to be fulfilled how will artificial fecundation create a cloud of unspiritual misery amongst a couple resorting to this scientific method with mutual consent and with all secrecy from the rest of the world? Are not male gynecologists and male physicians of repute being daily consulted by a number of female patients in spite of the natural shyness felt by them during the interview, the subsequent examination and treatment? Has it hampered the spiritual aspect of their lives? Has removal or slackening of the much condemned Purdah system from certain societies brought any spiritual damnation on them? Has not the education in Eugenics and sex hygiene to the youngsters and the installations of V. D. preventive centres and organisation of orphanages for illegitimate issues advocated by scientists and established by some societies and local bodies improved the general welfare of mankind and is followed by beneficial results? If the spiritual body was allowed to gain an upper hand over science so many leper asylums and leper hospitals would not have come into existance and leprosy would have ever remained an incurable disease. Much is said about the Indian culture and civilisation



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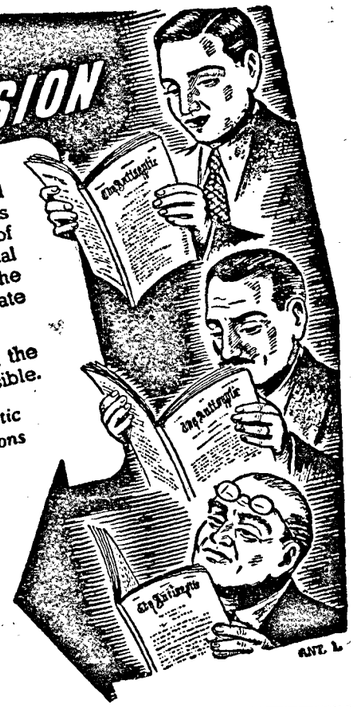
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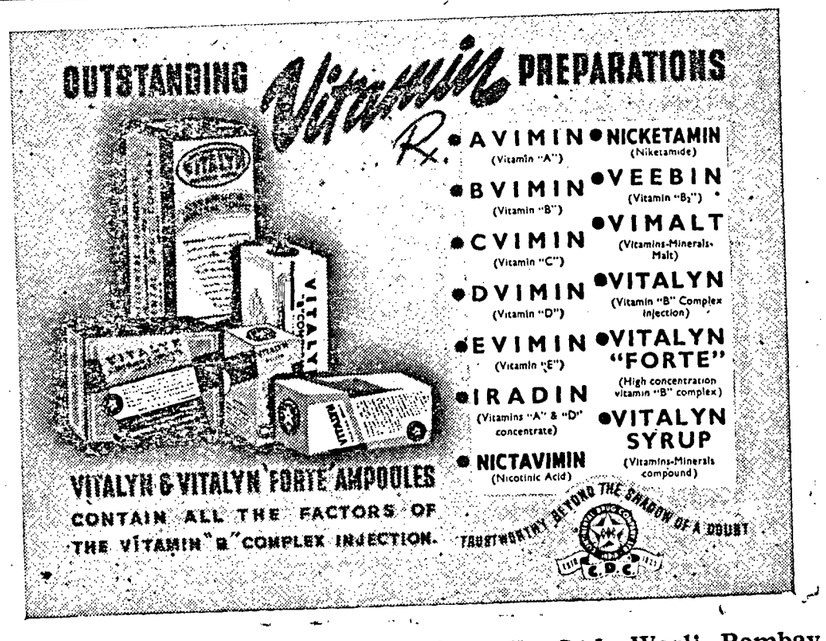
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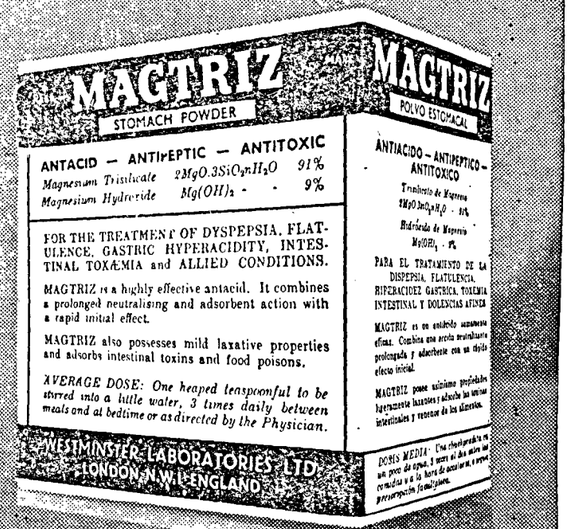
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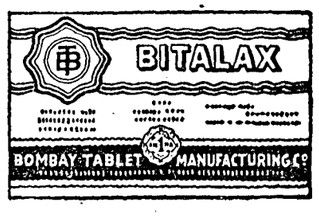
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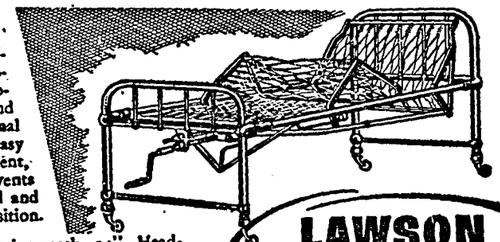
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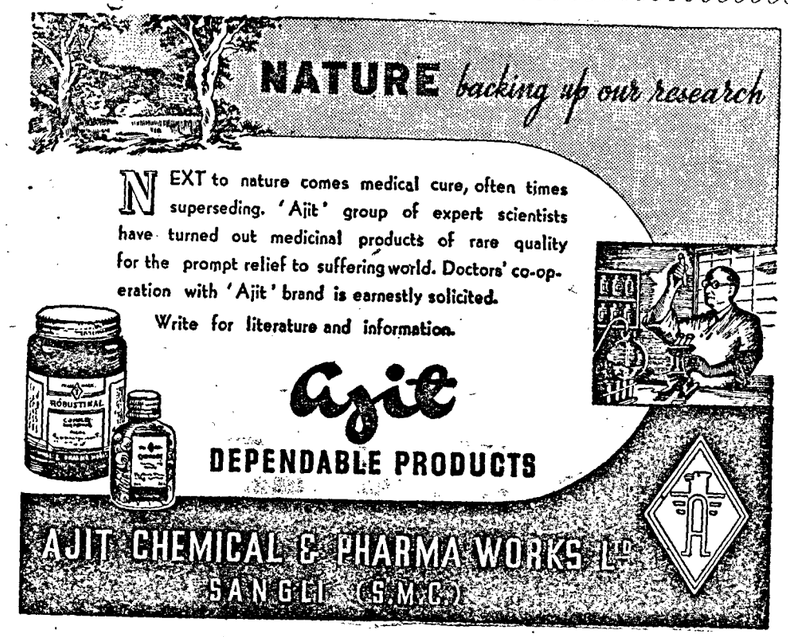
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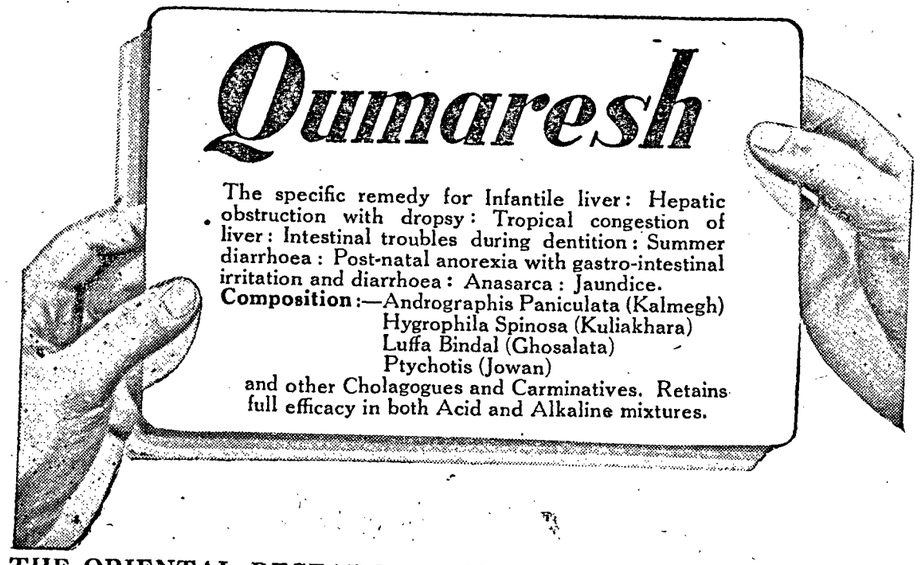
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Thought for the Month.

The Modern trend in the provision of organised health services for the community seems to be in the direction of ensuring that such services satisfy the following requirements:

(1) It should be available to all citizens irrespective of their ability to pay for it.

(2) It should be a complete medical service—domiciliary and institutional.

—Report of the Health Survey and Development Committee, New Delhi, p.6.

LEADING ARTICLES

Specialism in Medicine.

We publish in this supplement the thought-provoking address of Dr. Tirumal Rao on Specialism in Medicine delivered at the last Madura Conference of the Indian Medical Association. The three specific evils which Specialism in Medicine has engendered are, according to him, *ultra-specialism*, *pseudo-specialism* and *specialist mania*. We can see these evils in every sphere of our work, although in our country specialism has not yet progressed too far to make the general practitioners a mere certifying agency or a go-between the specialist and the patient. But the evil trend is there and is likely to extend its octopus if the general practitioners are not vigilant and the medical educational authorities do not stem the tide by restricting specialist diplomas and degrees to the unavoidable minimum.

One way of successfully resisting the inroads of specialists is within the absolute choice of the general practitioner himself. He must so increase his professional efficiency as to enable him to render an all-round service to his patients in all the fields of medical work. Thus, for example, he need not at all send the patient's blood to the bacteriologist for finding out

malaria parasites, nor a case of hydrocele or hernia to the surgeon, nor slightly abnormal cases of pregnancy to the obstetricians, nor conjunctivitis to ophthalmic surgeon. This work, he must do it himself. In other words, he must set up a good standard of practice and improve it in the light of his own growing experience, and as far as possible it must be an all-round practice.'

The present unfavourable position of the general practitioner is mostly due to want of enterprise and courage on his part. He evades his work and shifts it on to the hospital or to the specialist. We have often seen him send his case of simple hydrocele and uncomplicated case of hernia to the surgical specialist, and simple eye diseases to the ophthalmologist. The results are: he loses the opportunity for gaining experience, and the patient loses confidence in him.

The specialists pat the general practitioners and call them the back-bone of the profession. But actually they do not mean what they say. In our country they even receive patients directly and do the work of the general practitioners in so far as it concerns their speciality. But we are not at all inclined to blame the specialist, because their intrusion into the general practice is mostly due to the negligence or indifference of the practitioners themselves. We would therefore urge the general practitioners of our country to discharge their functions not by evasion but by fulfilment, and to equip themselves in a way as to enable them to do the work which is theirs by right of qualification. Then only will Specialism in Medicine come to occupy its rightful place. Otherwise the tendency to extend its sphere of work cannot be held back, and this would undoubtedly be to the great detriment of general practice.

Unification of Medical Cadres.

We heartily congratulate the Government of Madras for effecting unification of medical cadres and the grant of uniform scale of pay to all officers except those in the teaching line. The Government order dated the 4th August, '47, runs as follows:

The Government of Madras have had under consideration proposals submitted by the Surgeon-General and the Medical Licentiates' Associations, regarding the unification of the cadres of Civil Assistant Surgeons and Sub-Assistant Surgeons and the grant of uniform scales of pay to all officers (except those in the teaching line for whom a special pay was suggested). After a careful consideration of the proposals they have decided.

1. that Civil Assistant Surgeons should be designated as Civil Assistant Surgeons, Class I;

2. that Sub-Assistant Surgeons should be designated as Civil Assistant Surgeons, Class II and remain non-gazetted;

3. that promotion from Civil Assistant Surgeon, Class II to Civil Assistant Surgeon, Class I shall be treated as a promotion to a selection grade and be on the following conditions:—

(i) 15 years satisfactory service as Civil Assistant Surgeon, Class II under Government Service for licentiates, and (ii) not less than five years of service under government for medical graduates.

4. that the posts of Civil Assistant Surgeons Class I in the King Institute, Guindy and the Senior Assistant to Chemical Examiner to Government, be brought under the scheme of appointment of Supernumerary Civil Surgeons.

This order means that all the existing Sub-Assistant Surgeons who have put in more than 15 years of satisfactory service will be treated as Assistant Surgeon Class I with all the rights and privileges of that cadre. Since, in this province, there are a very few with less than 15 years of service, only a very small number will be left in the cadre of Assistant Surgeon Class II. If this is so, we believe it is a fair and equitable compromise.

What is not made clear in the order is; what would be the initial salary of these promoted officers? Obviously it cannot be on the initial starting salary of Assistant Surgeon Class I, as most of these officers have to their credit long years of service, although in subordinate branch. A reasonable arrangement will be that they should be given 50% antedate of the service already rendered. That is, if one has put in 15 years service, he should be started on the scale of pay of Assistant Surgeon Class I at the 8th year of service. We hope that the Government of Madras would respond to this suggestion in the same generous way as it has accepted the representations of the Licentiates' Association in the matter of unification of the profession.

OTHER ARTICLES

Specialism in Medicine, Its Past and Its Future*

B. TIRUMAL RAO, F.R.C.S. (E), D.L.O. (ENG.)
RAO BAHADUR
Hony. Professor, Andhra Medical College, Vizagapatam.

What is specialism, and who is a specialist? Specialism and specialist are not very happy terms in relation to the practice or teaching of medicine. It is unfortunate that very often definitions are the least definite of our knowledge, for there are things which defy definition. A specialist, it has been said, perhaps somewhat fantastically, is one who follows a policy of divide and rule in the realm of medicine, one who tends to know more and more about less and less. However much we dislike the terms, the things which they signify are real. They have gained a firm hold, and have come to stay, as far as could be foreseen. The rapid and widespread growth of specialism, however, during recent years has really created a problem which deserves our very careful consideration. This moment is particularly opportune, for us to consider it, as the planning of the future development of medical relief, and public health, is on the anvil of the Government. The Bhore Committee after a thorough and comprehensive survey have made certain important suggestions in their report on the various aspects of the complex subject of teaching and practice of medicine. It is up to us, members of the medical profession, to review the position with a critical mind, for we are vitally concerned with them.

There is nothing new or strange about specialism. Specialism in medicine is perhaps as old as medicine itself. It started first with surgery, branching off from medicine. It is clear that surgery, gained definite recognition as a speciality at the time of Hippocrates, for his famous oath says "I will not cut persons labouring under the stone, but leave this to be done by men who are practitioners of this work." In ancient Hindu medicine also, surgery occupied a prominent place as a specialism. But as time went on, physicians began to think too respectful of themselves and developed a contempt for surgery, as a handicraft. The general practice of surgery became relegated to barbers and other less cultured class of people. The cleavage between medicine and surgery became so pronounced, and their practice so degraded that the great Vesalius, in the 16th century, violently protested that the separation of surgery from medicine was "a hateful error, and a perverse distribution of instruments of healing amongst a variety of craftsmen." This estrangement between the two classes of practitioners, however, persisted and their differences became more and more accentuated, so that we hear of internal medicine, as opposed to external surgery. Osler relates a medico-surgical story from the life of George Mareschal who was the champion of French surgery in the early part of the 18th century. He cut Fagin, the chief physician to Louis XIV for stone. After the operation when Mareschal would give to his patient some counsel as to his diet, the bitter old man repulsed the surgeon with the remark "I have need for your hands, but thank God! Sir, I have no need of your head to order my way of life." It is interesting to notice here that this distinction between internal medicine, and external surgery based upon medicinal *versus* manipulative form of therapeutics, no longer holds good, though terms like internist still persist in common parlance. For thanks to Lister, there is now no internal cavity or organ which the surgeon hesitates to peep in or handle. It has taken centuries to restore surgery to its prestine glory, and to place it on its present proud pedestal.

Midwifery, the third in importance in the basic triad of medicine, though recognised early as a separate branch of medicine, had for long, a doubtful individuality and a precarious existence. It remained in the hands of women untutored and unskilful, till rescued by the valuable discovery of midwifery forceps. The invention of the ophthalmoscope by Helmholtz in 1851 opened out a new world to the ophthalmologists, and mainly helped to place the study of diseases of the eye on a scientific basis. Again the discovery of the eustachian catheter, the laryngoscope, the bronchoscope, and the oesophagoscope have established the speciality of ear, nose and throat on imperishable foundations. Incidentally it may be amusing to note that some of these epoch-making instruments were not invented by medical men—the eustachian catheter was the invention of an imaginative post-master, and laryngoscopic mirror of an inquisitive musician. In the case of these subjects also their growth was slow, long and laborious. It was after ages of stubborn opposition, of insuperable obstacles, and of strife and struggle that they attained the status of specialities. An attitude of scorn and contempt towards them continued in a greater or lesser degree even till comparatively recent times. Abernethy in 1790, when asked to be the President of the London Eye and Ear Infirmary, refused saying "I can see no good that may arise from this to the public. It may be of use to surgeons but I candidly tell you I consider it quackery. I will never lend my name to sanction it. Every surgeon should be acquainted with diseases of organs of sight and hearing and to detach them from general surgery would be no less injurious to science than oppressive to the public." In spite of all impediments, specialism established itself in medicine long before the modern era, and as such it is not a new phenomenon in the evolution of medicine.

Specialism is the inevitable outcome of the growing complexity of any branch of human activity or knowledge. It is inherent in all organic growth, and development. And so it is with medicine. That specialism has obvious advantages, there is no gainsaying, a fact recognised even at the time of Hippocrates. But can anybody afford to ignore the loud and violent cry of alarm raised by Vesalius, at a later date? Let us listen to what he said: "Those engaged in arts, and sciences, found many serious obstacles to the exact study and successful application of them. In the first place, no slight inconvenience results

* Presidential Address: Surgical Section, Scientific Session, XXIII All-India Medical Conference, 1946, Madura, Courtesy: J. I. M. A. April, 47.

standard of attainments and accomplishments of the general practitioner. His is an honourable and important role. He is the back bone of the profession, and the first line of defence. His education must be not only on a scientific but a broad humane background; if he has to play his part nobly and well in his relationship with the specialist and consultant as well as the public. Over emphasis on science detrimental to the cultivation of a lively interest in art, and literature should be avoided.

Medical Education

The foregoing discussion on specialism in relation to medical practice has brought us face to face with the subject of medical education for the latter is an essential and immediate prelude to the former. The standard of integrity and efficiency of the profession is dependent not so much upon the actual curriculum of the medical education but upon the proper approach to it. Medical education, as I have already mentioned, has not been left uncaught in the wave of specialism now sweeping all over. I have also incidentally touched upon some of the ways and means for a harmless and fruitful canalisation of its influences upon post-graduate education. Now follows a consideration of its effects upon undergraduate training.

In the teaching of medicine, specialism is of course an advantage, for the teacher gets an opportunity for making an intensive study, and for acquiring an intimate knowledge of the subject of his choice. His thorough familiarity gives him a confidence and authority, to speak on it, with a clearness and precision, which is impossible to expect from a man, whose knowledge is vague and fragmentary, though covering a multitude of ills.

But there is here also the danger of running a risk; the risk of developing a narrow outlook, a tubular vision, and a pedantic self-sufficiency. In the modern teaching of medicine, specialism comes in early in the preclinical period with the teaching of non-clinical subjects by whole-time professors who have no collateral clinical work. When I was a student, the Professor of Anatomy was a Surgeon, and the Professor of Physiology was a Physician. Even Chemistry and Biology were taught by medical men. But now not only anatomy and physiology but also pathology and pharmacology are taught by Professors who have no clinical work. Physics, chemistry and biology are taught by non-medical teachers. The non-clinical professor bereft of all the sober and humanistic influences of medical practice, and its responsibilities, develop an attitude of isolationism and teaches his subject, not as an applied science, but as pure science, not as an essential preliminary to he clinical study of medicine but as an end in itself. Therefore the pre-medical curriculum in the words of Dr. Souttar, "has reached the limits of human endurance, and it is only the genius of the medical student, for clearing his brain completely after every examination, that enables him to preserve his sanity."

Now, therefore, the student finds himself bewildered when he is passed on from the pre-clinical to the clinical stage of his training. The transition is abrupt, because of a gap between the two stages. The problem is how to bring about a closer relationship, how to bridge the gap; how to make the transition easy and smooth.

The Bhore Committee has considered the problem in some details, and their suggestions may be summarized as follows:—

(1) The departments of anatomy and physiology should be organised in close association with the teaching hospitals and should be readily accessible to clinical students for reference.

(2) In addition to the wholetime professor, there should be an associate or assistant professor or a clinician at least of the status of a registrar with collateral duties in the hospital.

(3) There should be close co-operation, and collaboration between the teachers of the preclinical subjects and between the preclinical and clinical teachers.

(4) Periodical visits to the hospitals of students during the period of preclinical training in order to stimulate their interest.

It is noteworthy that nobody came across any gap in the training when we were students. At any rate there was no talk about it. The reforms above suggested are no more than a partial retracing of our steps to the stage when the preclinical subjects were taught by part-time teachers with collateral clinical duties. The appointment of whole-time professors, setting them free from the shackles of bondage to clinical medicine as it then appeared, was hailed as a great reform. And now, the retracing of our steps is considered a greater reform. Some one has aptly said "There is nothing new except what has been forgotton." There is nothing contradictory or paradoxical about the present proposals. Only in our first flush of enthusiasm for science and research, the pendulum has swung too far to the left, and now we would have it set in the optimum middle.

The objective of the Bhore Committee is in accordance with the lessons, taught by the recent history, and their proposals are clear. But do they go far enough is the question. The appointment of an associate teacher, with collateral clinical duties in the non-clinical departments, does not help very much in bridging the gap. He may not be taken kindly, either by the whole-time professor who may treat him as an unwelcome intruder, or the students who may look upon him as an unnecessary appendage. He may occupy just the same position as some of the clinical specialists occupy at present, in the organisation of clinical teaching. The other suggestions, I am afraid are not also of a far reaching character. They do not seem to go right into the root of the matter.

It is expected that the above proposals establish a better correlation between the preclinical and clinical courses and that the bearing of science on what is to come in the clinic will be better impressed on the student. This is not the first time that similar pious hopes regarding reforms in the medical curriculum have been entertained but remained completely unrealized. The solution does not lie in incessantly laying hands on the curriculum. No problem is ever solved by begging the question. No formula would serve the purpose.

To my mind there appears a simple, a more direct and a more effective approach to the problem. In order to keep pace with the rapid development of medical sciences, the course of training has been lengthened to 5 or 5½ years, setting apart 2 to 2½ years of this period to the preclinical scientific subject, and all this while hiding the patient, the chief objects, of study, from the student. Is it necessary to do this? The actual period the student spends at the bed side of the patient remains about the same, even under the recent, and the most modern dispensation. In the broad sense of the term, the hospital has been called the clinical laboratory of the medical college, and the treatment of every patient in the hospital is of the nature of an experiment. If we accept this analogy, the greater the number of patients the student is made to observe, the greater is the knowledge of disease he acquires.

Is it not far better, therefore, that the student is brought face to face with the patient right from the start, and to make him to think in terms of the patient from the beginning of his studies. The patient will have been the central idea in the student's mind for a longer time. His senses become more acute of perception, and his powers of observation more strengthened. A student may know all about the anatomy and physiology of the pituitary gland and yet fail to notice the enlargement of the hand in a case of acromegaly. It is not infrequent that a senior nurse displays greater clinical judgment than a junior doctor, for greater have been her opportunities to observe the patient. I therefore consider, that it is so much to the advantage of the student, if he is directly associated with clinical work, at least for a couple of hours every morning during the first two years of the course instead of half-hearted occasional periodical visits. Does it vitiate in any manner his imbibing scientific knowledge during the rest of the day? I hope not; on the other hand, I should think it does him a world of good. The dynamic influence of the bed side, arouses his innate curiosity and creates a living interest in his study of even a "dry as dust" subject like anatomy. The student who watches the surgeon opening the inguinal canal, will come to the anatomy theatre with a gusto, and dissect the region with a relish.

The preclinical subjects will then be no more nonclinical. They acquire a new meaning and attain a new status in the eyes of the student. There will be no more talk of "bridging the gap" as it was, so in the past.

So much for the effects of specialism in the preclinical teaching of medicine. What about the status of specialisation in the clinical teaching? Its curriculum consists of the basic triad of medicine, surgery and midwifery and a number of ancillary specialities. It has undergone several periodical alterations to accommodate each rising speciality. A certain number of class room lectures and clinical demonstrations are made compulsory for each subject, and the student has to produce a certificate of the prescribed percentage of attendance before he is sent up for the final examination. Very occasionally are questions asked on the special subjects in the papers on surgery or medicine. The student therefore rather undertakes the risk of a question turning up by chance than bother himself with the speciality either with what is taught in the class room or in the clinic. He puts them down as so many non-examination subjects merely to be "signed up". To withhold a certificate for any reason in a mere special subject looks so unthinkable and absurd. Their present arrangement in the curriculum creates the impression that each is an isolated subject quite unconnected with the rest, and from the body as a whole. The student decides, that when he settles down as a practitioner, he has nothing to do with the specialities but refer the cases to the specialists. This attitude of isolation is fast taking root in the minds of the students as well as the teachers. It has been truly said by Walshe that "much that is implied in the term 'specialism' has come to be an obstacle to the teaching and practice of medicine."

In fact, the so-called general surgeon and general physician are, in the modern times, also in a sense, specialists confining the scope of their work to the few regions of the human body which have not yet been relegated to the specialists. They are no longer ubiquitous. It is often said that the specialist teaches his subject as if he is training specialists. It is not true. The time and the teaching facilities afforded to him are so small and meagre that even under-graduate teaching is not really possible. On the other hand, the professors of general medicine and surgery are more likely to fall into the error of teaching as if they are to train consultants, and operating specialists. The old type of teachers of medicine and surgery whose vision was wide and all-embracing, and whose knowledge encompassed the entire field of medical science, are fast becoming extinct. The student of today shall be the teacher of tomorrow. If modern teaching of medicine has become distributed into a number of isolated specialities, the future teaching of medicine will have passed into the hands of narrow-minded specialists and a vicious circle will thus be perpetuated.

Therefore, a planned reorientation of clinical teaching, and reintegration of the specialities is absolutely necessary. The scope and extent of general medicine and surgery should not be allowed to be further whittled down by haphazard growth of specialities; and specialities which have really deserved their status should be retained, but otherwise absorbed entirely into the parent subject, for purposes of teaching. The specialities so retained should not be treated as isolated unimportant appendices but as essential parts of the main subject. Much that is taught in general medicine and surgery should be omitted being more suitable for post graduate teaching, and much that is included in the specialities should be taught as part and parcel of the main subjects. This would mean a close co-operation between the various teachers of clinical medicine and surgery. Questions in the specialities should invariably be asked in the papers, and teachers of the specialities should be included in the final year board of examiners. They should be allowed to take part in the clinical and oral parts of the examinations. The mischievous impression should no longer gain ground in the mind of student, that the specialities are mere non-examination subjects, about which he need not unduly bother and which he can ignore

from a too great separation between branches of study which serve for the perfection of one art. But much worse is the mischievous distribution, among different practitioners of the practical application of the art. This has been carried so far, that those who have set before themselves the attainment of an art, embrace one part of it to the neglect of the rest, although they are intimately bound up with it. Such never achieve any notable result; they never attain their goal or succeed in basing their art upon a proper foundation." This is a serious indictment. Why was there so much opposition to specialism from people like Abernethy? How shall we understand his absolute abhorrence and hatred of it? Was it all due to his obscurantism? It may be that he was too much obsessed, but was he not also like Vesalius greatly apprehensive of the grave dangers and disadvantages accompanying specialism? If such is the deep distrust and despair engendered by specialism in the minds of thinkers in the past, there can be no wonder at the constant reiteration nowadays of the melancholy note that specialism is an evil, and that it is inevitable, when it no longer comprises of a few main subjects but presents a spectacular growth of spurious exuberance and frightful prolificity.

The primary cleavage, as we have already noticed, gave us the physician and the surgeon. Further subdivision took place chiefly on anatomical basis, each devoting to a single organ or system, because of the invention of an instrument or a special technique, investigational or therapeutic, so that we have in addition to the Obstetrician, Ophthalmologist, Oto-Rhino-Laryngologist, already mentioned, we have the Proctologist, Urologist, Gynaecologist and so on. It is interesting to note that in each of these further subdivisions, as a rule, there is an inevitable tendency to combine in itself the medical and operative therapy with which it is concerned. This is what should be the case in the domain of the two major branches of what have been called internal medicine and external surgery. In habit of thought and general attitude towards disease, there should be no difference between a physician and surgeon. The only difference that should be permitted is only on the basis of therapeutics. Now there are a number of other lines, on which the subjects are fast breaking up. Complexity of Physiology is responsible for the origin of Neurologist, Psychiatrist and Endocrinologist. New methods of diagnosis and treatment consequent on modern advances in physical and biological sciences created new specialisms, such as Radiology, Physio-therapy, Balneology, Clinical Pathology and Bacteriology etc. Certain diseases like tuberculosis, venereal deseases, and infectious diseases, treading on the border land of public health, constitute specialities themselves. We should not forget that public health is really a form of disease specialism, forcibly separated and pining ever since to be embraced back into the folds of greater medicine. There are again physicians who restrict their work to diseases involving a single system or to a single disease, haematology, allergy, diabetes etc. Among the surgeons there are some who limit their work even to that of a single operation—such as prostatectomy, herniotomy and thyroidectomy. I am sure that I have not reached the end of the list, though I have said enough, to show its divergent ramifications. But the trend, for aught we know, is still onward and new specialisms and superspecialisms will arise within the specialists of the present day.

The great expansion of knowledge and increasing complexity of practical-technical methods are no doubt the primary causes, but that, there are other factors at work, however minor, cannot be overlooked. Pursuit of individual inclination and talent, financial competition, the hypnotic spell the word "specialist" casts on the credulous public, all join forces, hastening the process of division and disruption.

The hold of specialism in this era of specialisation and research is not limited to medical practice and teaching of clinical medicine. The pre-clinical medical education has also come under its sway and sweep and has been totally transformed. It is a question how far it has been benefited. I, therefore, feel that the time has arrived when this complicated problem requires to be reviewed in its entirety and I propose to deal with this subject as it affects the three main aspects of medicine, namely Medical Practice, Medical Education and Medical Research.

Medical Practice.

The effects of specialism in medicine are most striking and conspicuous in the field of medical practice and it is best therefore that it is first dealt with.

The specialist has the advantage of intensive study and familiarity with the particular lines of diagnostic and therapeutic measures. He acquires a facility and skill by his restricted activity, and constant practice in his chosen field. He attains as a result of concentrated attention and frequent repetition of a limited number of procedures, an expert co-ordination of the eye, hand and brain, so that he performs his work with an effortless ease, which the others can do, at best, slowly and clumsily and may be, at greater risk to the patient. Specialism provides scope for a division of labour, and a choice of field best suited to one's own peculiar inclination and talent. No man can attain his best, unless there is a spontaneous enthusiasm and love for his work, and no man can love his work unless it gives ample scope for the display of his native abilities. A healthy distribution of tasks results in a great saving of labour, economy of material equipment, and conservation of mental energy.

If specialism was all a bundle of advantages, then it could not have presented such a knotty problem. In the words of Dr. Walshe, 'specialism is an inevitable evil'. For every virtue in this world there would seem to be a vicious hanger on, and specialisation in medicine is no exception in this respect. In the field of medical practice, specialism is potentially capable of producing or perpetuating at least three evils, *viz.*, (1) ultra-specialism; (21 pseudo-specialism; and (3) specialist mania,

Ultra-specialism—Unless specialism is carefully cultivated and conscientiously practised, it is apt to degenerate into ultra-specialism. The stimulus to intensive work in a special domain, is the lure to narrow down the field of work, to an undesirable extent, with the danger that the specialist runs the risk of losing sight of the wood on account of the

trees. He looks at diseases affecting organs, and not patients. He is unable to see beyond his own nose, or the patient's nose. In short, he is in the same predicament as the seven blind men of Hindustan, in the fable, who went to see the elephant. He forgets that the whole is greater than the sum of the parts. His limited outlook reduces him into a vain, arrogant believer in the self-sufficiency of his own specialism. He commits in short, quite unawares, perhaps, an act of intellectual suicide.

Pseudo-specialism—Pseudo-specialism is an even more potent danger than ultra-specialism. If ultra-specialism leads to a narrow and distorted vision and ends in intellectual suicide, pseudo-specialism begins even at the start with deliberate fraud and intellectual dishonesty. A specialist of the former class is an expert and often very successful in his own field of work, while one of the latter is a frustrated and disgruntled individual who is good for nothing. Finding it hard to make any headway in life, he often changes coats. He is the bye-product of the seemy side of business in the struggle for existence.

The specialist mania—But even the pseudo-specialist often thrives, because of the third evil, the specialist mania in the public. Specialism makes as much appeal to the people as magic and *mantram*. There is always a general feeling of fear and repugnance against orthodox methods of treatment specially surgical. Any surgery is still the most generally useful therapeutic measure which the physician has at his command, despite the great recent advances in chemotherapy. But say what one will, there is the dread and fear of knife, unsubdued in the human breast, in spite of the blessings of anaesthesia and Listerism. Great is the welcome, therefore, from the public of any simple remedy, medicinal or manipulative. Blind is the craze, for any new-fangled remedy, which the pseudo-specialist may easily exploit, and bring genuine specialism into discredit and disgrace. It is on the hopes raised in the minds of the public of a speedy cure with a cheap remedy that pseudo-specialism thrives and becomes vicious in practice. It often degenerates into quackery. This is also the place, where the other therapeutic cults, pseudo-integrated systems, the so-called pathies, find their favourite haunting ground. The patients may not even wait to consult his regular family physician, and even if this is done, the practitioner may feel himself compelled to yield, merely to accommodate his client. The general practitioner who is true to his self is really between the devil and the deep sea. There is the specialist mania on the one side, and his own professional conscience and scientific ideals on the other. Very often he is forced to compromise with the latter. It is unfortunate that religion, medicine and politics as Dr. Young pointed out, appear to be the three matters on which every one feels competent to criticise and offers suggestions to the expert. Therefore, if specialism is responsible for a state of specialist mania in the public, the public must be blamed for it as much as the specialist.

Thus we have seen the obverse and reverse of specialism in medical practice. It is neither a blessing nor a curse in toto. It has its merits and demerits. It is natural to the growth of medicine. It would be foolish to endeavour to suppress it, or exclude it altogether from the practise of medicine. Its advantage must be conserved at all costs, and its abuses eliminated.

If we are to achieve the above objectives, the growth of specialism must be regulated and controlled by insisting upon adequate training before one can pose himself as a specialist. Its haphazard growth, into innumerable isolated compartments, must be put a stop to. The Bhore Committee envisages two categories of post-graduate training: (*a*) the training of consultants and specialists; (*b*) the training of practitioners desirous of practising a speciality without the definite status of specialists. First dealing with category (*a*): It is a perfectly safe basis to place the specialist, in the same class as a consultant and to prescribe a training of several years which may lead to a higher qualification such as M. D. and M. S. This should meet with the needs of the major specialities like obstetrics and gynaecology, eye, and ear, nose and throat etc. As regards category (*b*) above, though I was in favour of instituting diploma courses in some of the subjects I now feel that I have to revise my opinion. I do not feel so sure of the wisdom of training practitioners for a short period and granting them a licence at the end to practise a speciality. A deeper foundation is required. It is inadequate as an inspiring stimulus to higher medical studies. It tends to breed technicians and not physicians and surgeons. A specialist needs to be a trained physician, and a skilful surgeon, and something more. A sanction given to cheap specialisation, permitting the practice of speciality, without the status of specialist, appears to be a most dangerous thing. This is the thin end of the wedge that breaks down the barrier of protection against many of its evils. A diploma ensuring a working knowledge of efficiency in such special techniques as those of radiology or anaesthesia, which are ever by their very nature auxiliary in practice, is quite a different thing from that of a diploma for each and everyone of the subsidiary subjects in the medical curriculum, major or minor.

The second great remedy against the evils of specialism is the maintenance of harmony and co-operation between the general practitioner and the specialist. Co-operation is possible only between equals. It is therefore necessary that the consultant or specialist should not assume any airs of superiority. It is true that, in recent years, the prestige and status of the general practitioner has gone down, what with the inroads of specialism into his legitimate domain, the complex methods of diagnosis and treatment necessitating compulsory institutional stay and care of the patients, and the advances and improvements in preventive medicine. However well preserved and protected, the time inevitably comes to each and every one when he needs the help of a doctor, the mortal coil breaking down surely under the stress and strain of modern life, if for an other cause. The doctor, who is best qualified to soothe and alleviate, if not cure his particular ailments, be they mental or physical is the general practitioner playing the role of family physician, rather than one whose interests are limited to the laboratory, or one whose practice is confined to the hospital. In any national scheme of health and medical relief, it should be the aim to maintain a high

with impunity. After all many of the minor, and the more common maladies, for which the patient seeks relief in general practice belong to the specialities. The fundamental methods of examination, diagnosis, and therapy are the same and common to all branches of medicine. It should be the aim of each and every one of the teachers to impress this truth firmly on the students' mind. Medicine may be successfully taught, with any course as the central point of radiation.

Medical Research.

Medical education is intimately related to medical research and advancement of scientific knowledge. In fact the Bhore Committee lays down that "from the first, medical education must be carried out against a back-ground of original investigation and research." Hence it becomes necessary to consider next, specialism as it affects medical research. In the field of research, specialism is of the utmost importance, as the smaller field permits of intensive study and concentration of attention. The advance of our knowledge of disease at almost breathless pace, has in fact become possible only on account of specialism. But as Robert Hutchison put it in his Harveran oration of 1931, specialism, though favourable to the accumulation of facts, is bad for the philosophy of knowledge. So upset was he with the bewildering rapidity of output that he seriously suggested "it might be a good thing if there were a close time in laboratory work, say for five years, to enable us to digest the vast accumulation of knowledge we already possess, and to think out new lines of advance."

Much of modern medical research is in the hands of specialists, who pursue their science for its own sake. But medicine is different; it is not a pure science like physics, chemistry or physiology, but an applied science. It has an end other than itself in view, namely the health and well-being of the community. Nothing which does not fulfil this primary aim of medicine is of any value to it. Medicine is not interested in knowledge, unless it can be applied to the prevention and cure of disease. The mere discovery of a multitude of facts is of no use to medicine, unless it is followed, side by side, with their clinical interpretation. A working hypothesis for the application of the discovered data is at once required. In the field of medical research therefore "the man who puts two old facts into a new and more realistic order deserves praise as certainly as does the man who discovers a new one." It is this purposeful effort at integration of the vast accumulation of isolated facts and experimental findings, it is this critical effort that is so essential in medical research unlike in the case of pure sciences. Further the results of the laboratory research work can be evaluated only by the experience of the clinician in the last resort. Clinical research should thus guide and control laboratory and experimental research. The unique feature of medicine is as Walshe points out, that while it is becoming increasingly experimental, it has long been and must continue to be an observational science. "In its observational aspect it deals with a supremely difficult material under conditions that make constant demands upon intuition and judgment. Nature is not interested in scientific method and the experiments she provides for us are in the guise of disease and injury. We have to take them as we find them, we cannot subject them to the necessary but artificial simplification that is the essence of a good experiment." (Walshe).

In short, the bed side is more important in medical research than the laboratory. "It is the duty of the teacher of medicine to interpret so far as possible, and to keep a lively interest in general ideas." (Walshe).

I am aware that very few of us have had any direct experience of the effects of specialism in research, for we are yet strangers to it. Our own contribution to it has been very little, in spite of its abundance elsewhere. Of course, the authorities, to appease as it were their own conscience, have started of late to make an annual enquiry of teachers in medicine, as to any research done or papers published by them. This demonstrates that the necessity and the desirability of research have been after all recognised, though the conditions essential for its undertaking have not yet been created. If some energetic enthusiast has been able to do a little bit so far in this direction, it is all due to his own self effort, often at considerable sacrifice of personal and private interests, or at the sacrifice of his other official responsibilities and duties. A conscientious teacher on the clinical side, often finds himself hard put to find sufficient time to teaching the student on account of the more urgent, imperative and doleful cry of the patient that his need is greater. Much less can he afford to dream of any research. Research, as in the case of every other human activity, is a question primarily of men and material, of course, of proper men and proper material. The men must be selected, given sufficient facilities, adequately paid and made independent of private practice.

The more difficult, and complicated problems of disease naturally more and more gravitate to the large teaching hospitals, and these are the proper places for clinical research. The teachers, at least at the higher level, must be enabled to uninterruptedly devote themselves to their work in the hospital without entering into competition for practice outside the institution. For, where advantage is taken of a hospital practice to subserve private ends, the physician or surgeon, paid or honorary, immediately becomes a less valuable servant of the institution, if for no other reason, than through the dissipation of his energies. When this abuse is prevented from becoming wide-spread and established, the private practitioner finds his position quite secure and stable, begins to take the same pride as before in playing the honourable role of the family physician respected and beloved of his community. All spirit of competition between the private practitioner and the paid service men will then disappear.

In the selection and promotion of men in the teaching departments, the flair and capacity for research should not be made a fetish. Proved ability and ripe experience should be given due consideration over the possession of a mere post-graduate degree, or the publication of a few papers.

It is true, that we, the medical profession at home, do not feel the gravity of some of the problems above depicted, just at present, as they do in the advanced countries of the west: The profession here is still

very young and just growing up, and gaining vigour, and strength. Specialism has not yet complicated medical practice to the same extent as in the West, except perhaps in the big metropolitan centres like Bombay and Calcutta. But its seeds have been widely sown and scattered, and it has taken a firm hold in the soil spreading its roots slowly and surely, in any and every direction.

It is now about two decades since the medical teaching has been organised giving due recognition to the specialities in the medical curriculum. Seven or eight years have elapsed since the Association of Surgeons of India was started, and the Association of Ppysicians of India, its counter-part in medicine came into being very recently. Sectional conferences of Ophthalmologists and Gynaecologists and Obstetricians were held on and off for sometime, though separate denominational associations have not yet formed. We are therefore unmistakably on the high road to specialism. Herein I sense a greater danger now for our profession in India than any that has been above referred to. We are passing through strange times. There is a tremendous upheaval everywhere. The social structure and economic fabric of our ancient land which had withstood the test of centuries through its varying political vicissitudes are fast crumbling. They are facing disruption and disorder during the short period of the last one or two generations under the powerful impact of western civilization, modern science and industrial revolution. The old ideals, and human values are at terrific discount. The advent of new socio-political dogmas, and cults of fascism and communism, socialism, and individualism and so on, with their conflicting ideas and ideologies find an eager welcome and the people who are notorious for their caste, class and communal differences, are fast splitting up, grouping themselves under new denominations, developing new interests and owing allegiance to new loyalties. The peasant has turned against the prince, the labourer against the capitalist, and the heterodox against the orthodox. There is a strange divergence and clash of interests between man and wife, father and son, teacher and pupil.

This is an unenviable and uninviting social and cultural background, which can by no means be ignored, when we are on the threshold of great expansion in the fields of medical relief and public health, as envisaged by the Bhore Committee. It is from these people, so utterly distraught, so miserably confused in their ideas, so hopelessly confounded in their outlook on life, that we have to draw the future entrants to our noble profession. It is a notorious fact that the profession has long remained, horizontally cross-sectioned into a number of classes and compartments on the basis of initial qualification, and so on. Now, by the inroads of specialism it is exposed to the grave risk of being vertically cross-sectioned into several isolated groups, on the basis of a conception of separate interests. The interests in view, whatever they are, are no doubt, entirely professional, and have nothing to do with current politics. It is also eminently desirable that each group should meet and discuss their own peculiar problems. But what I wish to suggest is, that at this juncture in our history, we should foster and strengthen the centripetal trends and tendencies, and curb and control the centrifugal with all our might and main, if we are to achieve the glorious ideal of a united medical profession in India. Our aspirations have at last taken a concrete shape in the form of the Indian Medical Association and it is their visible symbol. The measure of its strength, and stature of its power and prestige is the measure of our success and achievement, for it stands for the union and progress of the entire medical profession in India. As Harvey Cushing beautifully put it, "Interest does not bind men together. Interest separates men. There is only one thing that can effectively bind people and that is a common devotion. It is this common devotion and unselfish relation to the suffering humanity that binds its members together," with ties more close and enduring, than those which hold any other group of people engaged in a common purpose. It is to this common devotion that we must hold fast, and cling with a fanatic faith subordinating for the time being all other sectional interests if we are to strengthen and uphold the solidarity of our profession. It is very desirable, at this stage of our growth, that all interests find their satisfaction and fulfilment of their aspirations under the wings of one parent Association.

Lastly, we must remember that the very aim and purpose of medicine has undergone a radical change. It is no longer merely remedial and individualistic. It has become preventive in conception, and communal in outlook. It aims at enabling people to live out their full lives ensuring health and happiness. But is it not chimerical to hope for health and happiness, except under a reign of peace established on earth, an ideal which is so elusive and far distant as yet? Is it too much to hope that the men and women who belong to the sacred calling of medicine, and who are said to share as little as any in the defects of the period, and who most notably exhibit the virtues of the race, do bring to bear their subtle and silent, strong and irresistible, mental and moral influence on the people, in favour of exercising sanity and understanding, charity and toleration in politics? This again depends on the strength of our union. More wars have been fought, more blood has been shed, and more suffering and distress have been inflicted on the world in the name of religion than from any other motive force and primeval passion of the human mind. Philosophy rarely condescends from its sublime blissful Himalayan heights to poke its nose into the day to day drab dirty affairs of men. Science in its indefatigable quest of truth and knowledge shuts itself up in its cloisters, and puts on a face of supreme indifference and masterly inactivity, when its very discoveries are put to the use of destroying of all that is noble and precious, sacred and lovable of human endeavour and achievement. Religion, philosophy and science have all miserably failed man to come to his rescue in his moments of crucial trial, grave peril, and deep despair. It may be that Medicine, ever progressive and all embracing, integrated within, and in harmony without, Medicine the mother of all sciences, Medicine which finds its realisation in philosophy, Medicine whose practice is nothing but religion in practice, shows us the kindly light that leads the way for the establishment of kingdom of God on earth, for the establishment of brotherhood of man and fatherhood of God.

Development of National Medical Service in Different Countries

[*We give below the review of the development of National Medical Service in different countries as reported by 'the Health Survey and Development Committee of the Govt. of India. It is an excellent, review and we hope our readers will peruse it with much interest. Ed. I.M.J.*]

Preventive and Curative Health Services

The health services may broadly be divided into (*i*) those which may collectively be termed public health activities and (*ii*) those which are concerned with the diagnosis and treatment of disease in general. As regards the former, which are directed towards the creation of conditions favourable to healthful living and which embrace many fields in which State action is essential for the provision of the required facilities and the enforcement of legal measures, the responsibility in all countries rests on the public authority. Public health activity, in the early stages, was confined mainly to environmental hygiene but it began to embrace, later, various forms of personal services particularly in relation to mothers and children, the school-going population and to patients suffering from infectious diseases, such as tuberculosis and venereal disease. These developments brought in their train the need for providing adequate facilities for the diagnosis and treatment of disease in relation to these sections of the population as an essential part of the public health programme.

Turning to (*ii*), *viz.*, organised medical services for the diagnosis and treatment of disease in general the practice varies considerably. In no country except Soviet Russia has there been successfully estatablished a composite preventive and curative health service extending over the whole community and offering health protection to all without any charge to the individual. In many other countries there exist varying combinations of State and private medical services for the people. For instance, it is understood that most of the hospitals in Demark are maintained by public authorities, while in Canada there exists a system of public doctors maintained by municipalities on the basis of a salary or a schedule of fees paid to them by these local authorities. Side by side with the facilities for medical relief for the community provided by the State, relief is also available through private practitioners, medical institutions maintained by voluntary societies and through health insurance schemes on a voluntary or State-aided basis covering ltmited sections of the population. Even where the bulk of the medical service for the community is given by private practitioners, the need for consultant and laboratory services has been recognised and the development of voluntary "group" practice by doctors or the provision of such facilities by insurance or other organisations providing medical service has become a noticeable feature.

The ferment of ideas arising out of the World War has resulted in an increasing awareness, on the part of Governments and peoples, of the need for measures which will ensure social security, and health protection is becoming recognised as an essential part of social security The idea that the State should assume full responsibility for all measures, curative and preventive, which are necessary for safeguarding the health of the nation, is developing as a logical sequence.

Social Medicine

In interpreting health and disease man must be considered in relation to his social and physical environment. The study of disease as a community problem demands that the approach should be on a wide basis so as to include social and economic factors, such as housing, nutrition, poverty and ignorance of the hygienic mode of life. The causative organism of tuberculosis, for instance, is widely spread in highly industrialised and urbanised communities and yet the incidence of the disease shows a remarkable variation, depending largely on variations in social and economic conditions. The remedial and preventive measures that are adopted in respect of individual patients will largely fail to achieve results, if these factors are not considered and if the necessary steps are not taken to neutralise their harmful effects. A recognition of these facts has led to the emergence of "Social Medicine" which has widened the conception of disease from the narrow view of tissue changes and microbial and other specific causes by the inclusion of social, economic and environmental factors which play an equally important part in the production of sickness. In consequence, social medicine is beginning to develop its own methods of study of the community health problem. In the words of Professor John A. Ryle, "the socio-medical survey, that is to say, the combined social and clinical study of community health and sickness, often with special nutritional and economic assessments and careful sampling and controls", is coming to be accepted as the correct method of approach to such study. Side by side with such surveys controlled experiments directed towards influencing the life of selected communities through the provision of improved health services, better nutrition, a cleaner environment and health education have become recognised as a value method of extending experimental practice in the laboratory into the field of community life. This wider outlook has brought into the sphere of social medicine many workers besides the doctor. They include the public health nurse, the hospital social worker, the nutritionist, the public health engineer and the statistician.

The latest developments in the organisation of national medical services in a few countries may now be briefly described,

(a) *Great Britain.*—The scheme for a national health service outlined in the White Paper issued by His Majesty's Government in Great Britain is intended to provide a comprehensive health service to all. Some idea of the degree of comprehensiveness that has been envisaged may be obtanined from the following quotation from the White Paper :—

"It must cover the whole field of medical advice and attention, at home, in the consulting room, in the hospital or the sanatorium, or wherever else is appropriate—from the personal or family doctor to the specialists and consultants of all kinds, from the care of minor ailments to the care of major diseases and disabilities. It must include ancillary services of

nursing, of midwifery and of the other things which ought to go with medical care. It must secure first that everyone can be sure of general medical adviser to consult as and when the need arises, and then that everyone can get access—beyond the general medical adviser—to more specialised branches of medicine or surgery."

It is stated that, under the scheme, individual members of the public "will be able to obtain medical advice and treatment of every kind entirely without charge except for the cost of certain appliances. They will be paying for medical care in a new way, not by private fee but partly by an insurance contribution under whatever insurance scheme is in operation and partly by the ordinary process of central and local taxation." The respective share of the total cost of the scheme which will fall on the social insurance organisation, the taxpayer and the ratepayer are 21, 36-6 and 36'4 per cent.

(b) *Commonwealth of Australia.*—In a recent memorandum issued by the Minister of Health, which is entitled "The Health Policy of the Australian Government" the proposals for the re-organisation of medical services in that country embody principles which are indicated in the following quotation from the memorandum :—

"For the people are necessary :—

The knowledge that they may, as their right, require from the Government such medical and hospital services as they really need without the humiliation of proving their financial status, or the bitterness of accepting charity :

The knowledge that the breadwinner will not have to face a crippling bill for hospital and medical services if he. or any member of his family, suffers a prolonged illness.

It is intended, although this stage has not yet been reached, that every person shall have the right to receive medical advice from a doctor whenever he is ill or without any cost to himself. This will apply in the case of every Australian citizen, including women ann children. and will not be limited by any consideration of the financial status of the patient."

As far as is known, the present position is that a scheme proposed by the National Health and Medical Research Council is under consideration by the Commonwealth Government which, it is understood, has been or is likely to be entrusted, in the near future, by the several State Parliaments with the control of national health in co-operation with the States. This scheme proposes a national salaried medical service based on a system of health centres through-out the populated area of the Commonwealth which will be divided into health districts. These would, as far as possible, be also hospital districts in order to co-ordinate the preventive and curative health functions. The scheme will be financed by direct taxation and the co-ordination of the services will be on a Commonwealth-wide basis,

It has been stated that the scheme, whatever form it may eventually take, will be introduced only after the War.

(c) *United States of America.*—Careful investigations carried out in America have revealed that adequate medical care is very costly for large sections of the population of that country and that, in many areas, the poorer sections of the community lack suitable medical facilities.

Two developments are said to be in progress for the provision of an adequate medical service :—

(1) The Federal Government proposes to assist States, through subsidies, to expand hospital and other forms of health service, particularly in those parts of the country where they are most needed.

(2) A second development of great importance is the promotion of "co-operative medicine", a form of private medical insurance which guarantees adequate service during times of sickness through the payment of small premia. As a rule the doctors employed in this system are full-time salaried officers and specialists and laboratory services are also associated with it.

An outstanding example of such insurance medical services is the health plan evolved under the inspiration of Henry Kaiser. the ship-builder, and the technical guidance of Dr. Sidney R. Garfield, in the shipbuilding area on the Pacific seaboard of the United States of America in California and Washington States. Through a system of weekly payments complete medical cover has been provided for the worker and all the members of his family.

(*d*) *Canada.*—The Canadian approach towards the improvement of the national health is embodied in the draft Bill which empowers the Federal Government to give grants to Provinces in respect of approved health insurance schemes and public health services. The Bill contains three schedules, the first of which gives a list of the grants and the conditions governing them, the second consists of a draft model Health Insurance Bill for adoption by the Provinces, and the third lists the different types of health services that are to be maintained. The grants include a health insurance grant, a general public health grant and special grants for work in respect of tuberculosis, mental diseases, venereal diseases, professinoal training, public health research and crippled children.

The draft Bill provides that no province can qualify itself for grants unless such Province has made statutory provision for utilising both the health insurance grant and the general public health grant. It will thus be seen that financial aid from the Centre is dependent on the introduction of the health insusurance scheme by the provinces. Every adult (16 years and over) must contribute to the scheme if self-supporting and, if not, the person on whom he is dependent must pay a specified amount.

The Canadian Government definitely prefer a contributory social insurance scheme to a health service financed entirely out of public funds. The Minister of Pensions and National Health gave the following reasons for this.

"A completely free or non-contributory system may encourage the pauper mentality, may lead to a delusion that the public purse is bottomless". He pointed out that it is "more consistent with the dignity and independence of a man that he shall be enabled to apply for something that he has purchased

with his own funds. Under a contributory system, benefit becomes a right and not a concession". He also said that individual beneficiaries "are kept in touch by their contributions with the actual cost of the services they receive". An improvement in the health of the community will be reflected in a reduction of the contributions while abuse of the system will lead to an increase in contributions. Thus a contributory system should help to secure the co-operation of all the beneficiaries in eliminating abuse as far as possible.

(e) *Union of Soviet Socialist Republics.*—The attitude of the Soviet Government towards the health of the people has been described by Professor Sigerist in the following words:

"Health is one of the goods of life to which man has a right; wherever this concept prevails the logical sequence is to make all measures for the protection and restoration of health accessible to all, free of charge; medicine like education is then no longer a trade, it becomes a public function of the State."

This conception of health as a public function has resulted in the development of a co-ordinated scheme of preventive and curative health services and in the recognition of the need for providing an environment which will enable the body to remain healthy and to resist disease. "For this reason the control of housing, of industrial conditions, and other aspects of life comes under the care of the People's Commissariat of Public Health. Another function of that department is to encourage and look after the communal restaurants which, in the Soviet Union, have achieved such popularity that they serve 20 million people a day."*

The health service is entirely free to the people and places at the disposal of the patient not only the services of the general practitioner but also of the specialist as well as laboratory facilities.

The following quotation from "Health for All" by Stark Murray throws light on the structure and functions of the Russian health services:

"The structure of the Soviet medical system follows the general administrative structure of the country. In order that planning may be complete for the whole State it is controlled on the one hand by the People's Commissariat of Health, on the other hand by health committees and health nuclei organised in every factory, on every one of the large collective farms, and in every district. The one form of control is the natural outcome of the recognition that health protection is a function of the State, the other is the logical outcome of the principle that the workers themselves must take an active part in the protection of their own health. The system as it now stands is therefore not one forced on either the people of Russia or the medical profession by a particular group or class, but has had the active support and criticism of those interested in the service either as the purveyors of medical treatment or as the consumers of medical care.

"It will be recollected that Russia takes her present name—the Union of Socialist Soviet Republics—because the administration is divided up so that local government is carried out by a form of local authorities known as Soviets. Under the constitution, each of these Soviets appoints certain committees for certain functions and one of these must always be concerned with the public health. Its duties, as laid down by a decree on January 1st, 1931, are:—

(*a*) To supervise all hospitals and sanitary establishments;

(*b*) To take all necessary steps in the organisation of sanitary inspection and combating venereal disease.

(*c*) To advance the knowledge of personal hygiene and develop physical culture.

In addition it has other duties in relation to social insurance,

"There are altogether some seventy thousand such Soviets in Russia apart from the Soviets of the larger cities which function in a slightly different way, not without parallel in the case of an urban district council and a borough council in one of the large cities of this country. The smaller Soviets are linked in districts or Rayons, and each of these has an Inspector of Public Health, a doctor, who is responsible for the entire health work of the district. A large city such as Moscow, which has its own central Soviets and local Soviets, is also divided into districts comparable to the boroughs of London, and each of these also has its own health department and its own Inspector of Public Health. In the very largest districts further subdivisions may be made, for it is the aim of the system to use units which can reflect the needs of the individual citizen.

"The districts of Rayons are further centralised in larger units which we may call regions, and these are in turn under the central administration of each of the Republics through a Commissariate of Public Health. This Commissariat directs and controls the whole of the health work of the Republic, and is concerned therefore with the prevention, diagnosis and cure of disease. In addition it controls medical education, medical research, and many industries connected with medicine. It should also be noted that while the local health departments are responsible to the general executive committee in administrative and financial matters, their responsibility in regard to medical and sanitary problems lies entirely with the Commissariat of Public Health; there is, therefore, no interference with purely medical questions by organisations or authorities not directly connected with the medical profession. As a further safeguard it is laid down that the Commissar of Public Health must be medically qualified."

(f) *New Zealand.*—In *New Zealand* there is a Social Security Act which provides, among other things, a free and complete medical service to the whole population. The service was designed to operate like the panel system in Great Britain, the doctors working in their individual capacity and payment being made to them on a capitation basis. Well-to-do individuals are not compelled to accept free treatment or hospital care when obtained from a private physician or a hospital.

It is understood that the medical profession, as represented by the British Medical Association in New Zealand, refused to operate the scheme and that the Government, therefore, had to agree that, when a doctor refused direct payment from the State, patients could continue to pay the doctor as before and recover such payments from the State.

* "Health for All" by Stark Murry.

Summary of Modern Trends

To sum up, the modern trend is towards the provision by the State of as complete a health service as possible and the inclusion, within its scope, of the largest possible proportion of the community. The need for ensuring the distribution of medical benefits to all, irrespective of their ability to pay, has also received recognition. Provision of medical relief for the community has developed, in ths past, on a contractual basis between the doctor and his patient. The latter has had the right of choosing his own doctor and in countries. where the family physician system has been in existence, the knowledge of the doctor in respect of individual members of the family and the regard and esteem of the latter towa ds the doctor have been of advantage to both parties. Further, individualism in medical practice has promoted wide opportunities for those practitioners who are successful in their professional career, and has provided the incentive for ambitious and capable men to make the most of their talents. To them a change-over from idependent medical practice to a salaried State service is naturally repugnant. Apart from these, there are certain sections of the medical profession which view with genuine apprehension the results of making over the function of providing medical protection for the community entirely to the State. They fear that political influence or considerations of seniority or administrative ability may play an undue part in influencing promotion. They also fear that the security of tenure and graded scales of salary that a State service will provide, might discourage initiative and the pursuit of efficiency. There is in addition, the feeling that the free choice of a doctor by the patient and the intimate relationship, which the family doctor system has helped to develop in the past, might also be disturbed. We do not feel called upon to pursue controversies in regard to this question because, as we shall show later, our conditions are such as to leave no option in the matter. We are satisfied that our requirements can only be met satisfactorily by the development and maintenance of a State health service.

The Application of these Trends to India

We may now ask ourselves the question how far these modern trends in other countries are applicable to India. While inadequacy of trained personnel and of funds may set limits to the rate of progress in the expansion of the health services in the country as a whole, the enunciation of certain definite principles on which such expansion should be based is of great importance. The following questions seem, at the outset, to require an answer;

(1) Whether the service should be free or paid for by the recipient; if the latter, whether it should be a graded scale of payment so as to suit the level of the patient's income; and whether such payment should be made on each occasion when service is rendered or through some form of sickness insurance;

(2) Whether our scheme should be based on a full-time salaried service of doctors or on private practitioners resident in each local area or settled there on a subsidy basis;

(3) Whether, in either case, some measure of choice can be given to the patient as regards his doctor.

(1) *Whether the medical service should be free or whether it should be paid for.*—The general tendency appears to be towards basing the national health plan on a system of social insurance. One reason for this may be found in the view expressed by the Australian Minister of Health that the people should be spared the humiliation and bitterness of accepting charity. The same view has been taken by the Canadian Government which has based its health programme on a compulsory system of social insurance. In Great Britain the proposed national health service will be financed "partly by an insurance contribution, under whatever insurance scheme is in operation, and partly by the ordinary process of central and local taxation." In the United States of America, no national scheme for the promotion of health is, at present, in operation. A system of "co-operative medicine" which guarantees adequate medical service to the employees during times of sickness through the prepayment of small amounts is becoming a growing feature of industrial life. But this system depends largely upon the private employer and is not a State enterprise. Even in Soviet Russia, where medical care is free to all, the cost of the services is partly met from iusurance fund. Contributions towards these funds are, however, not made by the individual workers but by the factories and other institutions in which they work.

In India it is recognised that there are difficulties in the way of introducing, at present, a scheme of health insurance either by itself or as part of a universal social insurance scheme. We feel that a very large section of the people are living below the normal subsistence level and cannot afford as yet even the small contribution that an insurance scheme will require. We therefore consider that medical benefits will have, in any case, to be supplied free to this section of the population until at least its economic condition is materially improved. We are averse to drawing any line of distinction between sections of the community which are and are not in a position to pay for such benefits. The application of a "means test" for this purpose is unsatisfactory and may often involve inquisitorial enquiries. Such enquiries place an unpleasant duty on the officer making them and may give rise to resentment and a sense of grievance. We consider, therefore, that for the present medical service should be free to all without distinction and that the contribution from those who can afford to pay should be through the channel of general and local taxation.

It will be for the Governments of the future to decide ultimately whether medical service should remain free to all classes of the people or whether an insurance scheme would be more in accordance with the economic, social and political requirements of the country at the time.

We should like to record the following general recommendations regarding the provision of health service to the community in the near future:—

3. Stability of services must be guaranteed. There should be one month's notice on either side for termination of services.

4. Provident Fund and gratuity schemes as applicable with the former firms.

5. Every dispensary must always have a standard magazine subscribed as part of the equipment.

25 : 24 Parganas : (Bengal)

A meeting of this branch was held on 1-6-47. Attendance was excellent. Among other resolutions following important resolution was passed :—

" Whereas the recently announced Pay Commission's recommendations for sections of Medical Services under the Railway Board of the Government ofI ndia, in particular of the scales of pay of Sub-Assistant Surgeons, viz. Rs. 100—170—E. B. 230 in comparison with the scales of pay of Assistant Surgeons viz.

200-20-500, appear to be highly inadequate, unjust and discriminating in view of the arduous and numerous duties and the heavy responsibilities carried out by the Sub-Assistant Surgeons in these days of high living index all over the country! and because the scales of pay of Sanitary Inspectors and Nurses in the railway services have allowed higher basic starting pay, viz., Rs. 150—8-225 and whose educational qualification and duties are less onorous and skillful than the Sub-Assistant Surgeons.

This general meeting of the members of the 24 Perganas Branch, of the A. I. M. L. A. unanimously urges upon the Hon'ble Member in charge of the Railway Department, the Government of India and all the personnel of the Railway Board and allied authorities concerned with the welfare and management of the Railway Employees and also the President and General Secretary of the All-India Railwaymen's Federation to reconsider and revise the scales of pay for Sub-Assistant Surgeons and to introduce higher basic starting pay than the Sanitary Inspectors and Nurses and in keeping with the position of the Doctors in the society in the suggested scale of pay of Rs. 200-20-500-E. B. 15-420.

This meeting also requests the authorities of Railway Board for making immediate arrangements for a fixed yearly quota of at least 10 percent posts of Assistant Surgeons to be filled up by promoting experienced and deserving S. A. S. of over 15 years service and for allowing all the S. A. S. of under 10 years service to go on study leave with full pay for qualifying in the M. B. B. S. Examinations of Indian Universities and absorbing them into the Assistant Surgeons' cadre immediately after their qualification "

26. Gauhati : (Assam) :

The meeting of this branch was held on 19-6-47 Dr. S. C. Chakaravarty was in the chair. Following resolutions were passed.

1. Resolved that the Annual General Meeting of the branch should be arranged to hold in September, 1947.

2. Resolved that the Provincial Secretary be requested to arrange for the next Provincial Conference in 1947.

3. Resolved that the Government be requested to revise the decision of the Government regarding the withdrawal of personal pay of the officers (Vide letter No. 7315/50/37/(d) 26/47 m dated 23-5-47) from I, G. C. H. tc the Civil Surgeon, Sylhet.

4. Resolved that the Local Board of Gauhati be requested to revise the pay scales of medical officers serving under them on basis of the S, A. S. serving under Assam Government.

5. Resolved that this meeting views with disappointment the apathetic attitude of the Government in the matters or promotion of the S. A. S. to the cadre of the Assistant Surgeon and request the Government to remove this long felt grievance of the class by showing justice and sympathy at an early date.

27. Karnal : (Punjab)

The executive committee meeting of this branch was held on 6-7-47. The meeting discussed the Drug Act which has been recently passed by the Provincial Government and recorded the opinion that the Executive Committee welcomes this legislation as its enforcement will safeguard the people from the using of Allopathic drugs by the quacks and as such gives its unstinted support to the Government.

28 : U. P. Branch

Proceedings of a meeting of the Standing Committee of the United Provinces Branch of the All India Medical Licentiates' Association held at Lucknow at the residence of Dr. Sukh Basi Lal Ji m/o Balrampur Hospital, Lucknow at 3 p.m. on Tuesday the 5th August, 1947, under the Presidentship of Dr. Damoder Dass Vice-President.

The Following members were present :—

(1) Rai Sahib Dr. Ram Narain Lal Ji. Mussoorie.
(2) Dr. Damoder Dass Ji. Aligarh.
(3) Capt. Dr. Bhagwati Sahai Ji. Etawah.
(4) Rai Sahib Dr. Panna Lal Ji Seed. Lucknow.
(5) Dr. Mrs. T. Moni Ji. Agra.
(6) Dr. Mrs. Rainka Devi Dikshit Ji. Chandausi.
(7) Dr. Hari Mohan Lal Ji. Cawnpore.
(8) Dr. Prakash Chand Ji. Lucknow.
(9) Dr. Sukh Basi Lal Ji. Lucknow.
(10) Dr. K. D. Sharma Ji. Lucknow.
(11) Dr. D. K. Shrivastava Ji. Lucknow.
(12) Dr. B. B. Lal Dikshit. Chandausi.

1. Proceedings of the meeting of the Standing Committee held at Meerut on the 10th, February 1946 which were circulated and were confirmed.

2. Read and recorded letters expressing their inability to attend the Standing Committee meeting from Drs. R.S. A.D. Bhandari, R.S. A.B.L. Mathur, P. S. Verma, Capt. A. N. Vyas, C. S. Sharma, Mannu Lal Sharma, Madan Gopal Bhatnager.

Election of office bearers.

1. *President* :—Rai Sahib Dr. Ram Narain Lal who is nominated by all the District Branches of U. P. is elected unanimously the president of the U. P. Branch of the A.I.M.L.A. by the Standing Committee.

The President Dr. R. S. Ram Narain Lal then took the chair.

2. *Vice-President.* *i.* Dr. Damoder Dass, Vishnupuri, Aligarh.
ii. Dr. Sukh Basi Lal, Balrampur Hospital, Lucknow.

3. *Provincial Secretary* :—Dr. B. B. Lal Dikshit V. C. Hospital, Chandausi, is elected Provincial Secretary by the overwhelming majority of votes of the Standing Committee members.

4. *Joint Provincial Secretary* :—Dr. Mrs. T. Mani, Female Hospital, Dhulia Gunj, Agra.

5. *Treasurer* :— Dr. Mannu Lal Sharma, Prahlad Batika, Budhana Gate Meerut. As practically all the members of the Standing Committee have voted for him, he is declared elected the treasurer of the U. P. Branch of the A.I.M.L.A.

6. *Auditor* :—Dr. Maya Makash Sipet Bazaar Meerut is Elected Auditor for the next year.

The following resolutions were passed :—

1. Resolved that the U. P. Standing Committee most heartedly congratulates H. E. Dr. Bidhan Chandra Roy M. D. on his appointment as Governer of U. P.

2. Resolved that the question of 45 years of age for the promotion in the P.S.M.S., P.H. and other medical services should be removed as this sort of check for the medical man is unjustified.

3. Read resolutions from Dr. M. C. Bhatnager from Moradabad. Resolved as these resolutions have been passed several times and being an All-India question, be sent to the General Secretary A.I.M.L.A. Poona for necessary action.

4. Resolved that Dr. Hari Mohan Lal of Cawnpore be taken as second member of Standing Committee from Cawnpore Branch.

5. Resolved that the Government be requested to take necessary action regarding epidemic duties by the medical practitioners and medical students as per resolution No. 6 of the Standing Committee meeting of U. P. branch held at Meerut on 10th February, 1946.

6. Resolved that as the amendments to the U. P. Medical Act of 1917 has already been considered by the U. P. Medical Council, no further action is needed.

7. Resolved unanimously that Ex-Presidents and Ex-Provincial Secretaries of the Provincial branch be also considered as Ex-Officio members of the Standing Committee in addition to the official members.

8. The audited accounts of the provincial branch for the previous years were read and passed.

9. Resolved that local District Branch Secretaries be requested to realise the annual provincial contribution of Rs. 2/- from every member of the branch and send it on to the provincial treasurer along with the names of the subscribers. The provincial secretary should also issue an appeal to realise the subscription and enlist new members.

10. The following budget was passed :—

Income.		Expenditure.	
		i. Establishment	120 Rs.
		ii. Postage	55 Rs.
i. Interest on deposits	50 Rs.	*iii.* Printing & stationary	50 Rs.
		iv. Medals	...
ii. Pro. Contribution	350 Rs	*v.* Travelling expences	175 Rs.
		vi. Misc.	50 Rs.
Total	400 Rs.	Total	400 Rs.

11. Provincial Secretary should take necessary steps to arrange the next provincial conference at any suitable place in near future.

12. Resolved that a vote of thanks be passed to the chair and Dr. Sukh Basi Lal Ji for making nice arrangements for the members of the Standing Committee meeting.

Dr. G. K. Kulkarni gives notice of the following resolutions to be moved at the next Bombay Conference.

(1) Resolved that in view of the changing circumstances, a suitable commemoration of the A.I.M.L.A., be made by utilising the balance in hand in erecting a building at a suitable place agreed upon by the Conference.

(2) Resolved that a sub-Committee be formed and named as building sub-committee which will do he needful in the matter.

(3) Resolved that the period of the office bearers for their duty be extended from one year to not less than three years.

Note :—It is expected that a suitable plot can be obtained from the Improvement Trust Nagpur on a very concessional basis. Plans regarding the above proposal are roughly prepared and will be placed before the Conference for necessary discussion. Estimate also is available.

Dr. V. D, Sathaye gives notice of the following amendments to be moved at the next Bombay Conference.

Rule 30. Omit Clause (a) and substitute " immediate past president."

Rule 43. Omit old rule and substitute.

The subscription to membership is strictly payable in advance either from 1st January or 1st July of any year and may be paid with retrospective effect. But only the availble copies of the back numbers of the Journals will be supplied to the member. The subscription should be sent to the Treasurer direct or through the secretary of the Branch who shall remit the same to the treasurer immediately.

Rule 145. Add : "For this purpose he will open a joint account for the Association in the names of the President, General Secretary, Treasurer and Finance Secretary. This account will be operated by the Treasurer, Finance Secretary and any one of the remaining two."

Rule 229 & 230. Substitute " ¾ second class " for " Inter class."

Rule 252 & 255. Substitute " 2 months " for " 4 months "

Rule 267-A. Omit " on the first day of the Conference."

Rule 274. Omit " and elections of office-bearers."

Rule 275. Omit " of the subjects committee " meeting " in line 1. Omit 'of the subjects committee' in other places. Omit— " chairman " and substitute " members " line 4 and substitute— " delegates ".

Transfer Rule Nos. 275, 276, 277 under open session. After 277, Add-New Rule.

At the first meeting of the subjects committee the chairman shall invite the members to nominate members of the Association for the different posts of office-bearers, and various committee members provided the nominee specifies his consent in person or in writing if absent. When all the proposals for different posts have been closed a list will either be supplied to the delegates or displayed in a prominent place. The election will then be held by ballot in the open session., as per rules nos. 275-77.

Rule 275. Give the heading election of office-bearers. Omit and substitute : A ballot paper will be supplied to the delegates on which they will write the names chosen by them from the proposed list for the posts of the (*a*) "vice-president," (*b*) "general secretary" (*c*) "treasurer " (*d*) "Joint Gen. Secretary," (*e*) "Finance secretary," (*f*) Sc. Committee secretary," (*g*) managing editor or editor and manager (as decided) and the two co-editors.

If the same person is elected to more than one post from (a) to (g) he will select any one post and for the remaining posts the candidate getting the next highest votes will be declared elected (and so on, if necessary).

After Rule No. 181 add new rule :— Meeting of the Standing Committee :—A meeting of the Standing Committee will be called either on requisition by 15 members as per rule 182 or by the President in consultation with the General Secretary and with the consent of ten members of the Standing Committee.

Announcement

In the present critical times number of occasions are bound to arise where the National Government will be requiring the help of the medical men of this country. Famine relief, refugee camps, medical missions to other countries and other emergencies will require the help of the medical men. I wish the members of our association should be ready to give their help on such occasions. There are many of us who, I know, are prepared to lend their services either on voluntary or semi-voluntary basis. To facilitate this work a Bureau has been opened in my office. All desirous and prepared to serve in this way should send me their names with addresses stating whether they will be prepared to work on voluntary or semi-voluntary basis and whether they are prepared to go to any part of India or Pakistan or to serve on any mission outside India. A list will then be prepared and the members enlisted will be finally informed as the occasion arises from time to time.

V. D. Sathaye,
General Secretary, A. I. M. L. A.
502, Narayanpeth, Poona.

30th September, 1947

Lake Medical College.

This college was brought into existence last year at Calcutta with the sole purpose of helping the I. A. M. C. Licentiate Medical Officers to study for and obtain the M.B., B.S., degree.

But its management and rules of admission seem to be shrouded in mystery. The General Secretary of the All-India Medical Licentiates' Association reports to us that none of his communications to the Dean of this college was given even the common and minimum courtesy of a reply.

(*i*) that public funds should, as far as they are available, be devoted to the development of the health service, which we have recommended, for the community in general and for certain particular sections of it *e.g.*,, women and children and should not be apent on the provision of special facilities for other sections of the population,

(*ii*) that the money for such special facilities, if they are to be developed, should be provided by the communities or groups which will be benefited by these services, and

(*iii*) that the general health service should minister to the needs of the people without charge to the individual.

(2) *A salaried service as against a service of private practitioners.*—One of the fundamental requirements in developing an adequate health service for India is the provision of the requisite health personnel to cater to the needs of the large rural population in the country. This a question which has presented very considerable difficulty in the past. The absence of certain amenitis and services in the countryside has proved a deterrent to medical practitioners leaving the attraction of cities and towns and migrating to the villages. Various attempts have been made to solve the problem. One method, which has been tried in more than one province has been the settling of medical practitioners in rural areas and giving them a subsidy which will enable them to start practice, The subsidy was intended to be supplemented by private practice among the richer sections of the community. We have had considerable evidence to show that this method has been far from being an unqualified success, partly because in many villages the income derived from private practice is too small to support the doctor in reasonable comfort. The result has been that in many cases the better type of such subsidised dectors has tended to gravitate back to the towns. In area where there are greater opportunities for privates practice, the more prosperous sections of the community have, we were told, generally received greater attention than the poor. We have, therefore, come to the conclusion that the most satisfactory method of solving this problem would be to provide a whole-time salaried service which will enable Governments to ensure that doctors will be made available where their services are needed. The evidence tendered before the Committee by a number of representatives of medical associations by private individuals and by several responsible medical administrators lends strong support to this proposal.

(a) *Prohibition of private practice by whole-time salaried doctors.*—The next question is whether these whole-time salaried doctors should be permitted private practice or not. Our view is that, at the periphery, the same doctor should combine curative and preventive functions and that the training of the future doctor should be modified so as to enable him to carry out these composite duties. In so far as preventive health work is concerned, the practice every-where is to give the medical officer responsible for it adequate emoluments and to prohibit private practice. As regards medical relief the practice has so far been to permit private practice, but the desirability of doing so in the future requires serious consideration. There was a general agreement, among those whom we interviewed, that prohibition of private practice was essential in order to ensure that the poor man in the rural areas received equal attention with his richer neighbour. Many of the smaller towns do not differ materially from rural areas and the remarks in the preceding paragraphs apply equally to them.

Further, the fact that curative and preventive functions will, under our proposals, be combined in the same individual also seems to require the prohibition of private practice. Otherwise, it is almost certain that a doctor's preventive duties will not receive the attention which is essential.

(b) *Part-time Medical Men.*—In some of the larger district head-quarter towns and particularly in the cities, the number of general practitioners with high qualifications and of specialists has been growing during recent years, The possibility of utilising their part-time services to supplement the health organisation in these urban areas may with advantage be considered, particularly in the transition period before the programme of professional training recommended by us provides the country with an adequate number of trained men and women for the different branches of the health service.

Even in our long term proposals outlined in the next chapter we have suggested the inclusion of a certain number of part-time medical officers to be employed in the hospitals at the headquarters of secondary units and of districts. We have suggested that their proportion to the total strength of medical officers at the two types of hospitals might be about 25 per cent. The reason for the inclusion of part-time workers in these hospitals will be explained in the next chapter.

(c) *Employment of Doctors on an honorary basis.*—The question of the employment of doctors on an honorary basis also requires careful consideration. As regards the long term programme, our proposals for an expanding health organisation will probably lead to the absorption into the public service of the large majority of existing doctors as well as of those who will be trained in the future. Further, if these services prove efficient and satisfactory for meeting the needs of the people, it may be expected that the scope of activity for practitioners who, by choice, remain outside the State health services, will become limited to a section of the community consisting almost entirely of its wealthier members. Those who cater to the medical needs of this section will probably be few in number. There are, however, likely to be of a high standard of professional skill and academic attainments and it is possible that it may be found advantageous to make use of their services in an honorary capacity.

During the first ten years the need for medical men will undoubtedly be great and there seems, therefore, every reason for utilising the services of those who are prepared to work on an honorary basis. At the same time, the employment of professional men in a paid part-time capacity is normally to be preferred to honorary service. The State would, in this case, acquire greater powers of supervision and control over a worker than if he gave his services free of charge.

(d) *A Salaried State Health Service no serious impediment to private practitioners.*—We consider that any apprehension that private practitioners will be seriously affected to their detriment by our propasals for a State health service is unfounded. In the first place, the need for doctors to man the services we contemplate will be so great that we believe that all existing private practitioners, who desire to enter these services, will be able to do so if they fulfil the requirements that may be laid down. We feel that age should not, of itself, be a bar to such entry provided the applicant is fully qualified otherwise to fulfil the duties to be assigned to him. Those who prefer to remain in private practice will, we believe, not find their opportunities seriously circumscribed. It will be long before the entire population can be served by our proposed health services and our plan also provides for the utilisation of private practitioners in a part-time and honorary capacity.

(3) *Freedom of choice of a doctor.*—Such freedom will only be restricted by practical considerations. We contemplate that it will be open to any patient to obtain treatment free at any State institution in the country. This will afford a wide choice of doctors though we realise that in practice it may not be possible for an individual patient to go for treatment far from his home. In the later stages of our plan when a large number of institutions will be opened, the choice available to the residents in a particular locality will naturally be widened.

LETTERS TO THE EDITOR

The Audacity of the Tea Garden White Planters In Dooars (Bengal)

The inhuman treatment of the White Planters towards our Licentiate friends is unknown to our Association. So, I am putting here a few examples by which everybody will be able to understand what sorts of humiliation our Tea Garden licentiates are experiencing.

The White Managers (mostly illiterate), behave with their respective doctors as dogs and cats. They do not care to know whether their doctors has prestige of their own. The doctors have got no duty hours and they are to work whole day and night. Even in the midnight the managers will call the doctors to treat their kuthi-servants for slight headache and the doctors are to attend them immediately; otherwise on the following morning they will be discharged if they can't give explanation to their satisfaction. Also the doctors are to dress the abscesses of dogs and cattle of the manager and his white assistants. The Managers can name some of the patent medicines and they will direct their doctors to treat patients at their suggestion and if the doctors do not follow it, they will be discharged.

I ardently expect our Association should go through it wholeheartedly so that our friends may not be roughly handled by those white uneducated planters. This is also my appeal to the National Government. Drastic step should be taken to restore the prestige of the tea-garden doctors.

Dr. SATYENDRA BHUSAN SANYAL, L.M.F.
Member, of the A. I. M. L. A.

Mewar Government and the Licentiates

Many thanks for publishing our memorial to the Public Health Minister of the Mewar Government in the August Issue of our Journal.

The Strike of licentiate medical officers which was to commence from 11th August 1947 has happily been averted by the timely revision of our scale of pay. The revised scale is:

Rs. 100-5-150-10-200-Selection grade 200-10-250, with effect from 16th August 1947.

SATYA DEO SHARMA,
Udaipur 22-8-47 *Secretary, Mewar Branch of the A. I. M. L. A.*

ASSOCIATION NOTES

22. Hailakandi: (Assam.)

The monthly meetings of the branch were held on 15-12-46, 12-1-47, 9-2-47, 16-3-47, and 13-4-47. The average attendance for these meetings was 16. In one of the meetings a sub-committee consisting of Dr. S. C. Bose, K. P. Choudhury, N. C. Nandy and the secretary was appointed to inquire into the grievances of the A. M. S. of the Tea Estates and to formulate their demands, The sub-committee is requested to submit its report within a month,

Besides transacting usual business clinical subjects were discussed and papers on Asthma, Preservation of teeth, the role of Pituitary Extract were read. Of all the papers, the paper on "Why does a child cry" excited attention of the members and all the members present took part in the discussion.

23. Karnal: (Punjab.):

The annual general meeting of this branch was held on 18-5-47. Dr. Raiz was in the chair. Among the resolutions passed following were more important: 1. By a resolution the meeting demanded that a licentiate from a senior cadre should be appointed in the I. G. 's office to deal with the cases of the licentiates and the appointment should be for 4 years, The representative should be given an honorarium and compensatory allowance.

2. The meeting also decided to start intensive propaganda against accepting by the licentiates of the monthly pay of less than Rs. 150 rising to Rs. 450 and above. The resolution also stressed that the Association should spend sufficient fund for this sort of propaganda and collect some amount towards helping by loan to such licentiates who will act in response to the above propaganda, who will not accept posts and will be wishing to start private practice.

24. Parasia: (C. P.)

The meeting of the C. P. and Berar and C. I. Mining Area Medical Association was held at Barkui-Parasia on 25-5-47. In the meeting it was resolved to recommend to the authorities that the Materia Medica of Ayurvedic, Unani, Homoepathic and other system of Medicine be incorporated in the curriculum of the medical college and one of these subjects made compulsory for the examination in addition to the regular college courses. Such an incorporation of the above systems of Medicine in the college courses will be helpful to the Medical Profession that exist today and at the same time give recognition and impetus to the above systems of Medicine by the State.

Discussions also took place between Dr. N. B. Tembhekar representing the Central Provinces and also the mining area and the members of the Coal Committee on 19-2-47. Dr. Chetty, the president of the branch was also present by special invitation. In those discussions, the Coal Committee have agreed to recommend to the employers of doctors in the mining area to give effect to the recommendations made by at the last medical conference held at Parasia. The following are some of the main points:—

1. Salary: Initial salary to start at Rs, 150 p.m; with dearness allowance and other usual colliery allowances and seniority, of experience and service to be considered at the time of fixing the initial pay.

2. Leave—This can be accumulated upto 3 months full pay and 3 months on half pay to facilitate doctors to take advantage of post-graduate training or study leave. Otherwise the leave to be a month in a year.

It is time that the policy regarding the admission into this college should be announced in the public press, so that the candidates for admission may know the exact position.

As this college is intended for the benefit of the Licentiate I A.M.C. Officers, in active service or demobilised, it would be in consonance with democratic principle if the Central Government appoints a representative of the Licentiates' Association in the Admission Committee of this college if such a one exists; or institutes such a committee with a representative of the Licentiates' Association in it.

Would Dr. Jivaraj Mehta, the Director General of Health Service, kindly look up to this matter and do the needful.—*Ed., I.M.J.*

A REQUEST TO THE BRANCH SECRETARIES

OF

The All-India Medical Licentiates' Association.

We earnestly request the Branch Secretaries of our Association to collect all the Scientific papers and case notes read before their Branch meetings and forward them for publication in the INDIAN MEDICAL JOURNAL. Articles of Medico-political interest are also invited.

A. VISWANATHAN,
Editor, Indian Medical Journal.

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30.	Bismuth Iodoform Paste	3 0	1 8
31.	Boric Acid Ointment	2 8	1 4
32.	Boric and Zinc	2 8	1 4
33.	Calomel Ointment	2 8	1 4
34.	Chaulmoogra Oil	2 8	1 4
35.	Collargol	2 8	1 4
36.	Copper Citrate	2 8	1 4
37.	Eserine Ointment	4 0	1 8
38.	Homatropine	2 8	1 8
39.	Mercurochrome and Atropine	2 8	1 4
40.	Procain & Chloretone	3 0	1 8
41.	Pilocarpine	2 8	1 6
42.	Protargal	2 8	1 4
43.	Picric	2 8	1 4
44.	Scarlet Red Ointment	2 8	1 4
45.	Thiosinamine Mixed	4 8	1 8
46.	White Precipitate	2 8	1 4
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48.	Zinc Ointment	2 8	1 4
49.	Zinc and Itchyol	2 8	1 4
50.	Picirc Cum Atropine	2 8	1 4
51.	Pilocarpine Cum Doinine	3 0	1 8
52.	Xeroform Cum Atropine	2 8	1 4
53.	Quinine Bisulphate	2 8	1 4
54.	Yellow oxide of mercury Cum Balsam Peru	2 8	1 4
55.	Scopolamine	3 0	1 8
56.	Anti Pyogenous	2 8	1 4
57.	Sulphanilamide Cum Chaulmoogra Oil	2 8	1 4
58.	Sulphanilamide Cum Shark-Liver Oil	2 8	1 4
59.	Yellow oxide of mercury Cum Atropine	2 8	1 4
60.	Sulphadiazine	3 0	1 8
61.	Sulphadiazine Cum Atropine	3 0	1 8
62.	Penicillin Strong		2 8
63.	Penicillin Cum Atropine	4 8	1 8
64	Penicillin Cum Sulphathiozole	4 8	1 8
65.	Coper Cum Protargol	2 8	1 8
66.	Penicillin Cum Sulphadiazine	4 8	1 8
67.	Penicillin Cum Sulphanilamide	4 8	1 8
68.	Calomel Cum Sulphathiozole	2 8	1 8
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35TH CONFERENCE

OF

THE ALL-INDIA MEDICAL LICENTIATES' ASSOCIATION

The Conference will be held at Bombay in the premises of J. J. Group of Hospitals, Byculla, on the 26th and 27th December, '47.

Delegates attending this conference should inform Dr. A. D. Patel, General Secretary, Reception Committee, 1, Nagindas Mansions, Girgaum, Bombay 4, (Telegraphic Address: Medigest) the date and time of their arrival, 20 days in advance of the date of conference. Those who want to stay for more than two days, should accordingly inform the General Secretary Dr. A. D. Patel who will arrange with the Indian Medical Association for Boarding and Lodging on payment of Rs. 10/- per day.

Owing to ration and other difficulties delegates are advised not to bring their families.

PROGRAMME

26th December, 47:

10 a.m.	—	1 p.m.	Delegates Meeting.
1 p.m.	—	2 p.m.	Lunch.
2-30 p.m.	—	4-30 p.m.	Inauguration of the Conference.
4-30 p.m.	—	5-15 p.m.	Tea.
5-15 p.m.	—	8 p.m.	Subjects Committee.
8 p.m.	—	9 p.m.	Dinner.
9 p.m.	—	11 p.m.	Subjects Committee.

27th December, 47:

9 a.m.	—	1 p.m.	Open Conference.
2-30 p.m.	—	6 p.m.	Open Conference.
6 p.m.	—	8 p.m.	Scientific Session.
9 p.m.	—	11 p.m.	Scientific Session.

GENERAL PROGRAMME OF OTHER CONFERENCES TO BE HELD AT BOMBAY.

22nd December, 47:

9 a.m.	—	1 p.m.	Meeting of Provincial Secretaries of I.M.A. and of W. C.
2-30 p.m.	—	5 p.m.	Meeting of Working Committee I.M.A.
5 p.m.	—	5-30 p.m.	Interval—Tea.
5-30 p.m.	—	7-30 p.m.	Meeting of Working Committee.

23rd December, 47:

9 a.m.	—	1 p.m.	Meeting of Central Council.
2-30 p.m.	—	5 p.m.	Meeting of Central Council.
5 p.m.	—	5-30 p.m.	Interval—Tea.
5-30 p.m.	—	7-30 p.m.	Meeting of Central Council.

[*Next Page*

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CONFERENCES—*continued*

24th December, 47:

9 a.m.	—	12 noon.	Inauguration of All-India Medical Conference.
12 noon	—	1 p.m.	Election of Subjects Committee.
1 p.m.	—	3 p.m.	Lunch—Interval.
3 p.m.	—	4-30 p.m.	Opening of Exhibition.
4-30 p.m.	—	5-30 p.m.	Tea in Exhibition Grounds.
5-30 p.m.	—	7-30 p.m.	Subjects Committee I.M.A. Conference.
9 p.m.	—	11 p.m.	Subjects Committee I.M.A. Conference.

25th December, 47:

9 a.m.	—	10-30 a.m.	Inauguration, Radiological Conference.
10-30 a.m.	—	1 p.m.	Open Session I.M.A.
4-30 p.m.	—	6 p.m.	Inauguration of Obst. & Gynae. Congress.
9-30 p.m.	—	11-30 p.m.	Entertainment by medical students.

26th December, 47:

9 a.m.	—	10-30 a.m.	Inauguration of Surgeons Conference.
10-45 a.m.	—	1-15 p.m.	Inauguration of Physicians Conference.
2-30 p.m.	—	4-30 p.m.	Inauguration of Licentiates Conference
4-30 p.m.	—	5-15 p.m.	Tea—Interval.
5-15 p.m.	—	7-15 p.m.	Open session of the I.M.A. Conference.
9 p.m.	—		Boat Trip.

27th December, 47:

9 a.m.	—	12 noon.	Scientific Session I.M.A. Conference. discussion.
12 noon	—	1-30 p.m.	Inauguration of Venereologists Conference.
2-30 p.m.	—	6 p.m.	Scientific Session of all Conferences.
8-30 p.m.	—		Subscription Dinner if possible.

28th December, 47:

9 a m.	—	12 noon.	Scientific Session I M.A. Conference.
2 p.m.	—	6 p.m.	Scientific Session of all Conference.
9 p.m.	—	11-30 p.m.	Entertainment.

29th December, 47:

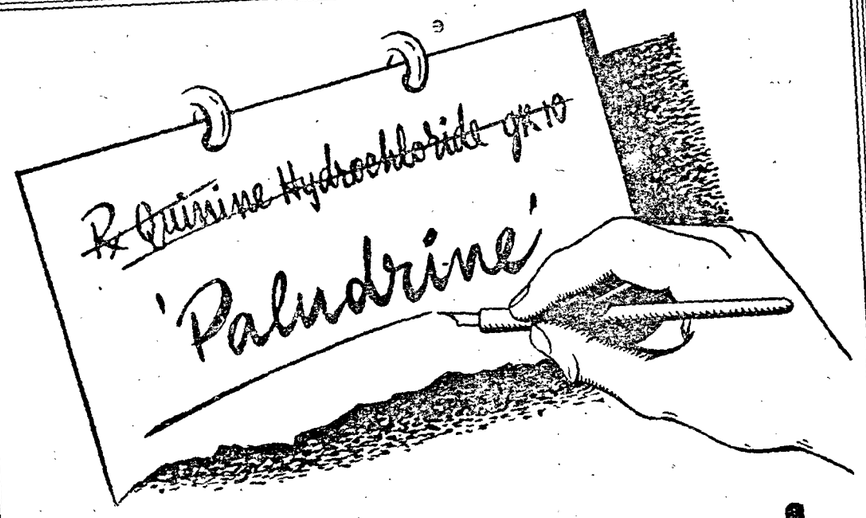
9 a.m.	—	12 noon.	Scientific Session of I.M.A. Conference.
2 p.m.	—	5 p.m.	Scientific Session of all Conferences.
6 p.m.	—	7 p.m.	Concluding session of all Conferences participating.

30th December, 47:

9 a.m.	—	12 noon.	Scientific Session.
8 a.m.	—		Trip to Elephanta Caves.

NOTE:—*All the Conferences will be held in the Premises of J. J. Group of Hospitals, Byculla. Delegates will be lodged in Hostels attached to the Hospitals.*

DR. CHAMANLAL MEHTA,
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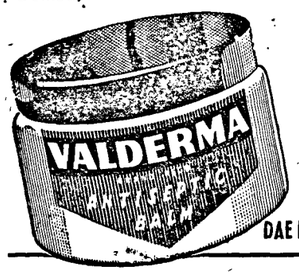
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FAMINE ENQUIRY COMMISSION 1945

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HM 14

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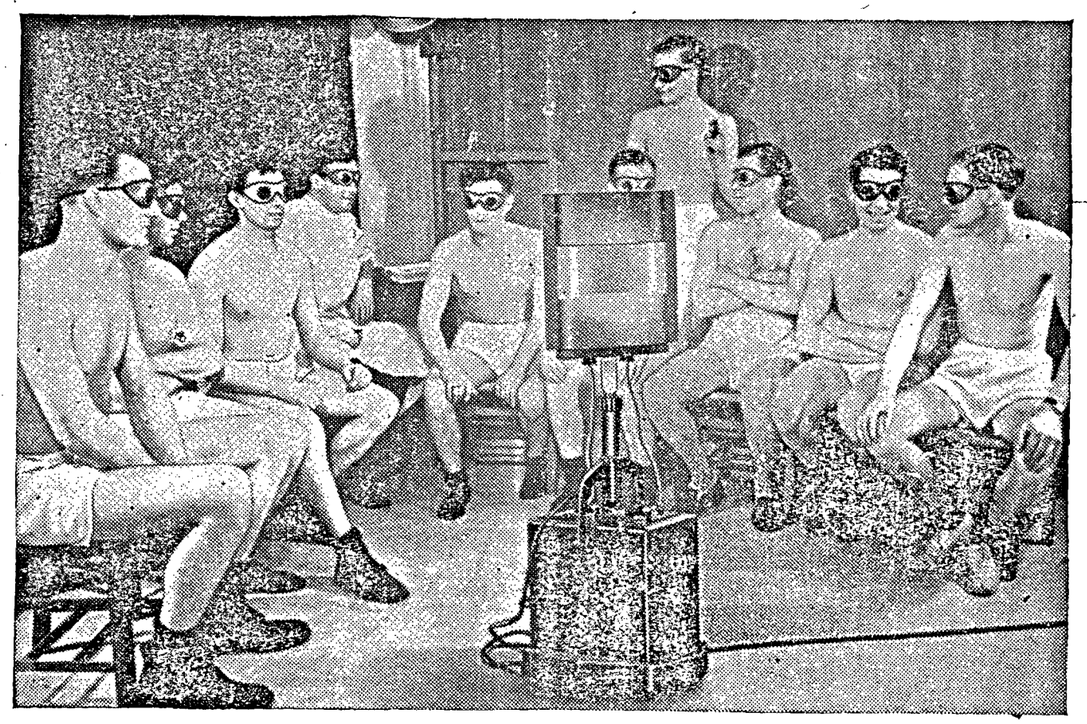


Illustration shows ratings of the Royal Navy (Submarine Branch) taking tonic sunbaths with the Hanovia 'Centrosol' unit on their depot ship.

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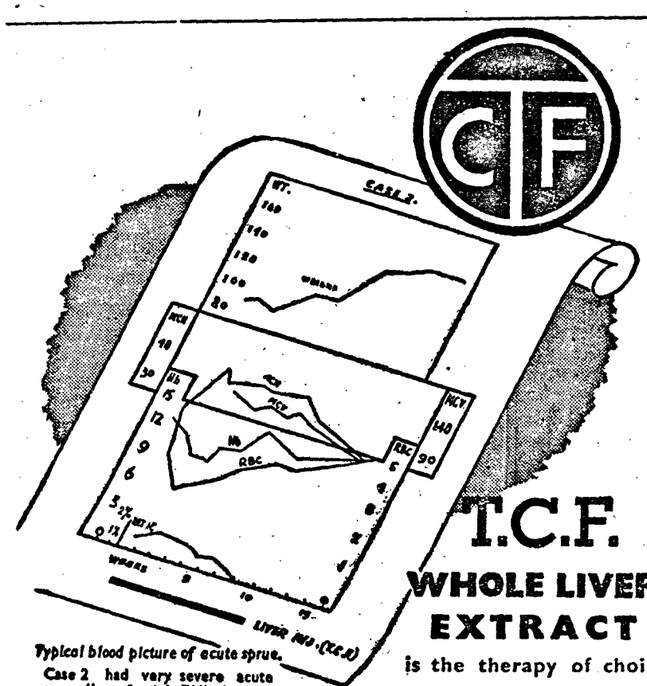
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(WITH MEDICO-POLITICAL SUPPLEMENT)

Vol. 41, No. 11
November 15, 1947

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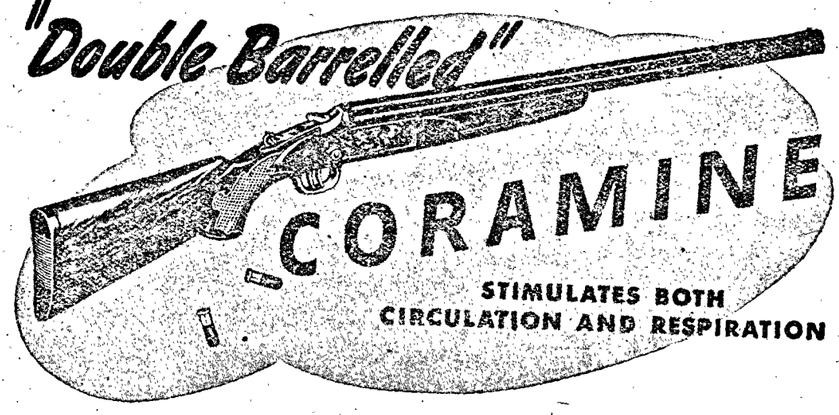
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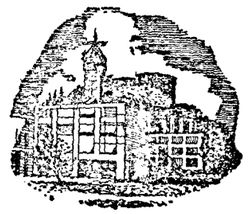
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* Wakeley, C.P.G. (1942) *The Practitioner*, 149, 50.

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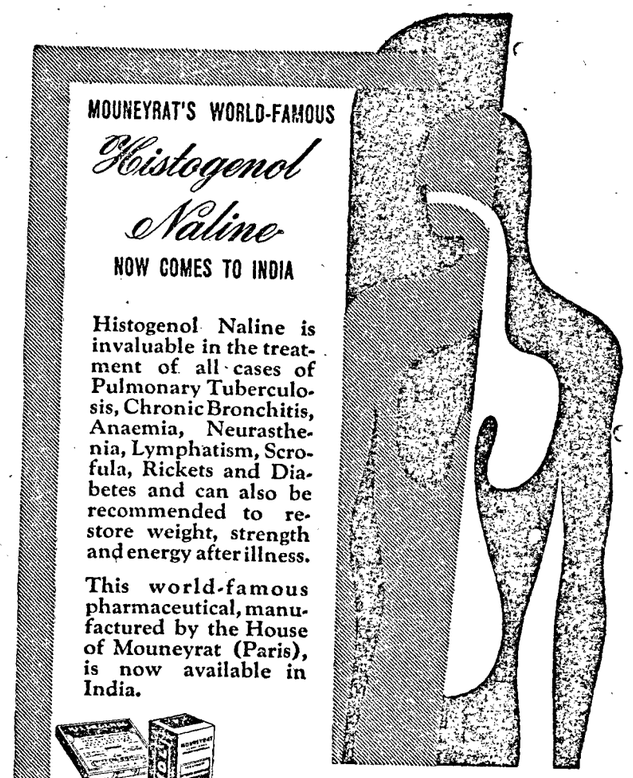
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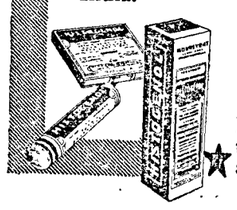
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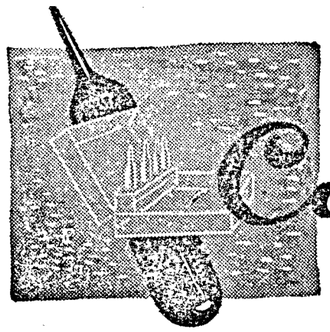
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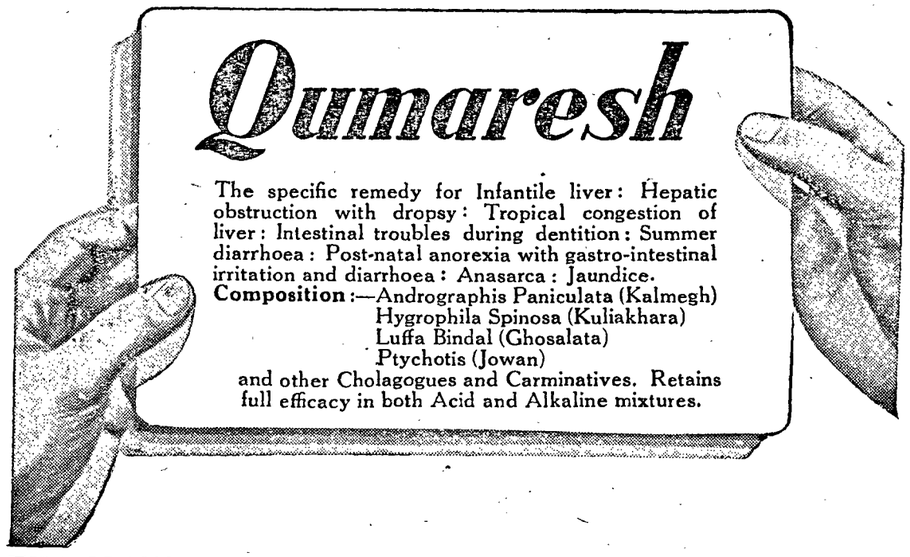
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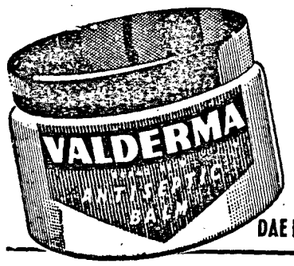
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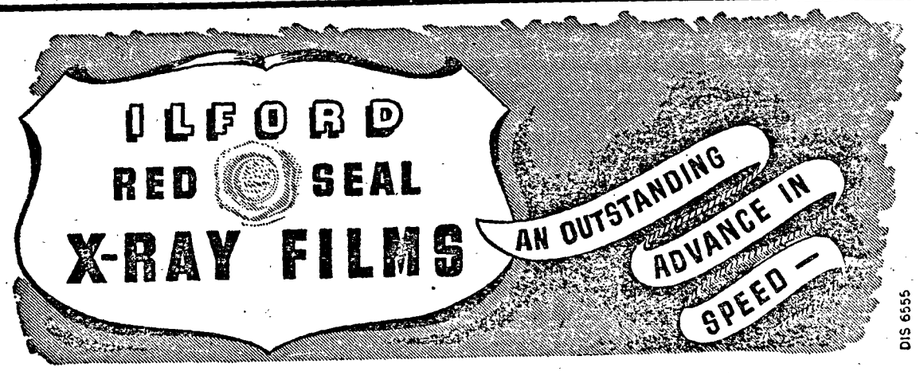
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RETICULIN-Oral is concentrated extract of young and healthy sheep livers processed according to modern scientific methods which ensure the maximum retention in the extract of all the anti-anaemic-erythrocyte-maturing factors, B-complex vitamins and Folic Acid present in raw liver. RETICULIN is clinically standardised and eminently suitable for the treatment of macrocytic anaemias.

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Liquid extract of yeast 2·5 oz.

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Vitamin B3	25 mg.
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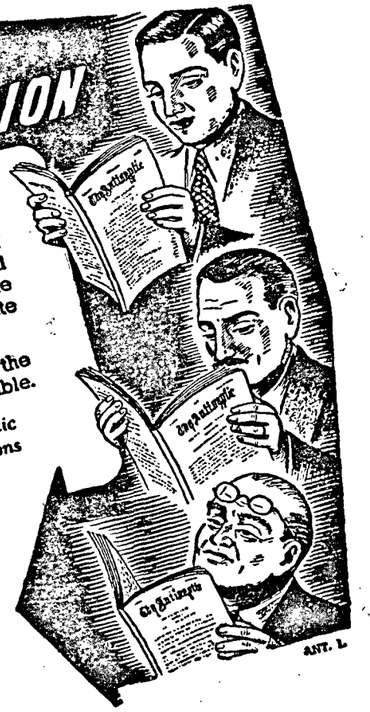
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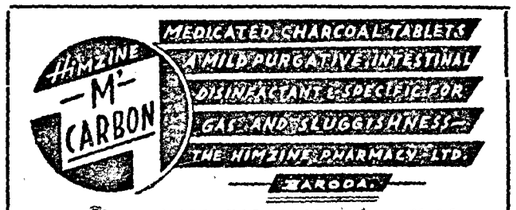
Indian Medical Journal

(Journal of the All-India Medical Licentiates' Association

Vol. 41. Madras: November 15, 1947. No. 11

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Indian Medical Journal

(Journal of the All-India Medical Licentiates' Association)

Vol. 41. Madras, November 15, 1947 No. 11.

IMPORTANT NOTICE

As the Treasurer of our Association, Dr. Khan Chand Wohra, is held up at Rawalpindi in Pakistan and as normal communication to him is not possible owinğ to disturbed conditions, all the members and subscribers to the Journal whose subscription has fallen in arrears are requested to remit the same to the Office of the Indian Medical Journal, 32, Sullivans Garden Street, Mylapore, Madras 4.

No V. P. P. could be issued, as is usually done, since all the records are with the Treasurer. We appeal to the members not to await any V. P. P., in recovery of their subscription, but to remit it voluntarily to this office. This is urğently essential in the interest of the Association.

All the Bills of the Branch Secretaries and other office-bearers, passed by the Finance Committee, will be paid by this office until further notice.

(By Order of the General Secretary)
A. VISWANATHAN,
Editor,
Indian Medical Journal
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Chanğes of address should be sent to this office only and to none else.

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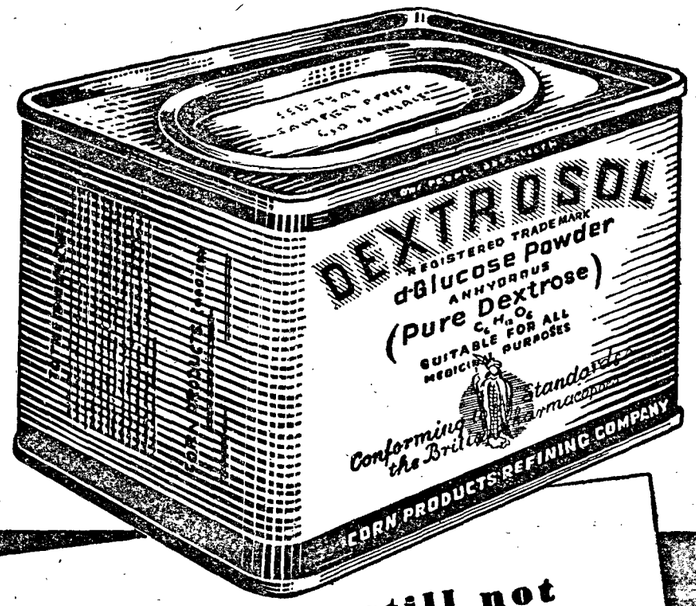
OUR MONTHLY SURVEY

Acute Barbiturate Poisoning:—In our October issue, Dr. Narayanamurthy has reported a fatal case of acute barbiturate poisoninğ in a younğ boy of 21 years. He ğives a complete record of the case except on one point. It was not known, nor could it be ascertained, how many tablets of Gardinal the boy had swallowed. This information could have been useful in knowinğ approximately the overdosağe that resulted in such a trağic accident. He is of the view that acute cases of barbiturate poisoninğ do rarely recover, and that picrotoxin which is ğiven with a view to undo the muscular relaxation brought about by barbiturate poisoninğ does not act as a real antidote. Apart from the academic interest of the case, its practical importance lies in the unwisdom and unsafety of prescribinğ compounds of Barbiturate without instruction to the dispenser as to how many tablets should be ğiven at a time and not to repeat the same till a fresh prescription is issued. The case reported by Dr. Narayanamurthi shows that underneath the pillow of the patient there was a phial of Gardinal tablets, written on the label as containinğ 100, by which we presume a full bottle was purchased by the patient, and the chemist supplied the same as there was perhaps no instruction to the contrary. We would therefore appeal to the practitioners not to prescribe poisonous druğs in bulk, but only the minimum quantity required for a day or two, and with instruction to the chemist that it should not be repeated without the doctor's further advice. This is essential in the interest of the patient as well as their own reputation. We know of another recent instance where the patient went on repeatinğ the prescription containinğ hypnotics without takinğ further medical advice; and the patient died ultimately. This could not have happened if only the doctor had instructed the chemist not to repeat the mixture unless so stated by him. It is our duty to be careful in all these matters, elementary thouğh they may be.

Leucoderma:—It is fairly common in our country. Very little however is known about its aetiology and its treatment quite unsatisfactory. Dr. Panja's account of this disease, published in our last issue of the *Journal*, throws a flood of liğht and helps to form a reasonable theory as to its aetiology althouğh from the treatment point of view the position is still unsatisfactory. He reğards leucoderma as a trophoneurosis affectinğ the adreno-autonomic nervous system, particularly the latter. His reasons are:

(1) In a larğe number of cases, leucoderma is seen alonğ the distribution of nerves.
(2) It is very often a symmetrical disease.
(3) Its appearance after severe shock has been seen in some cases, which obviously suğğest some central cause.
(4) All local causes have been investiğated as far as possible but always with a neğative result.

The nature of the central cause, however, is unknown. It is probably of the nature of a toxin absorbed either from some septic foci or formed from some abnormal producs of metabolism. Such a toxin appears to possess selective affinity for the autonomic nervous system. The disease, the author states, is neither hereditary nor familial in its incidence. Althouğh it is difficult to co-relate the existence of septic foci with the presenct of leucoderma, yet the author, after a careful analysis of a larğe series of cases, observes that a history of past or present bowel troubles in the form of dysentery, diarrhoea, dyspepsia, or marked constipation has been elicited and that it is probable such an abnormal ğut condition favours the development of poisons which may ğet access into the blood stream and ğive rise to the disease. As reğards treatment, local application of oil bouchi on small patches restores piğmentation temporarily, but it is of no use in treatinğ the ğeneralised form of the disease. He advocates intramuscular injection of emetine hydrochloride ½ to 1 ğr. twice a week for three to four weeks. This acts probably by improvinğ the detoxicatinğ power of the liver and stimulatinğ the oxidative process in the epidermis. Intradermal ğold injections have also been found useful. Intestinal antiseptics such as liq. hydrağyri per chloride or entero-vioform have done some ğood in a few cases. Vitamin B complex in biğ doses is also suğğested. It must be noted that results are always uncertain, but these are the only available lines of rational treatment of this simple but bafflinğ disease.



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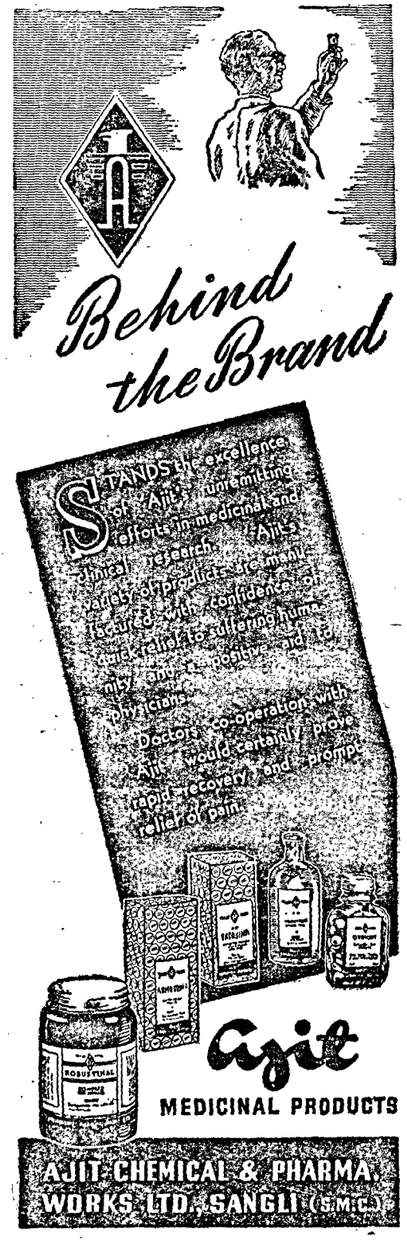
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ADDRESSES AND ARTICLES

Experiment With Wild Plants In The USSR

BY

N. TSITSIN

Vice-President of the Lenin Academy of Agricultural Sciences, Member of the Presidium of the Academy of Sciences of the USSR, Member of the Roumanian Academy of Sciences.

Wild vegetation in the Soviet Union is an exceedingly rich source of various raw materials from plants. In the eleven volumes of the " Flora of the USSR," issued during the last decade, almost all species of the country's vegetation are described. The results of a profound study of the flora of the Caucasus, the Far East, Western Siberia, the Urals, Central Asia and other regions of the Soviet Union have also been published by a number of botanical institutions and explorers.

Soviet botanists have explored in detail the country's plant resources and have entered them on the map of the flora of the USSR. Numerous expeditions have revealed the more valuable raw material groups and determined their geographical distribution, reserves and accessibility.

More than 60 new genera, nearly 400 new species and a large number of various forms of plants have been discovered on the territory of the USSR and described.

Under the direction of the author of this article, works the Committee for the Mobilization of Plant Resources which includes many scientists and practitioners in various specialities. Simultaneously with this Committee, special Commissions and the Botanical Institute of the Soviet Academy of Sciences, as well as scores of scientific research institutions and botanical gardens are working on the development of the plant riches of the country.

Utilization of the wild flora as a source of medicinal, industrial, food and vitamin raw material has considerably extended in the period of the Second World War.

Medicinal Plants

There are more than 300 species of medicinal plants. Many of them have been scientifically tested and verified in clinical conditions and officially recognized by the Soviet State Pharmacopoeia. Among these are plants from which styptic, astringent, laxative, cardiac, bile-expelling, anti-malaria and other medicinal preparations are manufactured.

Exceedingly rare and unique medicinal plants grow in the USSR. In south Kazakhstan, for instance, we find vast areas overgrown with wormwood containing santonine. In the mountains of Turkmenistan grow plants from which the alkaloid salsolin is obtained. This preparation possesses the property of expanding the blood vessels and of lowering blood pressure.

A highly effective means against bronchial asthma has been obtained from ephedra growing in Central Asia. Injection into the veins of its preparations raises the tone of enfeebled blood vessels in cases of shock. A weak solution of ephedrine is helpful in the treatment of influenza colds.

A new alkaloid, opherophysin, has recently been obtained by the All-Union Chemical and Pharmaceutical Institute. This alkaloid, contained in semi-desert plants of the leguminous family growing in the salt marshes, has been tested in clinics and has proved to be a reliable means for contracting the blood-vessels and stopping internal haemorrhage in childbirth.

Widespread in Central Asia is the perennial harmala used in the treatment of epilepsy and especially the consequences of encephalitis. There are grounds for assuming that harmala will be able to replace quinine in the treatment of malaria.

Soviet pharmacology has successfully studied a number of new medicinal herbs to replace scarce imported preparations. For instance, the perennial leguminous plant, thermopsis, widespread in Siberia and Kazakhstan, is an excellent expectorant. In a number of cases it may be applied instead of the tropical ipecacuanha. Besides this the thermopsis grass contains methylisticin which helps in the excitation of the respiratory centres.

Instead of the American senega, an expectorant, the polygala, widespread in Siberia and the Far East, may be successfully applied.

It has also been found that the periploca and oleander can serve as a substitute for the tropical strophanthus used in the treatment of heart trouble.

The Caucasus is the only place in the USSR where belladonna grows in a wild state. Its leaves and roots contain the extremely scarce atropine.

Among the vast thickets of wormwood in the Central Asian semi-deserts we find species containing up to 2 per cent of natural camphor.

Millions of hectares of marshes are covered with sphagnum mosses which are used as a substitute for wadding and as a bedding material; the absorbing capacity of this moss is much higher than hygroscopic wadding.

The oceans and seas of the USSR abound in seaweed which are a rich source of iodine. Certain species of seaweeds contain up to 2 per cent of iodine.

A great deal of work is carried on in the USSR for cataloguing the remedies of popular medicine. The Institute of Medicinal Plants has already collected information on the properties of over 5,000 popular medicinal herbs. New plants, particularly of tropical and sub-tropical origin, are being cultivated. The tropical cinchona-tree is being successfully acclimatized on the Black Sea coast of the Caucasus. This has become possible as a result of growing this plant in one year by an original method worked out by Soviet researchers. Cuttings of cinchona tree, which had taken root in hot-houses and conservatories, are planted in the open ground in the summer period. In the autumn the plant is removed together with the roots. From this one year tree, preparations are obtained which for their anti-malaria properties will stand comparison with tropical quinine. Tropical nephritic tea, which is a new remedy in the treatment of kidney diseases, also cocaine shrubs, are similarly cultivated in the USSR.

The arborescent aloe, from the leaves of which a thick sap is obtained, which is an effective laxative, is excellently developing in Transcaucasia. The Alexandrian leaves of cassia is another laxative plant, the cultivation of which has been well mastered in the southern districts of Central Asia.

The camphor tree, which is a highly valuable source of natural camphor, has found a second home in the sub-tropical districts of Western Georgia.

The Committee of Plant Resources has done much during the war for finding and utilizing plants acting as stimulants in the human organism.

Among the discovered wild mountain and taiga plants is the schizandra chinesis which is frequently met with in the Far East. Experimental and clinical tests of a preparation from this plant have established its stimulating effect both in the case of human beings and animals. This remedy reduces the feeling of fatigue and somnolence, raises the working capacity and improves the nocturnal eyesight.

Great importance is attached in the USSR to the finding and utilization of insecticides for combating agricultural pests, as well as for the manufacture of insect powder for the destruction of bugs, fleas and other insects. For this purpose, there is pyrethrin, contained in the modest field flower, camomile, in which has been discovered a powerful toxic substance similar to nicotine.

Industrial Plants

Wild plants are a supplementary source of raw materials for various branches of industry. In particular, many plants grow in the USSR which yield highly valuable essential oils for the needs of the perfume, food and medicinal industries. The flora of the USSR is rich in its variety of mint, steppe wormwoods, juniper, snakeweed. From these may be obtained such exceedingly scarce substances as thymol and menthol.

During the last decade the Soviet essential oil industry rapidly mastered the cultivation of nearly 25 species of essential oil plants growing on an area of 150,000 hectares.

The country has at its disposal a vast group of wild plants containing fats and essential oils, used for the production of varnishes, paints, dried oil, soap. Among these may be mentioned yellow reseda, crambe, burdock, asclepiadaceae containing from 30 per cent to 50 per cent of drying, semi-drying and non-drying oils. In recent years attention was drawn to the seeds of grapes and tobacco from which drying oils can be obtained that may serve as a substitute for linseed oil in the production of varnishes and linoleum. Plants containing saponine are used in soap manufacture, Among these is the root of saponaria officinalis. Spores of lycopodium are used in high grade section casting, in pyrotechnics and medicine.

Soviet flora is rich in raw materials for the tanning industry; the bark of the larch and conifer family, as well as horse sorrel and other plants containing tanning material. The Saxifraga crassifolia, widespread in the Altai mountains, is excellent for tanning. The leaves and rhizomes of this plant contain large quantities of tannin. Birch springs also provide good tanning material. In recent times such tanning materials as Sakhalin buckwheat and rhubarb have attracted attention.

The properties of scores of wild plants have been investigated for obtaining vegetable dyes for colouring silk, cotton, leather, fur and other industrial raw material and food products. Of special interest is a yellow mordant dye plant, locally called sarychob—growing extensively in Central Asia. Its flowers contain yellow substances suitable for dyeing carpets and silk yarn. Khaki and greyish-green dyes may be obtained from barberry, spurge and other plants.

Substitutes for imported tropical resins play an important role in the varnish and painting, rubber and textile industries. Interesting in this respect are various species of ferule, pistachio-trees and euphorbia which are widespread in the USSR. Among these plants are such, containing nearly 14 per cent of resin.

Highly valuable are the Central Asian tragacanth and astragalus as substitutes for the imported glutinous substances used in the textile, pharmaceutical and confectionery and biscuit industry. The roots of eremurus and other dextrine plants are used for obtaining glue.

Soviet research workers have worked out the technology of obtaining from Iceland lichen (moss) substitutes for agar-agar used in the food industry. The technology for the production of agar-agar from alga seaweed has also been worked out. There have been discovered a large group of fibrous plants suitable for the manufacture of fine and coarse fabrics, rope, string, fishing tackle, tare. These include kendyr, wild flax, diclinous nettle, hop; rods of the willow and shavings of the aspen tree are used as painting or wicker-work material.

Phellodendron amurense, the birch bark or ulmus campestris, are recommended as substitutes for cork. Such wild plants as sandy oats, andropogen ischaemum and stipa splendens are used as raw material in the handicraft production of brushes for industrial and household purposes.

Particular importance is attached in the USSR to rubber plants An opinion used to be current in the scientific world according to which such plants could grow only in tropical countries. This view has been refuted by Soviet explorers who have discovered among the wild flora of the USSR numerous rubber plants which are successfully cultivated under the conditions of the mild climate of the Soviet Union. Chondrilla, belonging to the composite family, have been discovered in Central Asia. The roots and sometimes the stems of this plant contain late-forming increscences of rubber substances. Laboratory analyses have established that these contain up to 5 per cent of rubber and 10 per cent to 12 per cent of resin. After technological treatment a resinous rubber product is obtained which is quite suitable for the resinification of synthetic rubber.

In the Kara-Sau Mountains (southern Kazakhstan) another composite plant, the Tau-sagyz, has been

found. The roots of this plant contain 20 per cent of rubber (in relation to the total dry weight). Cultivation of Tau-sagyz has commenced in the USSR in recent years, and a crop yield of 250 kg. per hectare is attained.

In the Tian-Shan Mountains grows the rubber dandelion—kok-sagyz, from the composite family containing up to 30 per cent of rubber in its roots. Kok-sagyz is now being cultivated in the USSR on an industrial scale not only under the conditions of the mild, but also of the continental climate. A rubber yield of no less than 150 kg. hectare has been obtained. A most simple method of primary processing of the kok-sagyz roots has ensured the industrial development of this crop in collective and state farms.

Attention has lately been concentrated on the cultivation of aslepias cornuti from the family of the asclepiadaceae which is widespread in the Ukraine. The leaves and stems of this plant contain upto 3 per cent of rubber. Selection varieties have recently been obtained, the leaves of which contain 15 per cent of rubber.

There are also in the USSR plants yielding gutta-percha. A considerable content of gutta-percha has been discovered in the evonymus verrucosa scop, a plant to be found extensively in almost the whole of the forest zone of the USSR. Its roots yield up to 18 per cent and its stems upto 14 per cent of gutta-percha in relation to the dry weight of the substances.

Food Plants

In addition to the food products abundantly supplied by agriculture, suitable wild plants are also widely utilized for food purposes in the USSR. The local population in various regions has long since used as food wild fruits, berries, mushrooms and other edible plants containing albumen, fats, carbohydrates, vitamins.

The Soviet Union is particularly rich in areas overgrown with wild fruits, these covering about seven million hectares. Transcaucasia and Central Asia are rightly considered the birthplace of European fruit-growing. In those regions there are vast areas containing wild apples, pears, apricots, prunes, haw-thorn, wild roses, barberry. In the forests of Kazakhstan, at a height of approximately 800 to 1,850, metres above sea level, are concentrated nearly three million fruit trees. The average age of these trees ranges from 40 to 100 years. We have seen trees whose age is calculated at from 300 to 500 years. Among the wild fruits are quite a few which for their sugar, acid and vitamin content surpass even cultivated varieties.

Soviet forests are rich in nut-trees whose fruits contain edible oils. Thus the kernel of the walnut, the bitter almond and the pistachio contain up to 70-75 per cent of fats. For their calory value these fruits are superior to wheat bread, potatoes and milk. The kernels of nuts contain many nitrous substances chiefly consisting of easily digestible albumins.

In Central Asia alone we have nearly 90,000 hectares of walnut trees, more than 30,000 hectares of pistachio and approximately 500,000 hectares of almond trees.

There are more than 60 per cent of fats and up to 20 per cent of albuminous nitrous substances in the kernels of the cedar nut which abound in Siberia, the Urals, the Far East and adjacent regions. The oil yield constitutes 35-40 per cent of the weight of the kernel.

There is a vast group of hazel nuts in the forest belt of the European part of the USSR and in the forests of the Caucasus. These nuts contain up to 65 per cent of fats and nearly 17 per cent of albuminous nitrous substances which are easily digestible.

The USSR contains a good many arborescent oil plants, such as the lime or linden. the ash and the beech which yield a big percentage of edible oil, likewise rich in albuminous substances.

Widespread in Kazakhstan is the agriophyllum whose seeds contain 17 per cent of digestible nutritious substances, fats, albumens carbohydrates. The physico-chemical content of oil in the agriophyllum closely approaches those of the sunflower, and for its nutritious properties even surpasses it.

There is in the USSR a group of wild plants rich in carbohydrates which can easily be converted into sugar of the glucose type. This group includes chicory, dandelion, the elecampane topinambour. Laboratory experiments have shown that the dry substances in the root of the wild dandelion contain 53 per cent of inulin, easily converted into fruit sugar, in chicory this content exceeds 30 per cent and the young root of elecampane contains up to 44 per cent inulin.

The licorice root has long since been used for medicinal purposes. Efforts are now being made to obtain from it a licorice extract containing a sweet substance known as glycerizine. It has been established that this extract may be used in the food industry and in biscuit manufacture will replace up to 50 per cent of sugar.

It has been found that sugar and sugary syrup may be obtained from such trees as the beech and the maple. Up to 15 litres of syrup may be extracted from one mature maple tree. A hectare of beech trees will yield 250 litres of sugary syrup and sometimes even more.

A study is now being made of the utilization of a number of starch plants as raw material for the alcohol and starch-molasses production. This includes such plants as the reed mace and the water-lily containing up to 70 per cent starch and sugary substances and up to 15 per cent of albumens.

Vitamin Plants

Wild plants in the USSR are also a source of raw material for the production of vitamins. Many of them contain more vitamins than cultivated vegetables. For instance, the berries of a number of species of the wild rose contain up to 14,000 mg.% of ascorbic acid. The fruits of this plant contain Vitamin A in the form of carotine. A great deal of attention is paid in the USSR to the cultivation of the wild rose.

Of no little importance as a source of Vitamin C are the cedar, fir, pine and silver fir-trees.

It has been established that the green nut contains from 1% to 3% of vitamin and the dry whole

fruits 10% to 13%. A simplified method of obtaining ascorbic acid from condensed water solutions of the unripe walnut has been elaborated. As a result of a simple technological process this acid is obtained in the form of crystals and its yield attains 20 per cent.

Non-crystalising ascorbic acid is used as a concentrate.

In the USSR reeds cover an area of up to five million hectares. The leaves of these reeds contain from 150 to 200 mg. per cent of Vitamin C.

Much of Vitamin C is also contained in the leaves of the walnut tree (up to 3,000 mg. per cent), the poplar, the apple, the maple, the elder and other trees. Infusions of many deciduous species of trees are likewise rich in Vitamin C. Thus an infusion of the leaves of the birch and lime trees contain 1,000 mg. per cent, the primrose 2,500 mg. per cent of ascorbic acid. The berries of the hippophae rhamnoides contain up to 500 mg. per cent of stable Vitamin C as well as carotine. More than 1,000 mg. per cent of ascorbic acid has been found in the leaves of the gladiolus flower. According to a preliminary estimate a hectare of gladioli will yield nearly a million man-doses of Vitamin C, not counting the flowers.

Exceptional attention is devoted to the search for sources of carotine. It is well-known that the absence or insufficiency of Vitamin A or carotine leads to so-called night blindness and to a lowered resistance of the human organism to infectious diseases. Up to recent times corotin was mainly obtained from the roots of carrots. But ashberry contains twice as much corotine as the carrot. This berry has also become a source for the production of carotine. A method of obtaining carotine preparations from any green plant has been worked out in the USSR. Much work is carried on in the USSR for enriching bread and other bakery articles with vitamins. For this purpose wheat embryo flake, containing upto 50mg. per cent of Vitamin E, 3.2 mg. per cent of Vitamin B and other vitamins, are used in the production of vitaminized biscuits and vitaminization of bread and food concentrates.

With the aid of wheat poly- vitamin wheat groats is manufactured. It contains from 5 per cent to 10 per cent of particles of embryos of wheat fats and vitamines and has a more pleasant taste than semolina.

Vitamin flour containing nearly 50 per cent of the particles of wheat embryos and almost 2 mg. per cent of vitamin B are also being manufactured.

The technology of vitaminization of some kinds of preserved food has been worked out. For instance, for their vitaminization with the Vitamin C a puree from red Bulgarian pepper and extracts of green walnuts has been applied. Powders of dried leaves of clover or lucerne have been successfully used for enriching preserves with carotine.

Vitaminization of meat, fish and vegetable preserves is carried out by partial or complete substitution of tomato sauce by a puree from red Bulgarian pepper. A powder of dried clover has been added to preserves of meat and peas so as to enrich them with carotine. The product obtained therefrom contains 1.7 mg. per cent of carotine.

The role of wild plants in remaking cultivated ones

The history of selection shows what an immense role has been and continues to be played by the wild plants in the improvement of the old cultivated ones and creation of new plants. Especially great successes in this respect have been achieved by the Russian selectioner Michurin. As a result of the crossing of the Rogneda cherry with the wild black cherry has arisen the famous "Bastard Chetty". The splendid myrtle-leaved cherry, "Ideal", has arisen from the stepple Samara wild cherry, the blossom of which was pollinated with the pollens of the Pennsylvania cherry. The well-known "Green gage" thorn Michurin plum has been obtained by crossing the green-gage with the wild blackthorn, and the magnificent group of the "Russian Experen" has been derived as a result of the pollination of the bergamot with the polion of the wild Ussuri pear. From the usual bitter ashberry came the best varieties of the Michurin ashberries. From various species of wild plants of Siberia and the Far East arose new unsurpassed genera and kinds of apples. The wild actinidia growing in the forest of Ussuri territory and eastern Manchuria has been transformed by Michurin into a cultivated plant that in the north replaces grapes.

Our personal work in the sphere of remote hybridization of cereals shows the unlimited possibilities we have at our disposal in the utilization of wild plants. Thus, the spring wheat couchgrass hybrid is yielding high crops, does not lodge even in the most humid years and is not susceptible to fungus diseases. The winter wheat-couchgrass hybrids cultivated by us are not destroyed in the north by frost. We have quite a new crop, *perennial wheat*.

The problem of crossing wild couchgrass with rye has also been solved.

The creation of hybrid plants of the rye type with grain possessing cohesive gluten enables us to pose the question of a new crop that will compete with winter wheat in a number of regions in the Soviet Union.

Without stopping at the achievements attained, we are now conducting much experimental work in connection with still remoter inter-species crosses. In this direction special attention is deserved by crossings of various species of elymuses with such crops as rye, barley and wheat. We have now solved the problem of crossing elymuses with cultivated plants which opens up a new era in the utilization of the semi-desert zone of the Soviet Union for hybrid grain crops.

In our researches, besides the annual cultivated plants, we have also used perennial forms of wheat-couchgrass hybrids for crossing with elymuses. We have in this way obtained complex elymus-wheat-couchgrass perennial hybrids.

We have set ourselves the task of bringing arboreal and herbaceous plants into kinship and hereditary proximity. One can clearly imagine that in obtaining unprecedented hybrids of these plants most diverse transitional kinds of vegetation are formed. In other words fruits, which we are accustomed to see growing on grass, will grow on trees, and on the

contrary, what has been growing on trees will now grow on grass.

Our line of research has been taken by many scientists abroad. In Canada, for instance, work is being carried on for crossing wheat with couchgrass to obtain new fodder plants. In the USA winter wheat is crossed with elymus for the cultivation of drought and frost-resisting fodder plants.

The achievement of Soviet science in the sphere of remote hybridization of cultivated plants with wild ones is not limited to the above-mentioned facts. By crossing a cultivated kinds of sugar-beet with a wild perennial one found in Transcaucasia, Soviet research workers have obtained a new variety. These hybrids open up the prospect of increasing the productivity of beet-growing.

Hybrids of the wild topinambour and the sunflower have been cultivated in the USSR. These hybrids combine the qualities of perenniality, tuber bearing and frost-resistance of the first with the high crop yield and early maturing quality of the second. This, to all intents and purposes, is a new plant which is distinguisked for its great productivity of the silosage mass, its capacity to resist rust, higher sugar content in the stems and of natural rubber in the leaves.

By the utilization of wild species of tobacco, new varieties of yellow tobacco have been cultivated which are immune from the tobacco mosaic and other diseases.

The wild flora of the USSR has also played a big role in the transformation of agriculture abroad. During the last fifty years, more than 1,000 kinds of apples have been exported from Siberia to the USA which laid the beginning of a new assortment of frost-resisting fruit-trees. The best kinds of American pears have been obtained by crossing with varieties of our Ussurisk pear.

From a small handfull of lucerne seeds (less than half a teaspoon in volume) gathered in Semipalatinsk region, this plant has spread widely in the USA where it now occupies scores of thousands of acres. From the Eastern part of Kazakhstan seeds of the white melilot were taken to the USA. This crop is now unsurpassed for its resistance to drought and frost. This species of melilot, going under the name of " Arctic Clover", has spread widely also in Canada.

A special American expedition had once brought from Siberia the wild broad-eared agropyrum or triticum. It has now begun to be cultivated widely as a fodder plant in the drought districts of the USA.

Seeds of the wild hedgehog and the foxtail plant (alopecurus) had laid the beginning to their cultivation in Sweden.

The wild flora is an inexhaustible source of the still hidden forces of nature itself. In this source, the investigator will find the fulcrum with the aid of which he will be able to turn the cultivated flora in the desired and necessary direction.

Crystalline Penicillin

(Sodium Salt)

From the Scientific Department of the Imperial Chemical (Pharmaceutical) Ltd.

Crystalline penicillin (sodium salt) as manufactured by Imperial Chemical Industries Limited possesses a number of special characteristics which are of interest in medical practice :

1. It has a potency of at least 1,600 International Units per milligram, and not less than 96 per cent of the penicillin it contains is penicillin G (II). Since it is of such exceptionally high purity, the possibility of toxic reactions or pain following its administration is reduced to a minimum.

2. It is crystalline, virtually non-hygroscopic, and much more stable than salts availabe hitherto. It may be stored safely, without refrigeration.

3. It is very readily soluble in water, and mobile solutions can be prepared in concentrations up to 1,000,000 units per ml.

General Properties

Crystalline penicillin (sodium salt) may occur as a white powder, or as white granules. Its therapeutic potency is expressed in International Units.

Stability :

1. There is no need for special storage conditions since crystalline sodium salt of this quality undergoes no significant loss in potency after eighteen months at 25°C.

2. All penicillin salts decompose slowly in aqueous solution even at room temperature, and they decompose more rapidly on warming.

3. Penicillin is rapidly destroyed by acids and alkalis. It is most stable in aqueous solution between pH 5 and pH 7.

4. It is destroyed by certain heavy metals (e.g. copper, mercury, lead), by alcohols (e.g. methylated spirit and surgical spirit), by aldehydes (e.g. formalin solution) and by oxidising agents (e.g. hydrogen peroxide and potassium permanganate). Antiseptics containing such chemicals should not be used on a wound before or during penicillin treatment.

Solubility, absorption and excretion :

1. Penicillin is freely soluble in water and diffuses readily.

2. It is quickly absorbed after subcutaneous or intramuscular injection or when applied locally to a wound. It is at its maximum concentration in the blood within 15 minutes of an intramuscular or subcutaneous injection, so little time is gained by intravenous injection. Injected intravenously it is distributed throughout the body almost immediately (but see 3 below). By means of a suspension of penicillin in arachis oil and beeswax, injected either intramuscularly or subcutaneously, the rate of absorption is retarded and a depot is formed at the site of injection. In this way therapeutic blood levels of penicillin can be maintained for prolonged periods.

3. The meninges and pleura and the serous membranes of the joints present a barrier across which penicillin does not readily pass ; it is advisable, therefore, that infections in these cavities be treated by direct injection into the cavity.

4. Penicillin is comparatively ineffective when given by the mouth and for this reason it has not been used extensively by that route. If given in relatively enormous doses however, such as about five times the parenteral dose, some absorption occurs and a satisfactory concentration in the blood stream can be achieved.

5. It is concentrated by the kidneys and excreted rapidly in the urine. Excretion begins within a few minutes of administration by any parenteral route.

Antibacterial Action

1. Penicillin, in the concentrations used clinically, has a much stronger bacteriostatic than bactericidal action. An antibacterial concentration must be maintained until the bacteria have been disposed of by leucocytes and other body defences. If for any considerable time a bacteriostatic concentration is not maintained in the blood, any living bacteria may multiply and there may be a recrudescence of infection.

2. The action of penicillin is not inhibited by serum or pus, so that it is effective in frankly septic lesions.

3. Dead tissue such as a sequestrum or large slough will harbour bacteria out of reach of the drug. Such tissue should be removed at the beginning of treatment or in any case as early as possible. The use of penicillin is not a substitute for ordinary surgical measures, but the systemic use of penicillin may enable the surgeon to operate extensively through infected tissues.

4. The chief organisms susceptible to penicillin are :

Actinomyces (most pathogenic strains)	*Pneumococcus*
B. anthracis	*Staphylococcus albus* and *aureus*
C. diphtheriae	*Streptococcus pyogenes*
Clostridia of gas-gangrene and tetanus	*Streptococcus viridans* (most pathogenic strains)
Gonococcus	*Spirochaetes* of syphilis, relapsing fever and Vincent's angina ; possibly of Weil's disease
Meningococcus	

5. Common pathogenic organisms which are relatively insusceptible are :

Bact. coli	*Strep. faecalis*
Myco. tuberculosis	Occasional strains of *staphylococcus* and of *streptococcus*, the acne bacillus, and almost all viruses, *e.g.*, the virus of the common cold.
Proteus	
Ps. pyocyanea	

6. When treating established infections caused by susceptible bacteria for which a specific antitoxin is available, this should be used in addition to penicillin, as the latter has no antitoxic action.

Indications

Diseases caused by susceptible bacteria are suitable for treatment with penicillin. Where a mixed infection composed of sensitive and insensitive organisms occurs, *e.g.* in wounds, considerable benefit often follows elimination of the susceptible organism although the insusceptble organism remains.

Directions For Use

1. Systemic Administration

(a) *Intramuscular and subcutaneous injection.*—Solutions of convenient concentrations for injection can be made by adding sterile pyrogen-free water to the powder in the rubber-capped injection bottles. Such solutions are injected subcutaneously or intramuscularly every 3 hours. The minimum effective single dose for an adult has been established as 15,000 units. This dosage usually produces a bacteriostatic concentration in the blood up to the end of 3 hours, but during the fourth hour the concentration as a rule falls below the bacteriostatic level. In very severe infections much larger doses may be used with perfect safety.

(b) *Intravenous Drip.*—The penicillin is dissolved in an appropriate volume of sterile isotonic saline or dextrose solution [100,000 units in 2 to 3 pints (1,200—1,800 ml.)], which must be pyrogen-free, and given by intravenous drip. This quantity is sufficient for 24 hours.

Intramuscular Drip.—Continuous intramuscular drip giving 100,000 units a day. Rigid aseptic precautions are essential. The main drawback of intramuscular infusion is the development of local oedema when large amounts of fluid are given. This does not occur if special equipment delivering 100 ml. or less in 24 hours at a constant rate is used as in the Eudrip apparatus.

2 Local Administration

(a) *Powders* :—Penicillin powder is mixed with sufficient sterile 'Sulphamezathine,' Sulphanilamide or Sulphathiazole to produce a final concentration of 2,500 or 5,000 units per gramme. The proper pharmaceutical procedure for preparing dilutions must be followed, using a sterile mortar and aseptic precautions. This powder can be blown with an insufflator on to raw surfaces or into wounds but it is only of real use on relatively dry wounds as blood or exudate rapidly washes it away. Application should be repeated every 24 hours at least. A single application cannot be expected to remove infecting organisms as the drug is fairly rapidly absorbed and eliminated.

(b) *Creams* :—The powder can be made into a cream of 500 units or more per gramme by preparing a sterile solution and incorporating in a sterile base (*e.g.* Sterile Penicillin Cream B.P.). This makes an excellent dressing for surface wounds, such as burns, and can be placed in deeper wounds. Application every 24 hours is effective. On burns or wounds the period may sometimes be extended to 48 hours.

A cream which is less easily contaminated and which is useful for skin infections may be made by incorporating 500 units per gramme into a base containing an antiseptic which does not readily inactivate penicillin. Chlorocresol (0.1%) may be used for this purpose, as in Penicillin Cream B, P.

(c) *Solutions* :—Solutions in sterile water of saline of 250 units or more per ml. are also used for local treatment. The solution is used for injecting through tubes stitched into wounds after closure or through a needle into abscess cavities after aspiration of the pus. The injections should be made twice daily.

The principle involved in local use is to hold the drug in contact with the infected tissues for as long as possible. Irrigation of an open wound is wasteful and ineffective. Solutions, sterilised by filtration, may also be used for injection into the theca in meningitis and into pleural and joint cavities after aspiration. For the theca up to 1,000 units per ml. may be used. Greater strengths are required in other cavities. Injection once daily is effective in these cavities as the penicillin is retained for some time. For eye infections, drops of 500 to 2,000 units per ml. are effective when applied at intervals ranging from a few minutes to one hour.

N.B.—Since many pathogens such as *Ps. pyocyanea Proteus* are insensitive to penicillin, strict aseptic precautions should accompany injections and dressings.

Dispensing and Storage

In dispensing penicillin it is essential to avoid bacterial contamination. The solution or other vehicle must be sterile before mixing with the penicillin and clean sterile vessels and instruments must be used in dispensing.

Containers should be air-tight and should be closed immediately after use.

Refrigeration is not required for storage and transport of the crystalline sodium salt, It may be stored satisfactorily for eighteen months at a temperature not exceeding 25° C. (77°F.). Anhydrous preparations such as lozenges, and ointments made with a greasy base, may be stored in a similar manner. Refrigerated storage is necessary for aqueous preparations such as creams. Solutions for injections should be used within 48 hours of preparation and while awaiting use should be stored at a temperature not exceeding 4°C. (40°F.).

Reactions

Minor reactions which have resulted from the administration of penicillin have been ascribed to the presence of toxic impurities in the drug. These will be largely eliminated now that the sodium salt of greater purity is available.

1. If fever occurs the water or saline used to dissolve the penicillin should be suspected as the source of the pyrogen.

2. Thrombosis is often seen after a few days of intravenous administration. No serious effects have been reported.

3. Pure crystalline penicillin can be injected in relatively large doses without causing pain and with only transient discomfort. It is now recognised that the pain after injection, frequently reported in the early days of penicillin therapy, arose mainly from the impurities in the product.

4. Rarely, a general urticarial rash has been reported. It has subsided quickly and has seldom recurred on further administration.

Duration of treatment and criteria of cure

Systemic treatment aimed at prevention of spread of infection may be for only one or two days, after which local treatment may suffice. When systemic treatment is aimed at eradicating the infection it should be continued till the infecting organism has disappeared, and then for at least 2 to 5 days more, according to the severity of the initial infection. Bacteriological control is of great assistance in assessing progress.

In systemic treatment improvement in the general condition is usually seen within 2 or 3 days, but the temperature often falls by lysis over a much longer time. Fever maintained for a week or more, if other signs are favourable, is not a cause for anxiety.

In local treatment the relief of pain and subsidence of swelling are usually the first signs of improvement Bacteriological tests are most valuable in assessing progress.

Successful treatment depends upon the maintenance of penicillin continuously in contact with all infecting organisms in a bacteriostatic concentration. Under these conditions growth must cease and the infection be overcome. Possible causes of failure are :—

1. The dose is too small or applications too infrequent.
2. Dead tissue (sequestrum, slough, pus) in some unsuspected place is maintaining the infection, or a focus (*e.g.* in a serous cavity) is not being reached by the drug.
3. The bacteria are not susceptible.
4. The penicillin preparation has lost potency.

Packings

'Avlon' Crystalline Penicillin (sodium salt) is issued as follows :

Single Vial	0·1	mega	unit	(100,000 units)
,, ,,	0·2	,,	,,	(200,000 ,,)
,, ,,	0·5	,,	,,	(500,000 ,,)
,, ,,	1·0	,,		(1,000.000 ,,)

Also in Boxes of 10 Vials.

Madam Marie Curie.

BY

DR. S. A. Subedar, L.C.P.S.,

Kutiyana, (Kathiawar).

One bright sunny morning a laughing, curly haired child ran down in Warsaw to join a group of her playmates who were just ahead. An old bent gypsy woman stopped her.

"Show me your hand, pretty child," she said.

Without a sign of fear the child thrust out her hand, and looked up with laughing eyes.

"What lines-such lines," the old gypsy woman whispered to herself. "Oh, you will be famous." The old woman shook her head and with one last look at the child went on her way.

And that was the first and most unscientific tribute paid to Marja Sklodowska, known to the world as Madame Curie. Working with her husband Pierrie Curie, she discovered radium, one of the most important factors in modern medical science.

In every true scientist there is above all the desire to discover the truth. In Madam Curie and her husband Professor Curie the desire was stronger than anything else in their lives. They were a deeply devoted couple. The sharing of their common interest in scientific research, their work is the most remarkable feature of their lives.

To Madam Curie goes the honour of actually discovering radium, but her husband prepared the way. Until his sudden and tragic death in 1906 the two shared equal honours.

Pierrie was born in Paris. He was educated in the University of Paris. His life was a story of a brilliant and clever man, working towards scientific honours which received due recognition. Madam Curie was born in Warsaw in 1867. Her father was a lecturer on science there. She was thus brought up in an atmosphere of science. Though Madam Curie became a french woman, she never forgot that she was born a Pole, and born at a time when Poland was suffering from the oppression of Russia. Marja Sklodowska was a beautiful woman as Polish women are, but she had that tragic look of those who are born of an oppressed race. Marja left Poland as there was no scope for her further studies and when she demanded to attend science lecture, the secretary laughed and put her name for cookery classes. Finally she came to Paris because she knew the French language. The French were sympathetic towards the Poles. In England at that time women were not allowed to take medical degrees. In Paris she lived very frugally. She attended lectures and worked in laboratories. Here she met Pierrie Curie, who was then a famous lecturer and in 1895 they were married. The marriage was very happy. They made scientific research their mutual life work. They had two daughters. Friends who visited them found Pierre sweeping the floor and playing with their daughters while Madam cooked meals.

In the year of their marriage 1895, Rontgen discovered the famous rays that were named after him, the fore-runner of the modern X-rays. The substance used for radium experiments was black and very hard, a compound called pitchblende. By seperating the substance into its elemental parts, Madam Curie extracted a substance which she called after her native land as polonium and second element radium. Radium is the most powerful of the radio active elements capable of penetrating substances opaque to light. Uranium possessed this property, but polonium and radium discoveries of Madam Curie possessed radio-activity in much higher degrees. The benefits of radium in medicine are still in calculable, but it has been used with great effect against cancer both to cure and to relieve pain. The bacteria of typhus, cholera, anthrax can also be killed by radium.

Sheer over work caused the health of Madam Curie to fail. Her husband begged her to give up the fight but she resolutely refused. But there was the question of expenses. Pitchblende is a very expensive substance, but the Emperor of Austria who was an admirer of Curies, sent to Madam Curie the whole ton of the precious material. It was a costly and the most strange gift received by a lady from a crowned monarch. Radium experiments are very dangerous. Pierre demonstrating radium experiments in England was so badly burnt that he could not hold his knife and fork at dinner. Enormous skill and judgement are necessary for extracting radium in the final process and the amount obtained is very small. This can be judged by the fact that one ton of pitchblende treated with fifty tons of water, and five to six tons of chemicals would yield about six grains of radium.

Madam Curie was not thirty-two when she discovered radium. In 1904 when the truth of her achievements were tested, she received the Nobel Prize with Henri Bequerrel and in the same year she received the Davy Medal of Royal Society. The University of Paris honoured Pierre Curie by creating a special department of which he was appointed the head and Madam Curie became his chief assistant.

Then only three years after this Pierre Curie was knocked down and was killed while crossing the Paris street. This was a great shock to Madam Curie. But she found her greatest solace in carrying her husband's work. She was appointed in her husband's place and in 1911 she won the Nobel Prize for chemistry. She established a radium institute in Warsaw her native place. In the World War I she helped various hospitals where radium treatment were carried out. She drove as near the fighting lines as the authorities allowed her and was presented to the English people. In 1921 United States paid homage to her when President Harding presented to her a gramme of radium to help her in her work. In 1921 a gift from the women of America was used by her for the radium hospital in Warsaw. She had not forgotton Poland.

The Curies were always reserved and detested publicity. After the death of her husband, Madam Curie lived for nothing but her work and her children. It wasan additional source of happiness to Madam Curie to find that her daughter was also deeply interested in her mother's work. In 1935 her daughter Madam Curie—Joiliot and her husband received the Nobel Prize for Chemistry. Madam Curie did not survive to see greatest honour conferred on her children. Death had claimed her. She died in July, 1934 in a sanatorium. No woman was ever more sincerely mourned, but no woman died more happily in the conviction that her own work was done and that she had left her children to carry her work still further.

Scientific research in radio-activity culminating in the discovery of radium opened men's eyes to a new world. In radium we find possessed of a new and a potent weapon for the war against disease. The collosal value of Madam Curie's work is already apparent, but it will be rightly assessed by the scientists of future generations.

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eight years before he was admitted to the Clinic when he had tuberculosis of the urinary bladder. General tuberculous and suppurative peritonitis and generalized miliary tuberculosis developed after perforation of a tuberculous ulcer of the bladder, and the patient died. He had received approximately 248 gm. of streptomycin over a period of 102 days. Roentgenograms of the lungs revealed evidence of regression in the miliary tubercles during this period.

Some of the tubercles in the lungs and liver exhibited definite evidence of healing with fibrosis and encapsulation. Other tubercles in those same organs, however, and especially in the spleen, kidney, adrenal glands, bladder and prostate gland revealed caseation and histologic evidence of progression. Microscopic examination of sections of the meninges over the brain and spinal cord revealed mild chronic meningitis without tubercles on the surface. Histologically, the evidence was insufficient to permit the making of a diagnosis of tuberculous meningitis. Deep in the sulci of the cerebrum, however, active caseating tuberculous lesions involving the meninges and adjacent portion of the brain were found.

Case 3.—The patient was a man, thirty-two years old. Tuberculous pleuritis developed in March, 1945. The patient was found to have miliary tuberculosis in August of that year. He received 177 gm, of streptomycin over a period of approximately six weeks. During this course of treatment, his temperature became normal, the cerebrospinal fluid, a specimen of which before treatment had caused tuberculosis when it was injected into a guinea pig, became normal and lesions in the choroid and lungs exhibited definite regression. Evidence of renal damage was noted during the course of treatment. Death occurred after an illness of approximately eight months. Necropsy revealed evidence of healing in the miliary tubercles in the lungs, liver and spleen. In examination of sections of the kidney evidence of severe hyaline granular degeneration of the tubular epithelium with sloughing of the cells was found. No evidence of tuberculous meningitis was noted but active widespread tuberculous lesions were found throughout the brain.

Case 4.—In July, 1945, tuberculosis of the hilar and mediastinal lymph nodes developed in a boy fourteen years old. Miliary tuberculosis of the lungs was discovered on September 15. The patient received 242.5 gm, of streptomycin over a period of approximately six weeks. Regression of the pulmonary and fundic lesions and a decrease in temperature occurred during this period, without other definite signs of clinical improvement, however. At necropsy evidence of regression and healing in the lesions of the hilar nodes, lungs, liver, spleen and right kidney was observed. The lesions in the left kidney, prostate gland and brain, however, were active and progressive. The presence of extensive tuberculous lesions in the brain in the absence of tuberculous meningitis appeared unique.

Comment

In our opinion, these cases present encouraging histopathologic evidence of an inhibitory action of streptomycin on human miliary tuberculosis and tuberculous meningitis. Convincing evidence of regression and healing in the miliary tubercles of the lungs, liver and spleen was obtained. By healing, we do not imply the destruction of all the tubercle bacilli in the lesions, a supposition which would be difficult to prove. We do mean the occurrence of fibrosis and hyalinization and the absence of caseation in the miliary tubercles. These regressive changes were particularly pronounced in the lungs, liver and spleen in cases 1, 3 and 4 and in the lungs and liver in case 2. The regressive changes did not appear to follow the usual pattern of encapsulation of a cellular or caseous central mass but represented rather a diffuse even fibrosis of the entire lesion. This suggested that healing had occurred so rapidly that the usual sequence of central caseation and peripheral encapsulation did not have an opportunity to develop. The regressive changes in these lesions resulted in the formation of irregular fibrotic scars with rough or angular borders rather than the typical more nearly spherical lesions usually observed in miliary tuberculosis.

Although healing of lesions of miliary tuberculosis has been reported the phenomenon is nevertheless a rare one. In the two cases observed by Rich, the lesions were less profuse than in the usual case of fatal miliary tuberculosis and he was of the opinion that in such cases the condition is more properly designated as "disseminated tuberculosis," reserving the term "miliary tuberculosis" for the condition in which the tissues are studded more thickly with tubercles. This thick studding with tubercles was a feature of our cases.

In support of our opinion that the miliary tubercles in these organs were regressing and healing, the clinical, roentgenologic and laboratory data lent considerable evidence. In case 1, clinical improvement was apparent within one week after treatment with streptomycin was begun. In this case also inoculation of the spinal fluid and the gastric washings into guinea pigs gave negative results after a period of treatment, and the roentgenograms of the thorax revealed marked improvement. In case 2, the roentgenograms of the thorax revealed definite improvement in the pulmonary miliary lesions. In case 3, although clinical improvement did not occur, the temperature fell to normal, the lesions in the choroid layer of the eye underwent healing and results of inoculation of guinea pigs with spinal fluid became negative during treatment. The roentgenograms of the thorax likewise revealed marked improvement in the pulmonary tubercles. Case 4, likewise, presented no evidence of clinical improvement but the temperature decreased and the lesions in the choroid layer of the eye regressed. The roentgenograms in this case revealed striking evidence of improvement.

Although there was definite evidence of healing in the miliary tubercles of the lungs and liver in all four cases and of the spleen in three cases it is important also to note the lack of significant histologic signs of regression in the lesions of the primary complex of the lungs and hilar nodes (cases 1, 2 and 4) and also in the hematogenous lesions of the kidneys (cases 2 and 4), prostate (cases 2 and 4), adrenal glands and bladder (case 2) and especially the brain (cases 2, 3 and 4).

The fact that tuberculous lesions may heal in one or some organs whereas active progression occurs in others is not a new observation. It is a phenomenon which has been well recognized for many years but has been difficult to explain. Among the factors which investigators have found to be of importance are such mechanical ones as location of the organ, blood and lymph circulation, and anatomic and histologic structure. In addition to these, Rich has indicated that the native resistance of different organs is inherently different. He has pointed out that although the lungs, spleen and liver always contain innumerable tubercles in miliary tuberculosis, the lung is frequently the site of extensive chronic lesions whereas the spleen and liver are not. Moreover, such organs as the kidneys, adrenals, prostate and brain are only lightly seeded with lesions in miliary tuberculosis but are frequently the site of extensive chronic lesions. It is to be noted that these organs were the ones in which little or no evidence of healing was found in our cases.

In addition to the mechanical factors and the inherent differences in the native resistance of different organs, two other factors seemed to us to be of importance: (1) the size or mass of the lesion at the time that treatment with streptomycin was instituted and (2) the concentration of streptomycin in fluids and tissues.

It is to be noted that the best evidence of healing occurred in the comparatively minute miliary lesions whether these occurred in the lungs, liver or spleen, whereas the larger lesions such as those of the primary complex in the lungs and hilar nodes and the large lesions in the bladder and prostate revealed little or no evidence of regression. It may be that an effective concentration of streptomycin readily penetrates the relatively small miliary lesions, but is unable to reach the larger necrotic masses in which tubercle bacilli continue to multiply.

The concentration of streptomycin was determined in various tissues and fluids of case 4 by our colleague, Dr. F. R. Heilman, and is shown in table 1. The most striking fact about these results is the presence of a significant concentration of streptomycin in the spinal fluid but its complete absence from the brain. This is probably of great importance in explaining the presence of progressive active lesions of the brain the absence of tuberculous meningitis in cases 3 and 4. It probably also helps to explain the histologic evidence of healing in the lesions of meningeal tuberculosis of case 1 and the absence of meningeal lesions on the surface of the brain in case 2. The relatively high concentration of streptomycin in the urine and in the kidneys emphasizes the point that other factors in addition to the concentration of the drug must be considered in explaining the relative absence of healing in the lesions of the kidneys and bladder.

Although cases are on record in which tuberculous meningitis has regressed or the lesions have healed, the phenomenon is certainly a rare one. For this reason, we believe the character and distribution of the lesions in the central nervous system of cases 2, 3 and 4 are extremely unusual.

TABLE 1

The content of streptomycin at necropsy in various tissues and fluids in case 4*

Tissue or fluid	Micrograms per G
Urine	3,507
Blood serum	120
Kidney	172.8
Lung	42
Spleen	20.6
Liver	16.9
Cerebrospinal fluid	15.8
Brain	None

In case 2, meningitis was not present on the surface of the brain or cord and the only lesions which could be found were deep in the sulci of the right parietal lobe, a location which streptomycin presumably could not reach. In case 3, the spinal fluid became normal during treatment and no evidence of meningitis could be found at necropsy although extensive lesions in the brain were observed. In case 4 also evidence of meningitis was not observed at necropsy but widespread lesions were present in the brain. The presence of significant concentrations of streptomycin in the spinal fluid and its complete absence in the brain undoubtedly explain these unusual findings. The question as to why streptomycin appears in the cerebrospinal fluid but not in the brain remains unanswered. It has been postulated that a so-called pia-glial barrier exists which prevents certain dyes and the serum bilirubin of jaundiced patients from reaching nervous tissue. Perhaps a similar mechanism is responsible for the inability of streptomycin to penetrate the substance of the brain. This patient received no streptomycin intrathecally. Subsequent experience with another series of cases of tuberculous meningitis treated by both parenteral and intrathecal administration of streptomycin has apparently yielded superior results.

Although attention has been centered in this study on the effect of streptomycin on the lesions of tuberculosis it is extremely important also to point out that except in case 3, no histologic evidence of a toxic effect of the drug on any of the organs was found. The degenerative changes in the renal tubular epithelium of case 3 suggested a toxic effect of the drug or of some impurities associated with the drug. That some impurities in the streptomycin were responsible appears likely in view of the absence of demonstrable renal damage in many other cases which have been studied histologically following treatment with streptomycin.

Summary and Conclusions

Clinical, roentgenologic and pathologic observations on four cases of fatal miliary tuberculosis treated with streptomycin are reported. Evidence of regression and healing of the miliary tubercles in the lungs was observed roentgenologically in four cases, ophthalmoscopically in the choroid layer of the eye

* Dose: 0.833 g. given intramuscularly every two hours for 9 doses (equivalent to 10.0 g. or 10 million S units per day). (This dose given during eighteen hours prior to death) (Reprinted by permission of the publisher from Baggenstoss, A. H., Feldman, W. H. and Hinshaw, H. C.)

CASE NOTES

Mepacrine and Mental Derangement

By
Dr. S. A. SUBEDAR, L. C. P. S.,
Kutiyana

Several cases have been reported in the *Journal* in which mental derangement has been observed after the use of Mepacrine. The following case will illustrate one more case of identical type.

A christian lady aged about 30 years, highly educated and serving as a school mistress, was having persistent attacks of malarial fever. Doctors prescribed Mepacrine. She was improving. But after the second attack she continued to take Mepacrine without consulting her medical attendant. She must have taken five or six tablets, when she began to show signs of a peculiar nature. She was a very sensible, quiet lady, but now she was boistrous, swearing at her parents, delirious at night, restless and on frequent occasions she acted in very indecent manner. She had to be kept in bed by force. She did not take food properly. Her pulse and respirations were normal. There was no fever. The only trouble for which the advice of medical experts was sought was this peculiar behaviour. Well known surgeon and physician were both consulted. But in spite of their expert advice, the condition of the lady did not improve. She was then sent to Bombay in this state.

She was kept in a nursing home in Bombay. Calci-Bronat injections I. V. and alkaline mixtures were administered. She began to show signs of improvement. She was then sent to Poona for convalescense. She regained her former health after about a period of two months. Not to talk of the expenses and the anxiety to which the parents were put. She is now completely recovered and has resumed her duties at school.

Here is a case of a very sensible lady without any history of insanity in her family, living in a very healthy surrounding, got this kind of mental derangement signs after she took the second course of Mepacrine. Whatever may be said in favour of this useful drug, it is certain it has been the cause of mental symptoms in a number of cases. Idiocyncracy must not be ruled out. But even the fact remains that in a number of cases it alone has produced these alarming results, The same was the case with Atebrin the well-known German drug before the War. In Ceylon when this drug was used as a sure remedy for Malaria the report that was published showed that over a large P. C. of cases were attacked with very grave mental symptoms, after the use of this drug. The manufacturers came out with an explanation that the drug should be used in its proper dosage and that the climate of Ceylon was not very suitable for the administration of this drug.

It is my firm opinion that Mepacrine is not a reliable drug. I admit I have not been able to use this drug in large number of cases to entitle me to express my definite opinion on the subject. Anyway I have been prejudiced against the use of this drug. And in fact I have totally abstained myself from using this in my practice.

Neglected Pelvic Presentation

BY
Dr. S. K. SHRIVASTAVA,
M. O., I/C Hospital, Nagod, C. I.

I was called to attend on a case in a village 3 miles away from the main Hospital on 5-3-47.

A Hindu female aged 22 years primiparae was in great agony with labour pains for the last two days.

I asked the history of the case from her attendants. According to their statement the period of conception was coming to about eleven lunar months (308 days).

She had no previous illness.

I examined her and she was quite healthy and strong. She was not nervous and answered my questions quite soundly and correctly. She also confirmed the same period of conception.

On questioning whether water (liquor amnii) flowed out, the bed side attendants told "In the night some water came out with some black and clotted blood". I wanted to see that discharge but it was washed off. I enquired whether some part of the child (Foetus) had come out or seen? Among them there was a local "Dai" who told some "Bag of Water" like thing had come out.

Temperature 98°, Pulse rate 120 p.m.

Palpation:—Now I made personal examination. At the fundus it was not smooth but irregular prominences and grooves were felt as if head was in the fundus, arms and legs in front. It was moveable from side to side.

Auscultation:—Uterine souffle was heard. Foetal heart sounds were heard high up, very feeble and twenty per minute.

Vaginal Examination (P. V.)—was denied by the patient as she was a strict Purdah observing lady. I advised, rather warned, her that without P. V. examination I was helpless to do anything, as the case was very complicated there was danger of loss of life both to the mother and the child inside. After great difficulty I was permitted to make P. V. examination. I saw the membranes were ruptured and the scrotum of the foetus was presenting outside which was congested and swollen. Buttocks of the foetus were to the posterior side towards the buttocks of the mother. A part of meconium was peeping through the annus of the child.

I at once sent for the Ambulance Car and brought the patient to the Main Hospital Nagod. It took about an hour to bring and prepare the patient.

I believed the child would be dead before complete delivery.

The patient was taken to the operation theatre and under chloroform anaesthesia I tried to deliver the child by hand. I wanted to find out the foot or knee of the foetus but as they were extended could not be reached. I put one finger in the groin of the foetus and one finger of the other hand in the rectum of the child. I pulled it gently downwards—part of buttock and thigh of one side came down a bit and then I caught hold of the one foot of the child, pulled it down and delivered the one limb. Similarly catching hold of the foot of the other side delivered the other one. Trunk and head were delivered without any difficulty. The cord was looped round the trunk. It was released—no pulsation in the cord was felt. The cord was tied and cut. The new born child was cynosed, no breathing—at once the mouth of the baby was cleared with finger and rolled round on the table—sprinkled hot water on buttocks and slapped the child. Heart was heard pulsating very feebly 3 times a minute. I continued rolling and making him up down for 15 minutes without any response. I injected Adernalin Hydrochloride 1 in 1000 Sol. ½ c. c. direct in the musculature of the heart. Instantly it began to pulsate rapidly. I was very much delighted and with great enthusiasm I was going on with rolling of the child between arms. The child began to breath and started crying. The bluish colour vanished and pinkish healthy colour appeared over the whole body of the child. The circulation established normally. The baby was quite healthy and was weighing 11 lbs. After giving bath and dressing, the child was taken to the maternity-ward.

I instructed my assistant to see and take care of the mother. The placenta had had to be delivered by manipulation. Having seen to the delivery of the placenta in full I injected Ergotin hypodermically to check Post Partem Haemorrhage.

Glucose with coramine was injected intravenously to the mother.

The mother was taken to the ward having returned to full senses. She was given cibazol by injection and by mouth with glucose and brandy etc.

Ergot and Quinine mixture was also given—and thus the mother was treated regularly as after labour case.

Both mother and baby were doing well and after a week the mother was taken to her village. She was advised to have rest and convalescence treatment for a few weeks more.

Conclusion:—

1. As there was no trained and qualified nurse the presenting scrotum of the child was mistaken for "Bag of Membranes", which would have been proved fatal if doctor in time could not make approach.
2. Without P. V. Examination we should not believe the history of local "Dais" as there is question of two lives.
3. We should not be disappointed with the apparent death of the foetus delivered under prolonged and neglected labour but should try to revive the child to our utmost.
4. Cause of such presentation in this case seems to me the over age of the child inside the uterus looping of the umbilicus card around the trunk of the foetus which could not allow natural free version inside the uterus in spite of normal pelvic measurements of the mother.

SELECTED ARTICLES

The Effect of Streptomycin on the Pathology of Generalized Miliary and Meningeal Tuberculosis: *Proceedings of the Mayo Clinic, July 1947.*

Archie H. Baggenstoss, M.D., M.S. in Pathology, Section on Pathologic Anatomy, William H. Feldman, D. V. M, M. Sc., D. Sc., Division of Experimental Medicine, Mayo Foundation and H. Corwin Hinshaw, M. D,, Ph.D., Division of Medicine: Recent studies have shown that streptomycin exerts a profound regressive and healing action on the morphologic aspects of well-established tuberculosis in guinea pigs. Evidence has also been presented which indicates that a suppressive effect is exerted by this therapeutic agent on a variety of types of human tuberculosis. In a recent article we reported a study of the therapeutic effect of streptomycin on the lesions of five cases of fatal miliary and meningeal tuberculosis. Since that report was completed we have had the opportunity of studying three additional cases of fatal miliary and meningeal tuberculosis in which streptomycin was administered. A review of all these cases reveals that definite histologic evidence of healing was present in six of the eight cases. Four of the cases in which the histologic signs of healing were unusually prominent form the basis for this report.

Report of Cases

Case 1.—A white female child, fifteen months old, had primary tuberculosis of the lungs and hilar nodes which was followed by miliary tuberculosis and tuberculous meningitis. The known duration of the illness, to termination, was five months. The child received a total of 56.6 gm. of streptomycin over a period of two months. Marked abatement in the miliary pulmonary tuberculosis was shown when a roentgenogram made after twenty-five days of treatment was compared with the one made on admission. Injection of specimens of cerebrospinal fluid which were obtained shortly after admission of the patient produced tuberculous lesions in guinea pigs but injection of specimens obtained after three weeks of treatment did not do so. When treatment with streptomycin was discontinued for a week specimens of cerebrospinal fluid again produced tuberculous lesions in guinea pigs.

Evidence of early calcification was noted in the primary lesions in the lungs and hilar lymph nodes but only poorly developed capsules of collagenous connective tissues were observed at the peripheries of the lesions. Definite evidence of healing in the miliary (hematogenous) tubercles in the lungs, liver, spleen and lymph nodes was found. These lesions consisted of fibrous connective tissue interspersed with lymphocytes. Microscopic examination of sections of the brain, however, revealed that extensive organizing tuberculous meningitis had been present with a number of small infarcts, probably the result of inflammatory occlusion of meningeal vessels.

Case 2.—A man, forty-six years old, had undergone nephrectomy for tuberculosis of the left kidney

in two cases and histologically in the lungs and liver in four cases and in the spleen in three cases. The development of widespread tuberculous meningitis apparently was inhibited in one case and either prevented or cured in two other cases. No histologic evidence of any toxic effect of the drug could be found with the possible exception of renal tubular damage which occurred in one case. These observations offer further encouraging evidence of the therapeutic efficacy of streptomycin in tuberculosis. They also offer some hope for the effective treatment of two hitherto consistently fatal forms of the disease.

Leucorrhoea.—BY S. N. GARDE—*Indian Journal of Medical Sciences, August 1947.*

Bourne and Williams give the following definition: "Leucorrhoea may be a functional excess of the normal secretions of the cervix and vagina or the existence of white discharge containing pus and other abnormal elements due to an infection". Women's ideas vary considerably as to what is normal. It is, therefore, necessary to regard the disease objectively and form one's own idea about its clinical existence.

It must be realised that leucorrhoea is a symptom and not a disease. Although in the vast majority of cases it has its origin in lesions of the reproductive organs, it may also originate from a variety of systemic conditions. Therefore it behoves the gynaecologist to make a thorough general examination. The commoner conditions in one's experience are general debility, chronic amoebiasis, anaemia and vitamin B deficiency.

Vitamin B deficiency deserves to be discussed in some detail as it is the result of the present-day food situation. Cases of this nature were non-existent in England before the war, but they are not uncommon now. One finds the same tendency here. Before the war these cases were confined to the hospital class of patients. But at present they are seen in private practice, not only in the middle but also in the upper class of patients. Recently we have had patients who have done well on vitamin B therapy alone. Braun, Bromberg and Brezezinski are of the opinion, that riboflavin deficiency is the principal factor in the causation of vulvo-vaginitis and other symptoms. They claim they have had better results with riboflavin alone than with vitamin B complex. One has had no experience of treating such patients with riboflavin alone. In one case the treatment was attempted but not continued for long and was changed over to B complex with good result. Aneurin or nicotinic acid alone have also been advocated. Our present practice is to prescribe vitamin B complex parenterally and then to put the patients on yeast tablets—Squibb's or Phillip's—6 to 8 per day. There is no doubt that the administration of the whole B complex is a wiser procedure than the using of any one of the components thought to be deficient. The deficiency is seldom, if ever, so clear cut. It is always multiple. Since this condition is the result of the present-day food situation, the real solution of the problem lies in its improvement.

Before leaving the subject of systemic conditions and starting with the investigations, it should be emphasised that leucorrhoea properly investigated, may lead to the diagnosis of serious lesions such as tuberculosis, syphilis, new growths and many others. Leucorrhoea may be the only apparent symptom.

Examination and Investigations

I. Age.

II. General examination.

III. pH reaction of the vaginal and cervical secretions.

IV. Routine gynaecological examination.

V. Gram-stained smears, cervical, vaginal and urethral.

VI. Kahn and Wassermann tests.

I. Age: A.—Children:—Nearly all cases are of vulvo-vaginitis. The most important investigations should be directed towards the establishment of Nisserian infection, next to the exclusion of worms. The history of the child passing worms is useful. Irritation of the anus is very suggestive and examination of the stools conclusive. Occasionally trichomonas, thrush or diphtheria may be responsible.

B.—Adults of Child-bearing Age:—The large majority of cases are cervical in origin, though trichomonad vaginitis and gonococcal vulvo-vaginitis (vulvitis in the non-pregnant and vulvo-vaginitis in pregnant women) are not uncommon. In pregnancy and diabetes, monilia and allied fungus infections are not uncommon. In fact some authorities estimate that 25 per cent of pregnant woman suffer from mycotic infection. The writer's experience is the same. Patients suffering from virginal leucorrhoea will also come under this age period.

C.—Post-menopausal:—Here vaginitis due to pyogenic infection is the commonest lesion. Occasionally trichomonas and rarely gonococcal infection are met with. Cancer, of course, must be kept in mind, though one is inclined to agree with Curtis when he states "that the importance of leucorrhoea as a diagnostic symptom of early cancer has been overstressed."

II. General Examination:—The general examination of the patient is of course important. It is stressed here on account of the systemic conditions that may give rise to leucorrhoea and also because of the tendency on the part of a busy practitioner to skip it.

III. pH Value:—The normal pH value of the vagina is from 4 to 4.5. A simple method of estimating the pH value is by the nitrazine test papers. These papers and the coloured chart for comparison are prepared by Squibb & Co. Though available in the United States, they are not yet available here. The agents, however, say that the nitrazine papers and the chart will soon be available. With this method one can record pH from 4 to 7.5. The writer for the last few years has been using the British Drug House's capillator which records pH values from 4 to 11.

IV. Examination of Fresh Wet Smears:—A drop of normal saline is put on the slide, and a drop of discharge taken from the vagina and/or cervix with a pipette is mixed with the saline. This is examined directly under the microscope with 1/6th

lens, without staining. Care must be taken that no antiseptics come into contact with the discharge before this examination. It should, therefore, be done before the bimanual examination. This is a most useful and simple procedure in the investigation of leucorrhoea. It is particularly useful in the diagnosis of trichomonas, local amoebic, monilia and allied fungus infections. It may sometimes be profitable to stain the discharge with methylene blue particularly where mycotic infection is suspected.

V. Bacteriological Examination:—Examination of smears from the vaginal, cervical and urethral discharges by Gram staining is desirable in every case of leucorrhoea and essential when clinically and from the history gonorrhoea is suspected. A history of gonorrhoea in the husband is of great significance, even if he has been treated and thought to be cured both by the physician and the man himself.

Smears examined microscopically will fall into one of the three grades:

Grade I: Large number of epithelial cells and Gram positive acidophilic bacilli. In these cases, even though there may be a profuse discharge there is no infection.

Grade III: Number of pus cells and enormous masses of cocci both Gram positive and negative and few, if any, epithelial cells. Grade III is a true infection either pyogenic as in senile vaginitis, gonococcal or trichomonad.

GRADE II: Is a mixture of grades I and III. There are occasional bacilli of the acidophilic type and epithelial squames and also pyogenic cocci and leucocytes. Grade II is a mild low grade infection. A few salient features of the various infections will be mentioned along with the treatment under the respective headings.

VI. Routine Gynaecological Examination:—This is of course of the utmost importance.

VII. Kahn or Wassermann Tests:—Syphilis may sometimes cause leucorrhoea. Whenever there is the slightest suspicion of syphilis the blood must be examined.

A case recently under our care well illustrates not only this point but also the importance of thorough investigation in a case of leucorrhoea.

Case Report:—Mrs. M., age 25, Para 2+0.

COMPLAINT: (1) arthritis both knee joints. Unable to stand. Duration 3 weeks. (2) Leucorrhoea.

BRIEF HISTORY OF PRESENT ILLNESS: For the last 3 weeks the family physician was treating the patient for rheumatic or rheumatoid arthritis. As she was not improving a second opinion of a consulting physician was sought. It was at the latter's suggestion that the patient was referred to us in order to exclude the cervix (because of leucorrhoea) as being the septic focus of arthritis.

Examination of the Patient: Family, personal, menstrual and obstetric history revealed nothing relevant. The husband denied having suffered from gonorrhoea or syphilis. The patient looked ill, thin and anaemic and was unable to stand. The temperature was normal. B.P. 100-70. Urine was normal. Gynaecological examination revealed the presence of yellowish white discharge. This discharge was not offensive or frothy and was non-irritating. pH value of the vagina was 5. Fresh wet smear did not show trichomonas or fungus. Cervical and urethral smears were negative for the gonococcus. Microscopically grade II infection was noted.

P. V. and Speculum Examinations:—Ext. parts. Normal. Cervix-erosion round the external os, and Naboth's follicles. Uterus; anteverted, anteflexed, mobile. Fornices: N.AD.

Because of the symmetrical affection of the knee-joints, in spite of there being no other evidence of syphilis, blood was examined for Kahn and found +++. The Kahn test was repeated. The patient's and her husband's blood were both found to be +++. Both the husband and the patient were treated with a course of penicillin and mapharside. The patient did very well on this treatment. Partly because the patient felt well and partly on account of domestic difficulties, the cervix was not cauterised for another 2 months. One is therefore inclined to believe that it could not have been the cause of her arthritis.

This case shows clearly the importance of thorough investigation in case of leucorrhoea. If one had been satisfied with the cervical erosion as the cause of arthritis and a Kahn test had not been done syphilis would have been missed at the time, and perhaps subsequently masked due to administration of penicillin and iodides.

Treatment:—Before discussing the treatment under the various headings, a word must be said about the general management of these patients. The general state of the health must be attended to. For local cleanliness a vaginal douche is advised. The chemicals used for douching are too numerous for enumeration. Our practice is to prescribe either dettol, one tea-spoonful to a pint of warm water, or soda bicarb, and sodium chloride, one tea-spoonful each to a pint of warm water. Where the discharge is purulent or sticky the latter is chosen, otherwise the former. It is immaterial what chemical is used for douching. But what is important is to specify the strength of the chemical to be used, as it is rather common for women to use unnecessarily high strengths, which probably do more harm than good. On the whole it is wise during pregnancy to avoid a vaginal douche and, if needed, it should be a low one, the can being placed not higher than a couple of feet. It is a popular misconception that a douche should not be taken during menstruation.

Vulvo-vaginitis of Children:—Schaffler et al. who studied 256 cases of this type with different treatments both local and general—Silver nitrate ointment locally, Metaphen and Acriflavine (1: 500) suppositories, Azochloramide in oil, cold quartz light, Theelin (P.D. & Co.) Amniotin (Squibb's) sulfonamides—came to the conclusion that silver nitrate ointment gave the best results and sulfonamides the next best. They found oestrogenic and other therapeutic agents unsatisfactory.

Before the advent of penicillin the arguments regarding the treatment of this condition raged around the comparative values of oestrogenic treatment (parenterally and/or locally) dextrose suppositories and sulfonamides. The advisibility of not using oestrogens in the child is evident. The superio-

rity of penicillin over the sulfonamides is well established. Now that penicillin is freely available there is no doubt that it is the best treatment, both parenterally and locally. For local use Ca Penicillin 500 units per c. c. should be used.

Where the cause is worms, of course, the patient must be treated accordingly.

Virginal Leucorrhoea :—These cases are non-infective in origin. Bourne thinks they are due to hyper-oestrinisation of the cervix, a sort of trachellopathia. Such patients as one has seen have not been examined bimanually or per speculum. One is not therefore in a position to say from one's own experience what the cervix feels or looks like, whether the so-called congenital erosion is present or not. It has also struck one that none of the patients seen, had any other symptoms of excess of oestrin. Those few patients who had to be curetted for puberty menorrhagia invariably had a normal looking cervix. The patients seen had been in poor health, without exception. Therefore, without denying the possibility of congenital erosion as the aetiological factor one is inclined to the view that poor health is more important. It might be mentioned that the possibility of masturbation should be kept in mind, particularly where the labia minora are found to be hypertrophied. The history in these cases is fallacious.

If at all one examines these patients gynaecologically, it must be done under anaesthesia.

Treatment is entirely on general lines with injections of liver extract, with vitamin B complex and iron by mouth.

Endocrine treatment has proved entirely disappointing. The hormone mostly tried was progestin. Bickers however advocated thyroid extract in these cases on the assumption that it may act as an antioestrogenic, an assumption difficult to believe.

If it is decided to examine the patient under anaesthesia it would be wise to keep the cervical dilators and the electric cautery ready, so that in case the so-called congenitial erosion was discovered one could at once proceed with dilatation up to Hegar No. 4 and cauterisation. That would spare the patient another anaesthetic.

Child-bearing Age :—(1) *Cervicitis* :—Cervical infections may result from primary invasion by the gonococcus or may be caused by invasion of pyogenic organisms, post partum, post abortum, or after instrumentation.

Acute Stage :—The Treatment of leucorrhoea in these cases is overshadowed by the treatment of the causal factor. Penicillin and sulfadiazine are of the utmost value. For the relief of pain, sitz baths and opiates are used. Fowler's position for drainage and low vaginal douches and glycerine-mercurochrome instillation for cleanliness are useful measures.

Chronic Stage :—In the chronic stage the treatment is topical either by application of silver nitrate, mercurochrome, etc., or the electric cautery. The writer agrees with Bland and Rakoff that these applications are of very limited use. The writer has now completely discarded these applications.

The electric cautery is undoubtedly the best treatment for chronic cervicitis. There are various techniques used in cauterising the cervix. The one the writer has found most useful is to make 5-6 linear strokes a couple of mm. apart starting from a little inside the external os and extending to the whole extent of the erosion and separately puncturing the Nabothian follicles. Where endocervicitis is suspected it is wiser to dilate the cervix and then cauterise, to avoid any danger of stenosis resulting in haemato—or pyometra. As a rule cauterisation can be performed without any anaesthesia. Occasionally one does come across patients who demand an anaesthetic. Plugging the vagina with pantocaine 2 per cent for 5 minutes serves the purpose admirably. If the patient insists on being put to sleep gas, trilene or sodium pentothal may be used.

The precautions to be taken are, to avoid sepsis by the application of pure Dettol before starting the cautery, and a thorough cauterisation. For avoiding haemorrhage which may occur on the 6th or 7th day, rest in bed is advised. The patient must be advised to take a douche daily and come again after two months. Extensive erosions may need another cauterisation, which is done after two months.

Cauterisation will not be an adequate treatment in cases of extensive erosion of the cervix or endocervicitis. Here the choice of treatment is between conisation, as advised by Crossen or surgery, either a trachelorrhaphy or amputation of the cervix. The writer has no personal experience of conisation and has invariably resorted to surgery.

Trichomonas infection :—Trichomonas infection is very common in the western countries. It is not so common here; this is hard to explain. Green-Armytage who has had extensive experience, both in the East and the West, attributed the higher incidence in the west to the extensive use of contraceptives.

The only certain way of making a diagnosis of trichomonas infection is by finding it in the discharge examined microscopically. Repeated examinations are often necessary before finding it, and examinations soon after the period are more likely to be successful. One can, however, diagnose the condition with a fair amount of accuracy clinically. A foul smelling purulent discharge, greenish yellow in colour and often frothy accompanied by pruritus vulvae and tenderness in the vagina with punctate haemorrhagic spots, is very suggestive of trichomonas. These patients often complain of dysuria and dyspareunia. Resistance to treatment and recurrence is almost pathognomonic.

Treatment :—The treatments recommended for this condition are legion. That alone shows that the treatment is unsatisfactory. Almost any treatment cures the patient so long as the treatment lasts. Recurrence is the real problem,

The treatment described here and at present followed by the writer is based on the treatment practised at the Lahey Clinic with slight modifications. The patient is given the following instructions :

(1) At bed time take a doucheof 2 quarts of warm water into which are added 3 ozs. of ordinary household vinegar. The douche is best taken lying down and in such a way that the vagina is distended every now and again.

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(2) After the douche introduce a Desulan tablet high into the vagina and leave it there. Desulan tablets contain sulfonamide, Pyridine, mercuric chloride, lactose and carbohydrates.

(3) Do this every night for six weeks and every other night for the next six weeks.

(4) During each day of the menstrual period take the douche in the morning and at bed time and insert two tablets into the vagina.

(5) Once a week during this treatment the vagina is insufflated with either Cade's or John Wyeth & Co's insufflator. The powder used for insufflation contains Kaolin, acriflavine and sulfathiazole. When silver picrate was available the powder used was equal parts of silver picrate and sulfathiazole. Before insufflating, the vagina is cleaned with hydrogen peroxide and dried. There is no danger in vaginal insufflation. The three fatalities reported by Brown, and Pierce, and Patridge, were all cases of pregnancy. Pregnancy is an absolute contraindication to vaginal insufflation. Menstruation and vaginal bleeding are also contraindications.

The writer has had very satisfactory results with this treatment. He is aware that the number of cases (four) thus treated is small, and, what is more important, the time that has elapsed since the completion of the treatment is too short to correctly assess the value of this treatment. Nevertheless there is no doubt in one's mind that this is so far the best treatment.

Bohme gives the following causes for failure of this treatment :

(1) Improper taking of the douche.

(2) The tablets either were lost or were introduced in such a way that they did not dissolve.

(3) Some patients cannot overcome their dislike to douching during the period.

Amoebic Vaginitis :—Is clinically very much like trichomonas but not so severe. The diagnosis rests on finding the amoebae in the discharge. The writer has seen two such cases. The treatment is on the same lines as trichomonas except that in addition to the local treatment the general treatment for amoebiasis must be given. In future it is proposed to treat these cases with vioform and sulfathiazole powder insufflation.

Mycotic Infection :—This is common in pregnant and diabetic women, in the former due to lactosuria, and in the latter due to glycosuria. It is, however, not uncommon in the nonpregnant and nondiabetics.

The charcteristic clinical picture is the presence of discharge which is usually scanty and curdy. The patient complains of pruritus but not to the same extent as in trichomonas infection, and sometimes of soreness of the vulva.

The diagnosis is of course made by the microscopic finding of the hyphae and blastomeres mixed with pus and epithelial cells.

There are numerous treatments in use. Gentian violet is undoubtedly the drug of choice. Solutions both aqueous and alcoholic, in strengths varying from 1 to 5 per cent have been recommended. Two per cent aqueous solution has given very satisfactory results in one's experience. Bland and Rakoff prefer equal parts of gentian violet and acriflavine 1 per cent. Where diabetes is present of course it must b treated.

Foreign bodies :—The varieties of foreign bodie causing leucorrhoea is of course legion. Foreign bodie are introduced by the physician or the patient hersel The foreign bodies commonly found in practice ar (1) Neglected pessaries. Time and again one see patients with pessaries, who have not taken a douche either because the attending physician did not advis them to do so or because of carelessness in carryin out the instructions.

(2) Neglected vaginal plugs. Neglect either o the part of the doctor, nurse or the patient herself (3) "Lost tampax"—"And I thought I had droppe it," is what the patient said when it was removed (4) Hysterical women and sexual perverts may us any sort of article for their satisfaction.

The treatment in all these conditions is evident

The discharge following fistulae is self-evident The treatment is surgical.

Senile Vaginitis :

This is endocrinal in origin, Due to hypo-estrin isation atropic changes occur in the vagina in the pos menopausal period and make the patient vulnerble t non-specific infections resulting in purulent discharg Pruritus usually is a prominent symptom. One mus of course beware of cancer at this age period.

Estrogens are a specific remedy for this condition. The best way is to administer stilboestrol 0. 5 to 1 mg. a day orally and also to use vaginal suppositories The patient must be warned against the oestrin with drawal bleeding which may unduly alarm her.

The Local Treatment of Furunculosis with Penicillin :—By JOHN H. LILES, *U. S. Naval Medical Bulletin, July—August. 1947.*

The furuncle is among the most common abscesses of the skin. Its treatment was a problem when lancets were still being made of wood, bone and stone. Methods of treatment of the furuncle are legion. Practically every medicament known to man has been applied in one form or another with watchful expectancy. Regardless of the weird concoctions to which it has been subjected we still depend upon the fact that the uncomplicated lesion will heal spontaneously in from 1 to 3 weeks. Because of this fact we have come to assume a false sense of security. The complications arising from neglected furuncles are more frequent than one would expect. Deaths are still occuring every day. The report by Theis and Frazier of a case of fulminating hemolytic staphylococcus aureus infection arising from a furuncle is an example of the perilous course such a neglected lesion may take.

The furuncle, or boil, is generally described as being an abscess of the skin involving a hair follicle or sweat gland. It may occur alone or there may be several lesions. The posterior aspect of the neck where the hair is most abundant, the buttocks, the thighs, and the axillae are the most common sites. The gross appearance of the furuncle is so well known that its description is unnecessary.

The etiology of the furuncle is not completely understood. In some cases the lesion appears to arise as a result of mechanical, chemical, or thermal irritation of the skin, or a combination of these. In other cases there is evidence to indicate that it may result from general disturbance of the normal metabolism of the skin with subsequent disruption of the antibacterial barrier. The organism most often isolated from these lesions is the staphylococcus aureus.

Probably the most popular treatment in recent years has been the application of heat to the furuncle to localize it, followed by incision if spontaneous rupture of the overlying skin did not provide sufficient drainage. The classical crucial incision results in a cicatrix that in many instances is quite extensive and disfiguring. The inadequately treated furuncle may be the source of satellite lesions, carbuncles, or result in septicemia with a grave prognosis. It is therefore highly desirable that the furuncle be treated early and adequately.

In penicillin, now available at a reasonable price, we have a drug which far surpasses any other in the treatment of furunculosis. That it is most effective when brought in direct contact with susceptible bacteria, is a fact that was established early in the history of the drug. The intramuscular route of administration will bring penicillin in contact with the bacteria within the furuncle, but in order to maintain an adequate blood level without using a special vehicle for the penicillin requires frequent periodic injections which is a decided disadvantage.

Topical application of penicillin does not result in bringing the drug in contact with the bacteria deep within the furuncle, since penetration of the skin is minimal and the opening, if any, is usually occluded by exudate.

Local injection of the penicillin directly into the furuncle is the only means of delivering the highest concentration of the drug to the desired site with the lowest total dosage. This method of treatment was begun by the author at a U. S. Naval Hospital in September 1945, and the first 50 cases, together with a separate series of 14 similar cases treated by local injection, moist heat, and incision only, from the basis for this report. Attention is invited to an excellent report by Rose and Hurwitz dealing with the regional injection of penicillin in local infections in which they included 2 cases of furunculosis,

A solution of penicillin containing 20,000 units per cubic centimeter was the most frequently used. A 2-cc. syringe was used with a 1-inch, 26-gage needle, it being found that the introduction of a needle of this size causes very little pain. Insertion was made at an angle beneath the skin at the primeter of the furuncle just beyond the area of erythema. The point of the needle was then directed to the center of the base of the lesion and from 0.5 to 1.0 cubic centimeter of the penicillin solution was injected, the amount being dependent upon the size of the lesion. If the furuncle was at the stage of pointing, the increased pressure would frequently cause the top to rupture and the injected fluid could be seen emitting from the opening together with a varying amount of exudate. The needle was then withdrawn. If the cap of the pointed lesion was too tough to rupture spontaneously at the time of injection it was nicked aseptically with the point of a sterile hypodermic needle. Extensive incision was unnecessary and felt to be undesirale. A small, dry sterile piece of gauze was the only dressing spplied.

A furuncle of average size, treated in the above described manner, usually showed marked regression in 24 to 48 hours. Often at the end of 72 hours it was difficult to find any trace of the furuncle except for a very tiny pit in the skin. If the furuncle did not show marked regression the day following injection, it was injected again. Even with quite large furuncles it was seldom necessary to inject more than twice. The average lesion required only one injection. Exudate from these was thin and small in amount. Furuncles in all stages of development were injected with equally good results. Those injected in the early stage seldom came to a point and as a rule disappeared rapidly. The alleviation of pain within 12 to 24 hours after injection was noteworthy. Except in a few instances, no attempt was made to identify the pathogens. All of the patients were ambulatory. The average healing time for a furuncle in this series was approximately 4 days.

Case Report

A white male, 20 years of age, was admitted to a U. S. Naval Hospital in September 1945 complaining of a series of painful furuncles in various places on the skin for approximately 6 weeks. At no time during that period was he completely free of them. Certain of the more advanced lesions had been incised from time to time and subsequently healed in from 10 to 14 days. Physical examination revealed the presence of 9 furuncles ranging from small to medium size and in all stages of development. These were located discretely on the thighs' back, buttocks, axillae and posterior aspect of the neck. In all other respects the patient appeared in good health. Routine laboratory examinations of the blood and urine, including a Kahn test, were within normal limits. All furuncles regardless of their stage of development were injected in the manner described above. Forty-eight hours later four of these were almost completely healed. The remaining five showed marked regression and were no longer painful. Seventy-two hours later the original nine lesions were practically healed, but three new ones in an early stage were discovered on the buttocks. These were injected and at the end of 48 hours were found to be healed. A follow-up of the patient 1 month later revealed that no other furuncles had occurred. There were no scars at the sites of the previously injected furuncles.

Control Cases

In a separate group of 14 cases of furunculosis local moist heat alone was applied and incisions made when adequate spontaneous drainage did not occur, and then only when the lesions were localized. The heat was continued after incision. The wounds were kept open by probing as long as the need for drainage was evident. The exudate from these furuncles was thick and copious and there was considerable sloughing. Pain was a constant symptom until the induration about the lesions had subsided. In all cases incised, scars proportional to the size of the incisions and tissue destruction were present after healing of the lesions. The average healing time in this group was approximately 11 days.

Summary

1. In a series of 50 cases of furunculosis in which the furuncles were treated by local injection of penicillin solution, the average healing time was 4 days as compared with 11 days for the controls.

2. The average healing time in the penicillin treated cases was approximately 64 per cent faster than in the controls.

3. The penicillin-treated cases had far less pain, no complications, scar formation was negligible, the lesions drained far less exudate, and the majority required only one injection.

4. Incisions were not necessary in the penicillin treated cases and no special concern was given to drainage.

5. There were no complications attributed to the local injection of the drug.

6. The treatment described is simple and applicable to any naval activity where penicillin is available.

Comment

1. Although a furuncle on the inside of the nose was not treated in the present series it is the author's opinion that in view of the danger of infections in these areas, hot moist compresses should be applied and the penicillin given parenterally rather than locally. One should not hesitate to supplement the local injections with large parenterally administered doses of penicillin whenever indicated, such as in cases showing evidence of a generalized injection.

2. Many cases subsequent to the series reported have been injected with as much as 100,000 units of penicillin in 1.0 cubic centimeter without ill effect. Solutions containing 50,000 units per cubic centimeter are now being used routinely in all cases. The higher concentrations have been found more practical, particularly in the case of paronychial infections of the fingers and badly infected in-growing toe-nails where the elasticity of the tissues is limited. Results in the latter infections have been just as good as in the case of furuncles and no felons have developed.

3. It would seem that in view of the past experience with breast and palmar space abscesses, these too should respond well to local injection with penicillin. It is hoped that this report will stimulate further investigation of this method of treatment in such cases.

4. The simplicity of the treatment described and the excellent results obtained in furuncles makes the use of routine incisions, various ointments, poultices, and sulfonamide crystals obsolete in their treatment.

Penicillin in Skin Diseases : By I. R. MARRE, M.R.C.S., L.R.C.P. *Skin Physician to the Metropolitan, Evelina and Acton Hospitals. From the Post-graduate Medical Journal, August 1947.*

It is now well recognised that penicillin is no panacea, but nevertheless it is a remarkable drug, and clinicians in every branch of medicine have good reason to be thankful for its usefulness in their own spheres. It is superior to the sulphonamides in that it has a greater range of effectiveness against bacterial diseases, in that it is virtually non-toxic, in that it rarely causes sensitization, in that its action is not inhibited by serum, pus or blood.

Certain bacteria are highly susceptible to penicillin, and others less so, while there is unfortunately a long list of insusceptible organisms.

The Medical Research Council list the principal bacteria as follows.

Susceptible

Gram positive cocci :
- Staphylococcus Aureus.
- Streptococcus Pyogenes.
- Other streptococci (except enterococcus)
- Pneumococcus.

Clostridia :
- Cl. welchii.
- Cl. septicum.
- Cl. oedematiens.
- Cl. tetani

Neisseria :
- N. gonorrhoeiae.
- N. meningitidis.

Miscellaneous :
- B. anthracis.
- Actinomyces bovis (variable).
- C. diphtheriae.

Insusceptible

- Proteus.
- Ps. Pyocyanea.
- Coli-typhoid-dysentery group.
- Pasteurella and Brucella.
- Str. faecalis (enterococcus).
- M. tuberculosis.

To these should be added Treponema Pallidum and Spirochaetes (susceptible) and Monilia, Yeasts and Moulds (insusceptible).

It will thus be seen that most of the gram negative bacteria are insusceptible, except for the gonococcus and the meningococcus, but that the main pyogenic cocci, which are the usual cause of septic skin diseases, are highly susceptible. The viruses are unaffected by penicillin, and there seems no point in using the drug in conditions such as herpes zoster and herpes simplex. Indeed I shall show later that in the latter disease it may actually be unwise to use penicillin. Again in allergic and constitutional skin conditions, unless infected, one would expect no favourable response and this is in fact what happens. The fungus infections form a large group of skin troubles which are also unaffected by penicillin.

Penicillin may be administered in a number of ways. Injections may be given intravenously, intramuscularly or subcutaneously, either by continuous

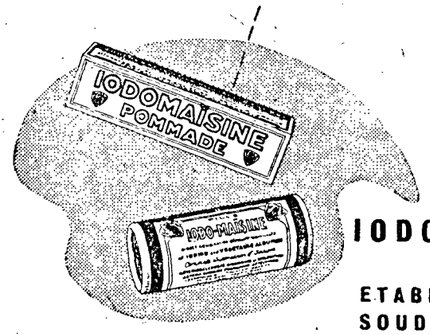
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drip or three-hourly intermittent injections. The three-hourly injections are given in aqueous solution of 15,000 to 20,000 units. For most skin diseases it is sufficient to administer penicillin, where injection is indicated, twice daily, either 300,000 units in aqueous solution per dose, or 150,000 units in oil and wax suspension. My own preference is to give aqueous solutions as three seems to be a rather more rapid clinical response and no liability to local reactions from the suspension which occurs occasionally. Local infiltration and injection have been described, especially for abscesses and carbuncles, but I prefer general administration.

Local treatments are of particular importance in skin diseases and penicillin may be applied by means of creams, ointments and sprays. Creams and sprays are fairly unstable and have to be kept in a cool place or in a refrigerator, and renewed at least every seven days. Cremor penicillini B. P., is a lanette wax cream made up to 500 units per gramme, but I prescribe the cream made up to 1,000 units per gramme, and I think the results are better. The spray should be made up in sterile water at the same strength (1,000 units per c.c.), and kept in an all glass spray, which should be boiled between changes of penicillin solution. Penicillin ointment B.P., is an ointment of wool alcohols (500 units per gramme) which is said to keep for months at room temperature, owing to its anhydrous constitution. This is a greasy ointment and must be used with care, and again I use this at double strength.

Although the spray is perhaps the most difficult to keep at home, I find it the most effective treatment if used often enough—three or four times daily, and allowed to dry on. It is certainly very effective in the superficial coccal infections. All the preparations should not be contaminated with the finger or an unsterile spoon or spatula, for fear of introducing insusceptible organisms. Cream or ointment can be removed from the container with some instrument which has been held in boiling water, and then cooled rapidly in the air. If crusting is severe, this may be gently removed by oil packs or boro-starch poultices, but mild crusting may be left to dry or fall off in the course of treatment.

Penicillin appears to be absorbed by the gastro-intestinal tract, but to obtain any sort of concentration in the blood it is necessary to give very large quantities, at least five times that by injection. The method is uncertain, and is not used routinely, although work is being carried out in this direction. Mouth infections do respond to lozenges (Trochiscus Penicillin B. P.), which contain 500 units per gramme, but persistence with this form of treatment for more than a few days results in a glossitis.

Cultures of organisms from septic skin areas should be routine in hospital, together with testing for penicillin sensitivity, but treatment of severe and acute cases should not be held up on this account, but should be started as soon as the culture has been taken In general practice it will be difficult to do this, and, in view of the fact that most pyodermias are caused by sensitive organisms, full treatment may be given at once.

Impetigo Contagiosa

This extremely common disease is to be found in infants as impetigo (pemphigus) neonatorum, a bullous staphylococcal eruption which spreads rapidly, and is very contagious. In older children and adults the typical streptococcal impetigo with its honey-coloured 'stuck-on' crusts is more usual, or the deeper bullous staphylococcal type. Early cases respond well to local therapy in the shape of cream or ointment applied three times daily, but in more severe cases injections as well may be needed. In impetigo neonatorum careful snipping of the blisters before applying the cream aids recovery. Improvement should be noted after the first day or two, and recovery should be almost complete within five or six days. If penicillin has had no effect in this time, the treatment should be changed, as the organism is likely to be insensitive. It should be borne in mind that impetigo is often secondary to scabies, pediculosis capitis or vestimentorum, a discharging ear or some other focus of infection, and that the impetigo will recur unless the primary condition is treated subsequently. All cases of impetigo should be carefully investigated for infestation or foci of infection.

Furunculosis

Boils are staphylococcal abscesses originating in and around a hair follicle. Carbuncles may be described as a group of boils in close proximity, becoming one large circumscribed mass with a few openings through which pus discharges. Where the boil is single and small, local application of penicillin cream or ointment may effect a cure, and will prevent the spread of secondary boils in the area. Where boils are multiple and large, systemic penicillin should be administered, possibly accompanied by local treatment as well. After the attack has been dealt with, an autogenous or stock staphylococcal vaccine is of great value in raising resistance against and should be given routinely in a case of any severity.

Sycosis Barbae

This is a staphylococcal folliculitis of the bearded area, and is often known as barber's rash. The response to this disease is on the whole good, and local treatment is usually sufficient, unless the degree of infection is unusually severe. For the purposes of treatment it is sufficient to divide sycosis into three groups.

(a) Primary infection, or following on a superficial infection such as impetigo.

(b) Infection secondary to other local foci, particularly septic conditions of the mouth and gums, of the nose and nasal sinuses, and of the ear.

(c) Infection following on seborrhoeic dermatitis,

Local treatment with the first group usually shows a dramatic response with little tendency to recur unless the condition is long standing, and the deeper parts of the hair follicle have become infected. In these more chronic conditions treatment must be persisted with for weeks or even months, and for some time after apparent cure, and the final result is satisfactory. In the second gronp an equally satisfactory result is obtained temporarily, but unless the primary focus is appropriately treated the condition will of course recur. In the third group the secondary folliculitis shows great improvement for a few days, but frequently at this stage the seborrhoeic condition (see seborrhoeic dermatitis below) becomes exacerbated

by the local application of penicillin with the production of an acute dermatitis. In cases therefore with a primary seborrhoeic basis, after four or five days of local treatment with penicillin, vigorus anti-seborrhoeic treatment, will complete the cure.

Acne Vulgaris

Acne is a constitutional disease, and does not itself respond to penicillin. In the infected, pustular types of acne a short preliminary course of local treatment is useful to clear up secondary infection, but must be immediately followed up by attention to the acne.

Seborrhoeic Dermatitis

This too is a constitutional disease, and one would not therefore expect it to respond to penicillin. In many cases there is no effect, but in a number of cases, patients with this condition show a marked sensitivity to penicillin, with an acute exacerbation of the disease. Where the seborrhoeic dermatitis is infected it is justifiable to use local penicillin for a few days only, to be followed up by the usual seborrhoeic treatments. It is my practice never to use penicillin in uncomplicated seborrhoeic dermatitis, and, when infected, only under the strictest supervision and for a limited period.

Otitis Externa

This common and acutely uncomfortable condition has not, in my hands, responded to penicillin, either by local or general medication, or both. Many of the cases are associated with a seborrhoeic dermatitis and on that account do not respond. In others there is an associated otitis media which needs attention. The largest group, however, has neither middle ear disease nor seborrhoeic dermatitis, and is often complicated by recurrent furuncles in the meatus, but nevertheless does not seem to respond to penicillin, possibly because of the great meatal swelling and interference with the blood supply. I find packing and the antiseptic dyes a more satisfactory treatment.

Echthyma

This is not an uncommon condition found usually in children suffering from malnutrition, but occasionally in adults as well. It is seen as isolated lesions chiefly on the legs and thighs, commencing as a reddened papule which becomes vesicular and then covered with a dirty looking crust. When this falls off or is removed, a small superficial indolent ulcer is formed, often surrounded by an inflammatory halo, and healing is usually slow. If the crusts are removed, however, and penicillin is applied locally two or three times daily, healing is greatly accelerated with satisfactory results.

Leg Ulcers

In this country these are mostly due to circulatory disturbances, and particularly to varicose veins. I have found penicillin cream of great use in these cases if used for a period of some seven to ten days, when the ulcer becomes much cleaner. After this time I discontinue penicillin and revert to the more usual treatments (always including some form of bandaging to reduce oedema) with good results. To continue for longer than two weeks with penicillin leads, in my experience, to a slowing down of the healing processes. Granulation tissue seems to become inhibited and there is also a tendency for penicillin resistant organisms to grow in the ulcer. Where there is much dermatitis surrounding the ulcer penicillin must be used with care, as occasionally an exacerbation of the dermatitis is caused by the penicillin. Reports on the treatment of tropical ulcer with penicillin have been very favourable, and this seems to be the treatment of choice in this condition.

Infectious Eczematoid Dermatitis

This a condition of acute dermatitis in the form of a plaque or plaques, made up of erythema, vesicles, pustules and crusting and spreading peripherally. The edge is often undermined or raised, and exudes seropurulent fluid. The patient may be undernourished or give a history of some small trauma. The condition often proves resistant to treatment, and although penicillin has improved the position, most of the cases still respond very slowly, and if the condition is at all extensive or affects the legs, treatment is best carried out in bed. I have a personal preference for the antiseptic dyes together with rest and tonics.

Eczema

Eczematous eruptions generally of whatever types do not do well on penicillin. Unless infected, conditions such as infantile eczema, exogenous (contact) dermatitis, nummular eczema and the eczematides are either unaffected or exacerbated. Cases have been described[5] of vesicular eruptions actually occurring during the administration of penicillin, and it is wiser, in the absence of specific indication, to avoid the drug in these cases.

Fungus Disease

These appear to be totally unaffected by penicillin, unless secondarily infected. Treatment with penicillin of secondary sensitization eruptions due to fungus often leads to an exacerbation of the condition.

Virus Conditions

Whereas there is some proof that infected virus conditions of the skin may be improved by penicillin, and a case of infected herpes zoster was so treated, uncomplicated cases of zoster and varicella are unaffected. I have now come across four cases of herpes simplex treated previously with local penicillin where the condition has spread under the influence of the treatment. One case I saw after three weeks of treatment had an extensive herpes simplex spreading over almost half the forehead. In endeavouring to account for this it seemed to me logical to assume not that the virus lived better in an atmosphere of penicillin, but that the normal mild secondary infection which usually occurs when the vesicles rupture, was prevented by the action of the penicillin. It is very possible that the virus is killed by the secondary pyogenic organisms in the normal event, and when this is prevented by penicillin, the virus spreads.

Other Conditions

Conditions such as psoriasis, lichen planus-pityriasis rosea and pemphigus, where the aetiology is unknown, are unaffected by penicillin.

Venereal Disease

Details of these treatments must be sought elsewhere, but gonorrhoea usually responds dramatically to penicillin, as does the early (treponema positive sero-negative) case of syphilis. Late primary, secondary and tertiary syphilitics are also given a full preliminary dose of penicillin, with considerable clinical improvement, but this is now usually followed up by treatments of varying lengths with asenic and bismuth.

Reactions

These are uncommon but do occur. Some of the reactions have been put down to impurities in the drug, and as the purer penicillin comes to be used, these may become less. True contact dermatitis has been reported, especially with workers with penicillin, but the usual manifestations are erythema, urticaria and a serum sickness type of reaction. Herxheimer reactions have been reported in cases treated for syphilis. Patients with seborrhoeic dermatitis often respond badly to penicillin, as do others with allergic or sensitization eruptions, resulting in an exacerbation of the condition. On a number of occasions, I have seen a local urticaria with penicillin in oil and was suspensions, but the usual reaction to the drug is a widespread and generalized urticaria, which fortunately responds well to 'Benadryl' capsules (50 mgmx. three times daily).

ABSTRACTS

Vitamin 'A' in Infective Hepatitis. Harris, A. D., and Moore, T.: B M. J. 1: 553-557, (April 26) 1947.

The liver is the store-house in the body for Vitamin 'A'. Therefore the liver diseases may interfere in various ways with Vitamin A metabolism and activity in the body. Observations were made on plasma Vitamin A and carotenoids at various stages of the disease in patients suffering from Infective Hepatitis, which showed that plasma Vitamin A value is much low in early stage of the disease and unusually high during convalescence.

The duration of anorexia in Infective Hepatitis did not seem to influence plasma Vitamin A. Higher mean values however were found in patients under 25 years, than those over and for those who showed no significant fever. But the fact should be borne in mind that severity of the disease is greater in the aged.

Plasma Vitamin A showed improvement with Hippuric acid synthesis test-improvement or even when it was stationary and Serum billirubin was rising. The plasma prothrombin returned to normal in general parallelism with plasma Vitamin A.

In normal subjects the plasma Vitamin A rises after massive doses of Vitamin A within 24 hours. In Infective Hepatitis the blood plasma did not show any rise in Vitamin A contents after the massive doses. In normal subject faeces do not contain Vitamin A even after massive doses, but subjects with Infective Hepatitis showed large quantities of Vitamin A in faeces. In health excretions of Vitamin A in urine is *nil*. In contrast traces were present in urine of patients of Infective Hepatitis. The low blood Vitamin A is not necessarily associated with a depleted liver reserve.

It seems that mechanisms of absorption, storage and subsequent release in blood of Vitamin A are interfered differently and not to the same degree in Infective Hepatitis. Therefore the "absorption Tests" of Vitamin A as a measure of degree of liver injury cannot be interpreted with certainty.

(*Courtesy: Indian Journal of Medical Science.*)

Residual Defects after Sprue. Drew, R., Dixon, K., and Samuel, E.: Lancet 1: 129—134 (January 25) 1947.

Twenty-six cases invalid with sprue were investigated by clinical, radiological, biochemical means to find out the residual defects after sprue.

Of these 26 patients, 12 showed no clinical signs and were well; nine cases showed mild, four moderate, and one severe signs of sprue.

Radiological evidence showed no abnormalities in 13 patients. Bowel patterns in seven patients showed mild changes. Moderate changes were found in seven patients, and two patients showed severe disorganization in bowel patterns.

On biochemical examination of 14 patients only two patients showed definite deficient absorption of fat.

Clinical and radiological estimations in this small number of cases persisted for same length of time, and were of equal value in assessing degree of recovery.

It was also found out that only those patients, who showed little recovery, showed deficient fat absorption.

(*Courtesy: Indian Journal of Medical Science.*)

Palpable Epitrochlear Glands, Incidence and Relation to Syphilis. Martin, L.: Lancet 1: 363, (March) 1 47.

The practice of palpating the epithrochlear glands only in special cases where syphilis is suspected has led to the belief that all palpable epitrochlear glands are abnormal, and suggestive of syphilis.

The author has examined 200 soldiers and 100 civilians for enlarged epitrochlear nodes and found that 42 per cent of the soldiers and 39 per cent of the civilians had palpable nodes, and in 14 per cent of these the nodes were larger than a cherry stone. None of these individuals examined were diseased.

Therefore caution is necessary in declaring in palpable epitrochlear node to be abnormal or enlarged; and there is no reason for attaching any diagnostic significance to them in the absence of other signs of syphilis. They may also be enlarged in other lymphadenopathies.

(*Courtesy: Indian Journal of Medical Science.*)

Persistence of Remissions of Thyrotoxicosis after Cessation of Thiouracil Therapy. Williams, R. H., *et alia* New Eng. Jour. Med. 236: 737, 1947.

The authors present the results in all patients after cessation of thiouracil treatment. Of 111 thyrotoxic patients 51 are in remissions that have lasted for 3 to 31 months; of these fifty-one cases 44 patients are well for over a year after cessation, and 33 for over eighteen months. In the patients who had a relapse after cessation most relapses occurred within a few months, 70 per cent within 2 months, and 88 per cent within 5 months; only one occurred after a year.

As regards the duration of thiouracil therapy it is believed that in most cases the drug should be given for nine to fifteen months. The duration varies with the type of patient and the response. More prolonged treatment is necessary in the following: (*a*) patients who continue to require more than 50 mg daily, (*b*) those whose thyroids enlarge even though no hypothyroidism exists, (*c*) those with increasing manifestations of malignant exophthalmos (*d*) and those with a loud bruit over the thyroid. Early cessation of thiouracil treatment may be considered in (*a*) patients who have in good condition for several months even with a daily dosage of 50 mg., (*b*) those whose thyroid glands have decreased in size during therapy, (*c*) those with no bruit over the gland, (*d*) and those who maintain a normal metabolic rate in spite of discressing situations.

Experience has shown that females with small goitres and mild thyrotoxicosis have good remissions that persist. Males, and patients with severe toxicity and large goitres are more resistant. Contrary to the impression of others the authors do not believe nodularity of the gland contra-indicates therapy.

The newer thiouracils, especially propylthiouracil, can be used with relative safety. With increased experience with these compounds, the frequency attendance of the patient for examination can be greatly reduced. However all these drugs are still under trial and hould not be indiscriminately used. Follow up studies of several years are necessary to properly evaluate their place in the treatment of thyrotoxicosis.

(*Courtesy: Indian Journal of Medical Science*)

MEDICO-POLITICAL SUPPLEMENT

TO

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Thought for the Month.

What we contend is that the purposes for which these separate systems with separate standards of medical education are fostered have not been and could not be realised; that this miscarriage of purpose is due to the defective and partial conception of the back-ground of medical education; that medical education should be viewed as a whole and not in parts; and that it should be based not on historic violence but on reconciliation and absorption. Working on these premises and taking stock of the chaotic conditions of today, we cannot but arrive at the conclusion that the content of medical education of the future should represent a scientific synthesis of ancient and modern medicine in our country—INDIAN MEDICAL JOURNAL Feb. '44.

LEADING ARTICLE

The New Director General of Health Services

The appointment of Dr. Jivaraj Mehta as the Director General of Health Services and Secretary to the Health Minister of the Government of India has been hailed by the profession as one of excellent choice. He was the dean of Seth Govardandas Medical College, Bombay, for more than eighteen years; thrice unanimously elected as the President of the Indian Medical Association —in fact it may be said he is the true architect of this association; led a strong and sustained agitation against the imposition of the Indian Medical Service on the civil side with all the key posts under its control; and above all he heartily identified himself with the political struggle led by the Congress, suffered and sacrificed much in the cause of our country's freedom. It is no wonder the Central Cabinet has chosen him as the head of the citadel which he has successfully

stormed. We are sure his great intelectual ability, moral integrity and inside knowledge of the profession will make him one of the finest medical administrators. Our profession needs such a man at this fateful juncture of our history. We congratulate him on this appointment and wish him every success in his undertaking.

We may be pardoned however if we remined him of the three immediate tasks ahead—he knows them as much as we do and more. The first task is the re-orientation of medical education in our country. It is at present suffering from a heavy and burdensome curriculum, too academic from its beginning to the end, and too far removed from the actual work which the practitioner will be called upon to do when he enters medical service or practice. These defects should be removed or remedied at the earliest possible moment and a fair balance of academic and practical education established. It is also equally necessary to have only one scientific system of medicine, incorporating in it all that is best and valuable in indigenous medicine. In the very interests of effective medical relief, our country cannot afford to have a multitude of warring systems of medicine. This is indeed a delicate question which can be solved not by dogmatism but only by a fair compromise, and Dr. Mehta is the best man to have this compromise effected and established to the credit of the profession and the glory of our country. We can trust him to do this job to the satisfaction of all concerned.

The second but not less important than the first task is the implementation of the recommendations of the Bhore Committee as far as possible and subject to such modifications as called for by local needs and conditions. The fundamentals of its scheme of primary, secondary and district centres, and of administrative co-ordination between the different strata of medical organisations and centres, and the provincial ministry of health, are quite sound and do not call for much change. We do hope and trust that Dr. Mehta will set the ball rolling as early as circumstances permit. We know that the full energy of our Central Government is now bestowed on the Punjab communal disturbances and the refugee problem, and they have really no time to think of any other question at present. When conditions become normal in that part of our country—and we hope normalcy would be restored by the next few months—we are certain that Dr. Mehta will apply himself to the task with his usual purposive vigour and pertinacity.

The third task is in the proper shaping of the Indian Medical Council Act in such a way that all the practitioners registered by the Provincial Medical Councils would be recognised and registered by the Indian Medical Council. This question has been debated with much heat and acrimony in the past. But, barring a few dissentient voices, the organised medical profession in our country has always been demanding at every one of its conferences the unification of profession by means of common medical registration and a general medical electorate based on such registration. Whatever might have been the difficulties in the past, there exists none at present, and so far as Indian Dominion is concerned licentiate medical education has been abolished in its provinces. The question of reciprocity should also be worked up with vigour and impartial strictness. No nationals of other countries who do not recognise the qualifications recognised by our Council should be allowed to practise in our country. The composition of the Council should also be made more democratic than at present.

All these require time, and we hope that when the propitious time arrives, Dr. Mehta will initiate his programme of action in these and other matters. We advisedly use the words : propitious time, and that time is when a new constitution is framed for both the centre and the federating units, and when Governments are formed under this constitution. Earlier than this, it is not possible to act with effect or uniformity. Let us therefore be patient and not harass Dr. Mehta for immediate action which, in our view, is not possible or feasible in spite of his best intentions and ardent desire to effect the necessary reforms. The stage of agitation has gone. The Government is our own. The heads of the department are our own men with a desire and will to serve the country. Let us offer our hand of co-operation by constructive suggestions, and the things will be done, not merely because we ask for them but also because they are good to the profession and our people.

OTHER ARTICLES

Public Health Organisation in Malaya

BY

Dr. C. SIVA RAMA SASTRY, L.M.F.,

Formerly Medical Officer, Congress Medical Mission to Malaya, Tenali.

Introduction :—Serving about three lakhs of outpatients a year in the land of 5½ millions of population, the Malayan public health administration stands as one of the best in the East.

It is really creditable for the public health staff of Malaya to have successfully conquered the three common causes of death in the tropics viz. cholera, typhoid and small-pox.

Mere rules and regulations are not the guiding force of the Malayan Public Health System. The high sense of duty, moral responsibility, and discipline of the Health and the Medical Staff of Malaya determine the efficiency and the benevolence of the preventive and the curative aspects of medical aid.

General Survey of Malaya :—Malaya is a land of jungles, recently developed. It did not have much of ancient institutions, villages or even population. Most of its present inhabitants too, even inclusive of a vast majority of Malays from Indonesia are only foreigners settling in Malaya. Because of its recent origin the whole nation could be developed according to a well chalked out plan. The one sixth of Malaya that is so far developed, is along a trunk road running from Alor Star in the North to Singapore in the South. Parallel to this road, runs the Malayan Railway chain of communications. The rich returns on the plantations contributed a great deal to development of excellent communications and these in return brought medical aid nearer home to each worker of Malaya.

Unlike what it is in India, most of the agriculture is industrialised. Consequently the workers, instead of being thrown on tiny fragment of land hither or thither are all pocketted in large estates and well provided with good communications. These estates are under law compelled to contribute their share to the upkeep of the medical system.

The Organisation :—Each plantation and mining area maintained a first aid centre run by a dresser. Dressers are of three categories in accordance with the training that they receive and the examinations they pass. They are taught the rudiments of medicine but certainly they are not given the training given in India to any medical student, licentiate or graduate. Though the planters, the public and the Medical Officers admit that the licentiate from India is as efficient as the L. M. S. of Singapore, if not more, law prevents him from being recognised as a medical practitioner whereas an apothecary from England can hold the Chief Medical Officer's post. Before the year 1937 even a medical graduate from India was not allowed to practice in Malaya unless he held an L.R.C.P. diploma. In the legal field an M.A.B.L. from India is not allowed to practice law while any bar-at-law without even a matriculation certificate can practice law. Mr. K. F. Nariman, when he visited Malaya last year to defend the I. N. A. victims, had to obtain special permission of the Government to appear in the court because he was a mere B.L. That is by the way.

The dresser treats the patient for all minor ailments. If the disease be serious or if it runs for a longer period than three or four days, he is to refer the case to the Group Hospital.

The Group Hospital is run by a group of estates. Each group hospital has some beds and a Medical Officer in charge. The Medical Officer in charge has to look to, not only the curative aspect; but also the preventive aspect of medicine. He is also a Health Officer and has to supervise drainage, vaccination, food supplies etc.

All surgical and infectious cases are directed from the Group Hospital to the better equipped Government Headquarter Hospitals situated in the district head-quarters. Infectious diseases are treated separately in separate wards and hospitals.

Lepers are segregated and at Singapore leper settlement some of the convalescing patients are made to serve in some useful avocations of life.

Lunatics are segragated and about 1500 patients are accomodated and treated in the Mental Hospitals after classifying them into various categories. Psychotherapy is also in vogue.

Specialised treatment is given to tuberculous patients in isolated sanatoria.

Quarantine is strictly enforced and vaccination is done with full faith and sincerity.

Public Health Workers :—Unlike what it is in some parts of India medical and public health services are merged into one in Malaya. A Health Officer of today may be a Medical Officer of tomorrow. This is of definite advantage, since the Health Officers are in touch with clinical medicine and cannot underestimate the importance of preventive medicine as an adjuvant to curative therapy. Herein lies the key to the success of the Malayan Medical System.

Before war, Malaya was made free from the incidence of cholera, typhoid and small-pox which were at one time highly prevalent. This was achieved by the Malayan Health Staff, which was mostly Indian, by virtue of their devotion to service.

The various district hospitals and the health units are controlled by the Chief Medical Officer at Kuala Lumpur, the capital of Malaya. The medical personnel, dressers and nurses are trained in the King Edward Medical College at Singapore. No post-graduate training facilities are available for doctors in Malaya. Services are divided into two—the European and the Asiatic. Most of the higher posts such as the D. M. Os are reserved for Europeans and a few favoured group of Asiatics. Asiatics have to be content with subordinate posts in the medical services.

Public Health Services in Soviet Azerbaijan

BY

KUBRA FARADJEVA,

Minister of Public Health of the Azerbaijan SSR.

The post-war Five-Year plan for the Soviet Azerbaijan Republic includes a large section devoted to public health services. By the end of the Five-Year Plan there will be 16,600 hospital cots in the republic. This exceeds the pre-war number of accommodations by more than 5,000. New hospitals now under construction in Azerbaijan towns and villages will accommodate more than 2,000 patients. The net work of maternity homes is being expanded. The number of accommodations in rural maternity homes will be doubled. New sanitary-epidemiological stations and pharmacies are being opened. In addition to the restoration of the pre-war network of sanatoria and rest homes, new sanatoria will be opened in the vicinity of the mineral springs in Isti-Su in the southern part of Azerbaijan and in Surakhany (on the outskirts of Baku).

The Ministry of Public Health is energetically carrying out this plan in practice. Care for mothers and their children ranks first. All mother-and child consultation centers in the republic are being equipped anew. Every expectant and nursing mother is under the constant observation of the nearest consultation centre. There a record is kept of every newly-born baby. From time to time the mother visits the consultation centre and sees the same doctor. Whereas earlier these centres were chiefly concentrated in the cities, they have been opened and are functioning in the larger rural areas.

There is a permanent medical aid station at every Soviet enterprise. Rural medical aid centres are set up in places which can be reached from any inhabited point without any trouble. Particular attention is being devoted to specialised medical aid in the post-war period. Set up and functioning today are new laboratories for diagnosis which are fitted out with first-class X-ray and physiotherapeutic installations. At industrial enterprises in Baku, where a considerable number of workers are employed special medical units are being formed. At the same time new medical institutions have been opened on the major construction sites of Azerbaijan, where thousands of people are now working.

During the war the medical workers of Azerbaijan rendered tremendous aid to wounded servicemen of the Soviet Army. Suffice it to say that more than 70 per cent of wounded soldiers treated in Azerbaijan hospitals were restored to the ranks fully recovered. Attention is now concentrated on the medical service and maximum rehabilitation of the capacity for work among war invalids. The latter are now being treated by specialists. They are registered at dispensaries for regular treatment. Suitable employment has been provided for the invalids in the republic. This has been accomplished with the aid of administrations of enterprises and social maintenance organisations. Those invalids who were unable to return to their pre-war occupation were taught new trades most suitable to their physical condition. These invalids continue to be under the observation of medical institutions all the time.

A decisive struggle is going on in the republic to eradicate malaria, the scourge of Azerbaijan for centuries. Much was done in this respect before the war. Besides restoring all the institutions linked with the campaign against malaria which existed before the war new institutions have been built. Public health organisations are now engaged in ridding the territory of malaria sources. It must be pointed out here that the Mingechaur Hydroelectric Station now going up in the republic will play an important part in stamping out malaria as well as in Azerbaijan agriculture. The huge Mingechaur reservoir will inundate malaria-infested swamps and thus ttansform the lowlands between the Kura and Araks rivers into a healthy area.

Hygiene was unknown in old, pre-revolutionary Azerbaijan. That explains the large number of diseases due to insanitary conditions. This number has sharply decreased in years of Soviet rule. An energetic drive is now on throughout the republic to eliminate the consequences of the war. The population as well as medical workers, are taking part in this campaign. Improvement schemes are now being put into effect in every village not only at the expense of the state but also with the aid of the inhabitants.

The ranks of doctors in Azerbaijan have swelled in Soviet times. The present number is close to 4,000, where as prior to the revolution there were only 290 doctors, most of whom were practicing in cities. Azerbaijan is proud of its medical institute, one of the biggest of its kind in the country, which is training skilled medical workers. The entire network of secondary medical schools and special medical training courses has been restored and expanded.

Native medical men are engaged in medical science created in Azerbaijan under Soviet power. Considerable scientific work is being conducted by 25 Azerbaijan professors. There are two eminent medical men among the members of the Azerbaijan Academy of Sciences. One of them is Mir Asadulla Mir-Kasimov, President of the Academy.

Protection of public health in Soviet Azerbaijan keeps in step with the great upsurge of the productive forces of the republic, with the growth of its economy and culture and the material well-being of the people.

The Moscow Tropical Institute

BY

PETER SERGIEV,

Director of the Institute.

Covering a vast expanse of territory, the republics and regions of the Soviet Union stretch through the cold and temperate zones to areas with a hot, arid climate such Uzbekistan, Turkmenistan, Tajikistan, Kirghizia, Azerbaijan and so forth.

These regions abound in special species of gnats, ticks and mosquitoes acting as carriers of specific tropical diseases, such as tropical and other forms of malaria, pendinski ulcer, dracontiasis and others.

Before the establishment of Soviet rule in the south of Russia and particularly, in Central Asia, tropical diseases were widespread in those regions and either crippled or killed countless people. The Russian empire did not boast of a single research institution engaged in these questions. The first malaria station, financed by charity, was opened in 1913; it remained the only one of its kind until the establishment of Soviet rule.

In the South-eastern regions doctors also were few and far between. The entire territory of present-day Tajikistan, for instance, was served by one doctor!

Since the former colonial and semi-colonial outskirts of the Tsarist empire have been converted into Soviet Socialist republics forming part of the Soviet Union, the network of medical and research institutions has grown rapidly there as in other parts of the country.

Tropical diseases and means of combating them are thoroughly studied in the malaria institutes, the work of which is guided by the Moscow Institute of Malaria, Medical Parasitology and Helmintholoby of the Academy of Medical Sciences. This institute, called the Tropical Institute in brief, was founded in 1920 and was headed for many years by the eminent scientist, the late Evgeni Martsinovsky.

Subsequently, tropical malaria institutes were founded in Yerivan, Tbilisi, Baku, Ashkhabad, Stalinabad, Samarkand, Kharkov, Makhach-Kala, Rostov-on-Don. The network of malaria stations and posts also grew rapidly and now number almost 3,000 as against one before the Revolution!

The Moscow Tropical Institute has trained over 1,500 specialists in the prophylaxis and treatment of tropical diseases.

All the malaria institutes and some of the malaria stations combine research with prophylactical, medical and sanitary-educational work. Detailed study is made of all diseases in their nidi for which purpose complex expeditions, consisting of specialists in various fields, are sent out. For instance, in the malaria nidi workers from the hydro-biological department of the Institute study the chemical and hydro-biological conditions of the local water reservoirs. Entomologists study the biology of mosquitoes. Protozoologists follow the cycles of development of malaria parasites in man. Clinicists test different forms of treatment.

As a result of all this sufficient data is accumulated for the elaboration of complex measures of combating the local form of malaria in the given region. When the expedition leaves its work is continued by local specialists.

Expeditions from this institute have visited all ends of the country.

The systematic and all-round nature of these researches provided a basis for an equally systematic and all-round struggle against disease. The Institute has elaborated a state plan for combating malaria and, in implementing it, the government assigns vast sums in order to ensure healthy living conditions for the former colonial peoples.

All persons suffering from malaria are obliged to register and to take treatment which is supplied free of charge. The Moscow Institute has elaborated a method, designed apparatus, and manufactured preparations for the destruction of mosquito larvae. Water reservoirs are sprayed from the air with special preparations designed to destroy mosquitoes. Gambusia fish are bred in large numbers as these destroy the larvae of the Anopheles mosquitoes, and it is prohibited to sow rice near inhabited localities as rice-fields, as we know, have to be flooded at certain periods.

A special study is being made of swamp flora, and certain plants have been found which, like the gambusia, are enemies of the mosquito larvae.

However, the most radical measure for the eradication of malaria nidi is reclamation of swampland and the straightening of river beds. This work is being conducted in all parts of the country where malaria is prevalent.

At the proposal of the Institute, anti-malaria indicants have been worked out, these being strictly adhered to in planning new cities and villages.

Research and practical work connected with the manufacture of anti-malaria medicinal preparations is being conducted on an equally wide scale in the laboratories of the Institute. By independent research, our presonnel arrived at the correct doses for the most efficient use of akrichine, an excellent substitute for quinine. The system of prophylactic use of akrichine, as proposed by the Institute, formed the basis for the international standard for the treatment of malaria. Prophylactic and curative synthetic anti-malaria preparations are being successfully applied in a large number of cases.

In all its work connected with the combating of malaria, the institute uses the data supplied by the malaria stations, tropical institutes, its own expeditions, foreign experience and literature, thus creating a scientific basis and paving the way for practical measures to combat this disease in all its forms.

Equally successful work has been done by the institute with regard to other diseases.

Academician Konstantin Skryabin is the founder of the Soviet science of a special group of helminths parasitic within the organisms of man and animals. In conjunction with the Institute of Helmintholoby workers of our Institute have elaborated methods of destroying the helminths and curing the sufferers. Like the anti-malaria measures, this struggle is conducted on a country-wide scale.

A comprehensive study has been made of the localities infested by various breeds of gnats and measures to combat each of these taken. Professor Nikolai Iatyshev, for instance, discovered the complicated mechanism by which the disease known as pendinski ulcer is caused by the bite of a certain type of gnat.

In the southern regions exceptional importance attaches to the destruction of amoeba dysenteriae, the struggle against various local fevers, and so forth. Thanks to the fact that the Government assigns huge sums for the study of tropical diseases and attaches great importance to the struggle against them the hot zones are being freed from the disease formerly indigenous here.

For instance, the city of Bokhara and its surrounding neighbourhood (Uzbekistan) was formerly a nidus of tropical malaria, stomach and intestinal diseases, and dracontiasis. In 1922 a tropical institute was founded there under the charge of Dr. Isayev, who came from the Moscow Tropical Institute. Together with his assistants he carried out a

detailed study of the water reservoirs in which the parasite causing dracontiasis bred, the biology of these parasites, and the ways by which they penterated into the body. An assault was then launched against the disease from all sides: sufferers were registered and given treatment, water-reservoirs purified, irrigation systems rebuilt, watermains laid in the ancient city. As a result of all this, dracontiasis no longer exists in Bokhara or anywhere else in the Soviet Union for that matter.

The cleansing of the Bokhara water sources also resulted in the elimination of the source of stomach-intestinal diseases and the breeding-places of the Anopheles mosquitoes. The outcome was that the incidence of all these diseases began to drop sharply. Effective remedies have been found against pendinski ulcer, while the rodents which were its carriers have been destroyed on a mass scale.

Professors Georgi Gauze and Maria Brazhnikova, of the Moscow Tropical Institute, have discovered a method of destroying the germs of different diseases by means of a Soveit antibiotic, the product of a soil microbe cultivated in a certain medium; this antibiotic is known as Gramicidin "S".

The activities of the Moscow Institute and its affiliated branches are mounting in scale and are governed by the Five-Year Plan for the rehabilitation of the national economy which must inevitably promote general welfare and culture and improve the health of the Soviet population—*Tass News agency of the USSR.*

Medical Women's International Association Congress at Amsterdam—(*From B. M. J., August 16. 1947.*)

The Fifth Congress of the Medical Women's International Association, held at Amsterdam from June 24 to 28, was attended by over 350 delegates representing 16 different countries. It was extremely successful from the international point of view, and was marked by the outstanding hospitality of the Dutch Government, people, and medical women, The Congress was opened by the Minister for Social Affairs. The Burgomaster and Municipality of Amsterdam entertained the delegates at a reception. and the Vice-Chancellor of Leyden University, who played a prominent part in the resistance movement when the Nazis tried to force him and his staff to adopt a Nazi constitution, received the Congress at the University.

Pro. A. Ruys, of Holland, was elected president for the next three years; Mme Montreuil-Straus, of Paris, was elected honorary secretary, and Dr. Doris Odlum, of Great Britain, honorary treasurer. Miss Louisa Martindale was made an ex-officio member of the governing body, and the following were appointed vice-presidents: Dr. Agnete Braestrup (Denmark), Dr. Eriksson-Lihr (Finland), Pro. Gauthier-Villars (France), Dr. Guest (Canada), Dr. Miloshevitch (Poland), and Dr. Barbara Stimson (United States), Dr. Bertha Van Hoosen (U. S. A.,) who was one of the Founder Members, was made an Honorary Member in recognition of her outstanding services to the Medical Women's International Association. It was decided that the secretariat should be located in Paris for the next three-year period.

The Council for 1949 will be held in Helsingfors, and the next Congress will be in Philadelphia in 1950 or else in Paris. Mme Montreuil-Straus and Dr. Odlum will act as observers at the meeting of the General Assembly of the World Medical Association in Paris next month.

World Reconstruction

Prof. A. Ruys, opening the discussion on "The Responsibility of Medical Women in the Reconstruction of the World, as Physicians, as Social Workers, and in International Work and International Co-operation," dealt with the situation in Poland, Hungary, Czechoslovakia, France, Belgium, and the Netherlands, All six countries had been heavily damaged by the war; five were occupied by the Germans. In those countries where hygienic conditions were good before the war and the incidence of infectious diseases had been low, as in the Netherlands, reconstruction was proving a much easier task than in others whose hygienic conditions were less advanced:

The death rate increased in all six countries. In Poland the population was reduced by 31.4 per cent owing to the extermination measures of the Germans. In the Netherlands the death rate, which was low before the war (8·6), rose to 15.4 in 1945, but in 1946 the Netherlands, as well as Belgium and Hungary, had returned approximately to the pre-war figures, whereas in the other countries the death rate was still much higher. Typhus was a major problem in Hungary, Poland, and Czechoslovakia, but not in the West. Cases of typhoid increased greatly in Europe, except in France, but by 1946 the figures had gone down considerably, especially in the Netherlands. The incidence of tuberculosis also rose appreciably. except in France; but here there was a high incidence even before the war.

The birth rate was still very low in Poland, but in the Netherlands it was exceptionally high. Prof. Ruys regarded this as evidence of the great vitality of the people, who, after a winter of extreme starvation, quickly regained their strength. Infant mortality had been exceptionally high in 1945 in Belgium, the Netherlands, and France, but by 1946 the figures were at the pre-war level.

In Poland, Czechoslovakia, and the Netherlands rations were now adequate in calorie values, but fats and proteins were still deficient. In Belgium the food situation was nearly back to normal, but in France and Hungary conditions were far from satisfactory. Housing conditions were terrible in large parts of Poland, more than 80 per cent of the buildings having been destroyed. In Hungary only 25 per cent of the houses of Budapest were undamaged; in Czechoslovakia one-quarter were destroyed by bombing. In the Netherlands 23 per cent of the buildings were damaged by war or flooding. In France and Belgium there had been little damage except in the Ardennes, but everywhere there was a deficiency because so few new houses had been built.

Part Played by Medical Women

The proportion of women doctors in Poland was 25 per cent; in Czechoslovakia 15 per cent; in Hungary 10 per cent; in the Netherlands 10 per cent; in France 5 per cent; and in Belgium 1.5 per cent. In Poland there were nine women professors and nearly 200 women research workers at universities. A woman doctor was head of the Ministerial Department for Women and Children. In Czechoslovakia and Hungary they had the same rights as their male colleagues, but in fact did not attain to the higher posts. In the Netherlands and France medical men and women had equal rights, and on the whole the outstanding medical women had no difficulty in obtaining the higher position. In the Netherlands two were professors in the University of Amsterdam. In France there were professors at the universities and some women had charge of hospitals. In Belgium there was one woman professor at the University of Brussels, but on the whole medical women had very little influence,

In all these countries women doctors took part in general practice and in nearly all the specialties, but they showed a preference for paediatrics, gynaecology and obstetrics, psychiatry, ophthalmology, and preventive medicine. Polish women apparently were playing a relatively large part in the social and hygienic reconstruction of their country. In the other countries they had still to struggle against considerable male prejudice.

In international organizations there were very few medical women. All the countries except Hungary felt that women had special responsibilities which differed from those of their male colleagues. Up till now the voice of women in the international field had been too faint. This was not always the fault of the men. Dr. Ruys thought that medical women were often too timid, or had too little self-confidence, or perhaps were spiritually too lazy, to make themselves heard, She felt that only a strong effort on the part of the women themselves would make Governments aware of the contribntion that their women doctors could make.

Conditions in Scandinavia

Dr. Eriksson-Lihr dealt with conditions in Denmark, Finland, Norway, and Sweden. The birth rate had increased noticeably in all four countries between 1939 aud 1946. The death rate in Sweden had gone down. In Norway it had greatly increased, and Finland lost nearly 79,000 people during the war. In all four countries the death rate in 1945 and in 1946 was lower than in 1938. Infant mortality in 1945 and 1946 also showed a gratifying reduction, although it had greatly increased during the war years.

In Finland and Norway food was often deficient, and cases of hunger oedema occurred. Lack of vitamin C was seen in Finland, and of vitamin A in Norway in adults. Curiously, dental caries decreased in Finland whereas in nearly all countries it had increased.

In Sweden there were 7.5 per cent of medical women, in Norway 8 per cent, in Denmark 9 per cent, and in Finland 17 per cent. The value of public education in health subjects was stressed, but all four countries felt that some measure of compulsion was necessary to make sure that the public used the preventive services. They all felt that women should play a larger part in public affairs. She quoted an old Chinese saying to the effect that women are never privileged to prevent disaster but are always called on in the reconstruction.

United States

Dr. M. Eliot, Associate Chief of the Children's Bureau, U.S. Department of Labour, said that housing was a great problem in America. Some 1,200,000 American families lacked separate dwellings and were sharing with others in October, 1945. Since then 1,600,000 married veterans had returned without homes to go to. Another 1,300,000 single veterans had married. Adequate housing would require new construction at four and a half times the pre-war rate. The problem of juvenile delinquency was magnified and aggravated during the war and still continued to be serious.

Women doctors amounted to some 5 per cent of the profession, or about 8,250. The majority engaged in private practice, 85 per cent in cities and towns; 5 per cent were qualified as specialists, especially in paediatrics, psychiatry, and pathology. In April, 1943, after two years' effort and with the support of all women's organizations, women doctors were appointed to the Army and Navy corps. Promotion was slower than for men. The demand for women doctors in civil practice had increased greatly. Women had encountered many handicaps in relation to appointments on hospital staffs. A number of women served as members of the House of Delegates of State Medical Societies. Group practice had greatly increased, privately arranged among the doctors themselves.

In the absence through illness of Dr. Margaret C. Macpherson, Dr. Janet Aitken read her report on Great Britain, There were 51,533 doctors in Great Britain of whom, roughly, one-seventh were women, with about 5,000 in active practice. Women in general practice were firmly established and they were also employed in the public health services. Openings in consultant practice were more limited. The British Medical Women's Federation was the only organization representing medical women as such. It had a membership of some 2,200, was representative, and was recognized by Government Departments, public authorities, and the British Medical Association.

General Discussion

These and other reports were followed by a lively discussion in which members of all the countries present took part. Certain interesting features emerged.

1. The main post-war problem was unanimously agreed to be lack of houses with all its attendant social and moral dangers,
2. The figures for delinquency were still much higher than before the war in nearly all countries, and there was also some increase in criminality.
3. The vital statistics of most countries were surprisingly good. Nutrition was recognized to be the main factor in maintaining physical health and to a great extent in supporting morale.
4. The countries that were more advanced before the war, even though they were occupied, had, on the whole, made a remarkable recovery. The less advanced countries were obviously more handicapped and conditions were still unsatisfactory in most of the Central European countries.

5. Communicable diseases had not increased to the extent that had been feared, although there was an increase in most countries in tuberculosis and venereal disease.

Finally it was agreed that the position of medical women varies in different countries. In those which were more advanced the social status of women was higher than in the more backward countries. It was noteworthy, however, that the position of medical women in Poland appeared to be relatively high. Although in most countries they had normally equality of opportunity, many women experienced difficulty in obtaining the higher posts, and it was felt that this was due not so much to lack of capacity as to a certain amount of prejudice. There appeared to be general agreement that women had a special contribution to make to reconstruction by the very fact that they were women, a contribution which should be made in close co-operation with their male colleagues. It was also felt that medical women had tended in the past to take too little interest in public affairs, and that it was their duty to fit themselves to take part in all the activities which regulated the life and future of their nation and mankind.

Annual Report of The Indian Medical Journal for the year ending September, 1947.

Accounts:—The accounts of this office together with balances (cash in hand and at Bank, stamps and paper stock) were audited every month and certified to be correct. The annual audit statement and report are annexed.

(2) From the audit statement it will be seen that the Journal has made a net profit of Rs. 18,095.

(3) Amount remitted to the Treasurer and adjusted to his account for the payment of Association bills by this office during the year under report is Rs. 12,155.

(4) The Balances at the end of the year are a follows:

		Rs.	A.	P.	
At Bank.	...	15,879	0	0	
On Hand	...	86	0	0	
In Stamps	...	40	0	0	
In Paper	...	5,295	0	0	(In round figures)

(5) The gross advertisement business done during the year is Rs. 54,153. The net income during the year is Rs. 50,583. Bills pending collection is Rs. 14,991.

(6) It may be noted in passing that this office has been paying the Association bills since September 1947, as our Treasurer is held up in Pakistan and cannot run his office normally.

Paper and Printing:—(7) Paper was available more freely than last year. Hence we have increased our pages to 80—90 (which is a pre-war normal) since July last. Average number of monthly pages was 60. The cost of printing has increased incredibly and we are now paying at the rate of Rs. 45/- per forme as compared to Rs. 25/- last year. We propose to increase the number of pages per issue to 90—100 in the coming year, subject to availablity of paper.

General:—(8) In spite of repeated appeals by letters and through the *Journal* for scientific contributions, the response is poor.

We have resumed the publication of medico-political supplement since August, 47.

The Editorial Board met regularly and reported its proceedings to the General Secretary.

AUDIT STATEMENT

The Indian Medical Journal, Mylapore, Madras

Receipts and Payments Account for the year ended 30th September, 1947.

Receipts

		Rs.	A.	P.	Rs.	A.	P
To Balance As on 1—10—1946:							
Cash on hand	...	45	9	4			
Postage stamps	...	32	4	3			
Cash at Bank	...	11,114	1	3			
Stock of paper	...	3.056	14	4			
					14,248	13	2
To Journal Income:							
Advertisement	...	50,583	6	11			
Other Receipts	...	61	4	6			
					50,644	11	5
To Association Income:							
Members subscriptions less refund	...				1,111	5	0
Total	...				66,004	13	7

Payments

		Rs.	A.	P.	Rs.	A.	P.
By Journal Expenditure:							
Paper and Printing	...	19,199	4	5			
Establishment	...	7,500	0	0			
Rent	...	900	0	0			
Other Printing	...	645	8	3			
Stationery	...	51	6	0			
Postage	...	1,823	0	9			
Telephone	...	108	4	0			
Miscellaneous.	...	1,412	15	4			
Audit Fees	...	260	0	0			
Advertisement Commission.	...	650	0	0			
					32,550	6	9
By Remittances:							
To Honorary Treasurer	...	1,2014	0	3			
To President	...	140	8	0			
					12,154	8	3
By Balance as on 30-9-1947:							
Cash on hand	...	86	3	1			
Cash at Bank	...	15,878	13	1			
Postage Stamps	...	40	3	6			
Paper Stock	...	5,294	10	11			
					21,299	14	7
Total	...				66,004	13	7

The Indian Medical Journal, Mylapore, Madras

Income and Expenditure Account for the year ended 30th September, 1947

Debtor:		Rs.	A.	P.
To Paper and Printing Journal	...	19,199	4	5
To Establishment	...	7,500	0	0
To Rent	...	900	0	0
To Other Printing	...	645	8	3
,, Stationery	...	51	6	0
,, Postage	...	1,823	0	9
,, Telephone	...	108	4	0
,, Miscellaneous	...	1,412	15	4
,, Audit Fees	...	260	0	0
,, Advertisement Commission	...	650	0	0
,, Excess of Income over Expenditure		21,402	2	6
Total	...	53,952	9	3

Creditor:		Rs.	A.	P.	Rs.	As	P.
By Journal Advertisement:							
Collections	...	50,583	6	11			
Add Outstandings at the end of the year	...	14,996	12	5			
		65,580	3	4			
Less Outstandings at the commencement of the year	...	11,688	14	7			
					53,891	4	9
By Other Receipts	...				61	4	6
Total	...				53,952	9	3

Audit Report

We have extracted the above Income and Expenditure Account for the year ended 30th September, 1947 of the Indian Medical Journal, Madras, from the books maintained by them. Proper adjustments have been made for outstanding advertisement charges and advance collections in respect thereof.

We have verified the actual cash on hand, Postage stamps and Paper Stock as on 10th October, 1947, the date on which we visited the office for audit. The following inventory of furniture was also verified by us:

6 Almyrahs; 2 Plywood; 1 Typewriter Table; 1 Adrema Addressing machines; 1 Underwood Typewriter No. 10-4114202. (Cycle condemned.)

We are very much pleased to note the neat and correct way in which the books were maintained.

SUNDARAM AND SRINIVASAN,
Registered Accountants.

MADRAS
14th. October, 1947.

NEWS AND NOTES

Our D. G. H. S. Bombay is proud to have one of its distinguished sons—Dr. Jivraj M. Mehta—as the Supreme head of the Health Services of the Indian Dominion—a well merited honor—and a fit person in a fit place. We only hope he will try to achieve the objects of the Indian Medical Profession—Uniformity of Medical Education, Medical Registration and Medical Services. We wish him good luck and God speed.

Medical Week During X-mas:—December 22nd to 29th will see Bombay holding the Annual Conferences of the following Associations (1) All India Medical Licentiates Association (2) Indian Medical Association (3) Association of Physicians of India (4) Association of Surgeons of India (5) All India Obstetric and Gynecological Society (6) Indian Radiological Association (7) Association of Dermatologists and Venereologists Bombay, cordially welcome members of the profession to this unique opportunity of enjoying the mental and social feast. Let these Associations keep up this espirit de corps and continue, in future, to hold their sessions together at the same time and place, with a view to ultimately becoming one with the Indian Medical Association.

Quinquennial Elections of the Bombay Medical Council:—The election of six members of this Council took place recently and these are the successful candidates. Graduates' Constituency four seats Drs. (1) R. N. Cooper (2) G. K. Mulki (3) Motibhai D. Patel (4) Chamanlal M. Mehta. Nongraduates' Constituency two seats Drs. (5) U. B. Narayanrao and (6) V. D. Sathaye. Nos. 2 and 3 are the new horses. Congratulations to them all. (*From our Bombay Correspondent*)

Notice of Amendments by Dr. D. B. Bhate. Provincial, Secretary C. P. and Berar Provincial Branch, Chhindwara.

Rule No. 30 clause "1" The Provincial President Clause "1" to be converted to "m".

Rule No. 55 add clause "c": To promote the aims & objects of the Association, contemplated by rule 3 of section 1.

Rule No. 58 insert in between the words "fact" & "to the" in line 3 "to the Provincial Secretary and"

Rule No. 59 insert "and Provincial" after the word "Primary" in line 1

Rule No. 61 insert "the Provincial &" after the word "following to" & between the word 'the general'

Rule No. 61 Clause a "put coma" after the word 'body' in line 2 and insert "ordinary,"

Rule No. 65 After full point in line 10 para ii of rule No .65, add "The voting papers should be sent by the Prov. Secry. under postal certificate.

Rule No. 65 Insert after the word 'President' & before the word 'before' in line 12 para ii of rule No. 65 "in a registered cover A. D.; in case these papers are given personally the voter shall obtain a receipt in writing from the Prov. President."

Rule No. 65 Insert after the word 'year' & before the word 'and' in line 14 para ii of rule No. 65 "in the presence of the Provincial Secry. and the contesting members for the posts, or their duly authorised agent in writing if the members so desire"

Rule No. 69 Insert after the word 'to' and before the word 'the' in line 4 "The Provincial and"

Rule No. 267 clause ii add after item 5 item '6' as "Provincial President" and convert items. 6, 7, 8, 9, 10, into 7, 8, 9, 10, 11.

Rule No. 229 & 230 substitute 'Second class' for 'inter class.

Notice of Resolutions by D. N. Khandekar, Indore.

(1) That the General Secretary once elected should continue in his office for a period of three years instead of one as present and that he should be eligible for re-election only once.

(2) Resolutions or amendments pertaining to budgets and expenditures should not be allowed to be sponsored and discussed in the General Meeting unless discussed and approved by the Subject's Committee.

Notice of Resolutions by the Gujarat Branch, A. I. M. L. A.

No. 1. In view of the fact that the Licentiate Diploma Courses have been abolished and most of the medical schools have been converted nto medical colleges in most of the Indian Provinces and that different compartmental branches of medical services are bound to be abolished owing to the advent of Independence in our country, it is hereby resolved that the All India Medical Licentiates' Association be amalgamated with the Indian Medical

Association and the members of the former be at once borne on the register of the latter.

It is further resolved that the funds of the All India Medical Licentiates' Association be handed over to the Govt. of India in the form of an Education Trust and the interest thereof be utilised in giving scholarships to the children of the members of the licentiates' class for higher medical studies.

No. 2. Resolved that this branch of A. I. M. L. A. urges upon the Indian Govt., to abolish separate compartments of medical services and to organise the Medical & Health Services on a Provincial basis; admission to which should be by open competition, the pay and prospects being the same for all entrants to these services.

No. 3. Resolved that the Indian Medical Council Act, 1933, be so amended as to bring into existence at an early date an all India Medical Register which should consist of the medical practitioners registered in Provincial Medical Councils of India (Prior to 1936).

No. 4. Resolved that there should be one common electoral roll of all registered medical practitioners under the various provincial medical council Acts for the election of members to the Provincial Medical Councils. This resolution does not apply to Bombay Practitioners' Act of 1938.

No. 5. Resolved that a Provincial Branch of Gujarat including Cutch & Kathiawar be opened with its Head-quarters at Ahmedabad. This branch should include the part of Gujarat, North of Bulsar.

No. 6. Resolved that this A. I. M. L. A. requests its members not to accept any medical appointments on conditions which are derogatory to the medical profession and calls upon its branches to safeguard the interests of their members so far as salaries and remunerations of such appointments are concerned, by opening official employment bureau at important centres.

C. R. THEOEDY,
Hon. Secretary,
Gujarat-Branch, Ahmedabad.

WORLD HEALTH ORGANIZATION CHARTER

The World Health Organization has been set up as a means of implementing one of the objectives of the United Nations. The constitution will come into force when signed by twenty-six members.

The states parties to this constitution declare, in conformity with the Charter of the United Nations, that the following principles are basic to the happiness, harmonious relations and security of all peoples:

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief or economic or social condition.

The health of all peoples is fundamental to the attainment of peace and security and is dependent on the fullest co-operation of individuals and states.

The achievement of any state in the promotion and protection of health is a value to all.

Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger.

Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.

Informed opinion and active cooperation on the part of the public are of the utmost importance in the improvement of the health of the people.

Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures.

Accepting these principles, and for the purpose, of co-operation among themselves and with others to promote and protect the health of all peoples, the contracting parties agree to the present constitution and hereby establish the World Health Organization as a specialized agency within the terms of article 57 of the charter of the United Nations.

Chapter I. Objective

Article 1.—The objective of the World Health Organization (hereinafter called the Organization) shall be the attainment by all peoples of the highest possible level of health.

Chapter II. Functions

Article 2.—In order to achieve its objective, the functions of the Organization shall be:

(*a*) To act as the directing and coordinating authority on international health work.

(*b*) To establish and maintain effective collaboration with the United nations, specialized agencies, governmental health administrations, professional groups and such other organizations as may be deemed appropriate.

(*c*) To assist governments, on request, in strengthening health services.

(*d*) To furnish appropriate technical assistance and, in emergencies, necessary aid on the request or acceptance of governments.

(*e*) To provide or asist in providing, on the request of the United Nations, health services and facilities to special groups, such as the peoples of trust territories.

(*f*) To establish and maintain such administrative and technical services as may be required, including epidemiologic and statistical services.

(*g*) To stimulate and advance work to eradicate epidemic, endemic and other diseases.

(*h*) To promote, in cooperation with other specialized agencies where necessary, the prevention of accidental injuries.

(*i*) To promote, in cooperation with other specialized agencies where necessary, the improvement of nutrition, housing, sanitation, recreation, economic or working conditions and other aspects of environmental hygiene.

(*j*) To promote cooperation among scientific and professional groups which contribute to the advancement of health.

(*k*) To propose conventions, agreements and regulations and make recommendations with respect to international health matters and to perform such duties as may be assigned thereby to the Organization and are consistent with its objective.

(*l*) To promote maternal and child health and welfare and to foster the ability to live harmoniously in a changing total environment.

(*m*) To foster activities in the field of mental health especially those affecting the harmony of human relations.

(*n*) To promote and conduct research in the field of health.

(*o*) To promote improved standards of teaching and training in the health, medical and related professions.

(*p*) To study and report on, in cooperation with other specialized agencies where necessary, administrative and social technics affecting public health and medical care from preventive and curative points of view, including hospital services and social security.

(*q*) To provide information, counsel and assistance in the field of health.

(*r*) To assist in developing an informed public opinion among all peoples on matters of health.

(*s*) To establish and revise as necessary international nomenclatures of diseases, of causes of death and of public health practices.

(*t*) To standardize diagnostic procedures as necessary.

(*u*) To develop, establish and promote international standards with respect to food, biologic, pharmaceutical and similar products.

(*v*) Generally to take all necessary action to attain the objective of the Organization.

Chapter III. Membership and Associate Membership

Article 3.—Membership in the Organization shall be open to all states.

Article 4.—Members of the United Nations may become members of the Organization by signing or otherwise accepting this constitution in accordance with the provisions of Chapter XIX and in accordance with their constitutional processes.

Article 5.—The states whose governments have been invited to send observers to the International Health Conference held in New York in 1946 may become members by signing or otherwise accepting this constitution in accordance with the provisions of Chapter XIX and in accordance with their constitutional processes, provided such signature or acceptance shall be completed before the first session of the Health Assembly.

Article 6.—Subject to the conditions of any agreement between the United Nations and the Organization, approved pursuant to Chapter XVI, states which do not become members in accordance with article 4 and 5 may apply to become members and shall be admitted as members when their application has been approved by a simple majority vote of the Health Assembly.

Article 7.—If a member fails to meet its financial obligations to the Organization or in other exceptional circumstances the Health Assembly, may, on such conditions as it thinks proper, suspend the voting privileges and services to which a member is entitled. The Health Assembly shall have the authority to restore such voting privileges and services.

Article 8.—Territories or groups of territories which are not responsible for the conduct of their international relations may be admitted as Associate Members by the Health Assembly on application made on behalf of such territory or group of territories by the member or other authority having responsibility for their international relations. Representatives of associate members to the Health Assembly should be qualified by their technical competence in the field of health and should be chosen from the native population. The nature and extent of the rights and obligations of associate members shall be determined by the Health Assembly.

Chapter IV Organs

Article 9.—The work of the Organization shall be carried out by (*a*) the World Health Assembly (hereinafter called the Health Assembly). (*b*) the Executive Board (herein called the Board, (*c*) the Secretariat.

Chapter V. The World Health Assembly

Article 10:—The Health Assembly shall be composed of delegates representing members.

Article 11.—Each member shall be represented by not more than three delegates, one of whom shall be designated by the member as chief delegate. These delegates should be chosen from among persons most qualified by their technical competence in the field of health, preferably representing the national health administration of the member.

Article 12.—Alternates and advisers may accompany delegates.

Article 13—The Health Assembly shall meet in regular annual session and in such special sessions as may be necessary. Special sessions shall be convened at the request of the Board, or of a majority of the members.

Article 14.—The Health Assembly, at each annual session, shall select the country or region in which the next annual session shall be held, the Board subsequently fixing the place. The Board shall determine the place where a special session shall be held.

Article 15.—The Board, after consultation with the Secretary General of the United Nations, shall determine the date of each annual and special session.

Article 16.—The Health Assembly shall elect its president and other officers at the beginning of each annual session. They shall hold office until their successors are elected.

Article 17.—The Health Assembly shall adopt its own rules of procedure.

Article 18.—The functions of the Health Assembly shall be:

(*a*) To determine the policies of the Organization.

(*b*) To name the members entitled to designate a person to serve on the Board.

(*c*) To appoint the Director General.

(*d*) To review and approve reports and activities of the Board and of the Director General and to instruct the Board in regard to matters on which action, study, investigation or report may be considered desirable.

(*e*) To establish such committees as may be considered necessary for the work in the Organization.

(*f*) To supervise the financial policies of the Organization and approve the budget.

(*g*) To instruct the Board and the Director General to bring to the attention of members and of international organizations, governmental or nongovernmental, any matter with regard to health which the Health Assembly may consider appropriate.

(*h*) To invite any organization, international or national, governmental or nongovernmental, which has responsibilities related to those of the Organization, to appoint representatives to participate, without right of vote, in its meetings or in those of the committees and conferences convened under its authority, on conditions prescribed by the Health Assembly; but, in the case of national organizations, invitations shall be issued only with the consent of the Government concerned.

(*i*) To consider recommendations bearing on health made by the general Assembly, the Economic and Social Council, the Security Council or Trusteeship Council of the United Nations, and to report them on the steps taken by the Organization to give effect to such recommendations.

(*j*) To report to the Economic and Social Council in accordance with any agreement between the Organization and the United Nations.

(*k*) To promote and conduct research in the field of health by the pessonnel of the Organization, by the establishment of its own institutions or by cooperation with official or non-official institutions of any member with the consent of its government.

(*l*) To establish such other institutions as it may consider desirable.

(*m*) To take any other appropriate action to further the objective of the Organization.

Article 19.—The Health Assembly shall have authority to adopt conventions or agreements with respect to any matter within the competence of the Organization. A two-thirds vote of the Health Assembly shall be required for the adoption of such conventions or agreements, which shall come into force for each member when accepted by it in accordance with its constitutional processes.

Article 20.—Each member undertakes that it will, within eighteen months after the adoption by the Health Assembly of a convention or agreement, take action relative to the acceptance of such convention or agreement. Each member shall notify the Director General of the action taken and if it does not accept such convention or agreement within the time limit it will furnish a statement of the reasons for non-acceptance. In case of acceptance, each member agrees to make an annual report to the Director General in accordance with Chapter XIV.

Article 21.—The Health Assembly shall have authority to adopt regulations concerning:

(*a*) Sanitary and quarantine requirements and other procedures designed to prevent the international spread of disease.

(*b*) Nomenclatures with respect to diseases, cause of death and public health practices.

(*c*) Standards with respect to diagnostic procedures for international use.

(*d*) Standards with respect to the safety, purity and potency of biologic, pharmaceutical and similar products moving in international commerce.

(*e*) Advertising and labeling of biologic, pharmaceutical and similar products moving in international commerce.

Article 22.—Regulations adopted pursuant to article 21 shall come into force for all members after due notice has been given of their adoption by the Health Assembly except for such members as may notify the Director General of rejection or reservations within the period stated in the notice.

Article 23.—The Health Assembly shall have authority to make recommendations to members with respect to any matter within the competence of the Organization.

Chapter VI. The Executive Board

Article 24.—The Board shall consist of eighteen persons designated by as many members. The Health Assembly, taking into account an equitable geographic distribution, shall elect the members entitled to designate a person to serve on the Board. Each of these members should appoint to the Board a person technically qualified in the field of health, who may be accompanied by alternates and advisers.

Article 25.—These members shall be elected for three years and may be re-elected, provided that of the members elected at the first session of the Health Assembly the terms of six members shall be for one year and the term of six members shall be for two years, as determined by lot.

Article 26.—The Board shall meet at least twice a year and shall determine the place of each meeting.

Article 27.—The Board shall elect its Chairman from among its members and shall adopt its own rules of procedure.

Article 28.—The functions of the Board shall be:

(*a*) To give effect to the decisions and policies of the Health Assembly. (*b*) To act as the executive organ of the Health Assembly. (*c*) To perform any other functions entrusted

to it by the Health Assembly. (*d*) To advise the Health Assembly on questions referred to it by that body and on matters assigned to the Organization by conventions, agreements and regulations (*e*) To submit advice or proposals to the Health Assembly on its own initiative. (*f*) To prepare the agenda of meetings of the Health Assembly. (*g*) To submit to the Health Assembly for consideration and aproval a general programme of work covering a specific period. (*h*) To study all questions within its competence. (*i*) To take emergency measures within the functions and financial resources of the Organization to deal with events requiring immediate action. In particular it may authorize the Director General to take the necessary steps to combat epidemic, to participate in the organization of health relief to victims of a calamity and to undertake studies and research the urgency of which has been drawn to the attention of the Board by any member or by the Director General.

Article 29.—The Board shall exercise on behalf of the whole Health Assembly the powers delegated to it by that body.

Chapter VII. The Secretariat

Article 30.—The Secretariat shall comprise the Director General and such technical and administrative staff as the Organization may require.

Article 31.—The Director General shall be appointed by the Health Assembly on the nomination of the Board on such terms as the Health Assembly may determine. The Director General, subject to the authority of the Board, shall be the chief technical and administrative officer of the Organization.

Article 32.—The Director General shall be ex-officio Secretary of the Health Assembly, of the Board, of all commissions and committees of the Organization and of conferences convened by it. He may delegate these functions.

Article 33.—The Director General or his representative may establish a procedure by agreement with members, permitting him, for the purpose of discharging his duties, to have direct access to their various departments, especially to their health administrations and to national health organizations, governmental or non-governmental.. He may also establish direct relations with international organizations whose activities come with in the competence of the Organization. He shall keep regional offices informed on all matters involving their respective areas.

Article 34.—The Director General shall prepare and submit anually to the Board the financial statements and budget estimates of the Organization.

Article 35.—The Director General shall appoint the staff of the Secretariat in accordance with staff regulations established by the Health Assembly. The paramount consideration in the employment of the staff shall be to assure that the efficiency, integrity, and internationally representative character of the Secretariat shall be maintained at the highest level. Due regard shall be paid also to the importance of recruiting the staff on as wide a geographic basis as possible.

Article 36,—The conditions of service of the staff of the Organization shall conform as far as possible with those of other United Nations organizations.

Article 37.—In the performance of their duties the Director General and the staff shall not seek or receive instruction from any government or from any authority external to the Organization. They shall refrain from any action which might reflect on their position as international officers. Each member of the Organization on its part undertakes to respect the exclusively international character of the Director General and the staff and not to seek to influence them.

Chapter VIII. Committees

Article 38.—The Board shall establish such committees as the Health Assembly may direct and, on its own initiative or on the proposal of the Director General, may establish any other committees considered desirable to serve any purpose within the competence of the Organization.

Article 39,—The Board, from time to time and in any event annually, shall review the necessity for continuing each committee.

Article 40.—The Board may provide for the creation of or the participation by the Organization in joint or mixed committees with other organizations and for the representation of the Organization in committees established by such other organizations.

Chapter IX. Conferences

Article 41.—The Health Assembly or the Board may convene local, general, technical or other special conferences to consider any matter within the competence of the Organization and may provide for the representation at such conferences of international organizations and, with the consent of the government concerned, of national organizations, governmental or nongovernmental. The manner of such representation shall be determined by the Health Assembly of the Board.

Article 42.—The Board may provide for representation of the Organization at conferences in which the Board considers that the Organization has an interest.

Chapter X. Headquarters

Article 43.—The location of the headquarters of the Organization shall be determined by the Health Assembly after consultation with the United Nations.

Chapter XI. Regional Arrangements

Article 44.—(*a*) The Health Assembly shall from time to time define the geographic areas in which it is desirable to establish a regional organization.

(*b*) The Health Assembly may, with the consent of a majority of the members situated within each area so defined, establish a regional organization to meet the special needs of such area. There shall not be more than one regional organization in each area.

Article 45.—Each regional organization shall be an integral part of the Organization in accordance with this constitution.

Article 46.—Each regional organization shall consist of a Regional Committee and a Regional Office.

Article 47.—Regional Committees shall be composed of representatives of the member states and associate members in the region concerned. Territories or groups of territories within the region which are not responsible for the conduct of their international relations and which are not associate members shall have the right to be represented and to participate in Regional Committees. The nature and extent of the rights and obligations of these territories or groups of territories in Regional Committees shall be determined by the Health Assembly in consultation with the member or other authority having responsibility for the international relations of these territories and with the member states in the region.

Article 48,—Regional Committee shall meet as often as necessary and shall determine the place of each meeting.

Article 49.—Regional Committees shall adopt their own rules of procedure.

Article 50.—The functions of the Regional Committee shall be:—

(*a*) To formulate policies governing matters of an exclusively regional character.

(*b*) To supervise the activities of the Regional Office.

(*c*) To suggest to the Regional Office the calling of technical conferences and such additional work or investigation in health matters as in the opinion of the Regional Committee would promote the objective of the Organization within the region.

(*d*) To cooperate with the respective regional committees of the United Nations and with those of other specialized agencies and with other regional international organizations having interests in common with the Organization.

(*e*) To tender advice, through the Director General, to the Organization on international health matters which have wider than regional significance.

(*f*) To recommend additional regional appropriations by the governments of the respective regions if the proportion of the central budget of the Organization allotted to that region is insufficient for the carrying out of the regional functions.

(*g*) Such other functions as may be delegated to the regional committee by the Health Assembly, the Board or the Director General.

Article 51.—Subject to the general authority of the Director General of the Organization, the Regional Office shall be the administrative organ of the Regional Committee. It shall, in addition carry out within the region the decisions of the Health Assembly and of the Board.

Article 52.—The head of the Regional Office shall be the Regional Director appointed by the Board in agreement with the Regional Committee.

Article 53.—The staff of the Regional Office shall be appointed in a manner to be determined by agreement between the Director General and the Regional Director.

Article 54.—The Pan American sanitary organization represented by the Pan American Sanitary Bureau and the Pan American Sanitary Conferences, and all other inter-governmental regional health organization in existence prior to the date of signature of this constitution, shall in due course be integrated with the Organization. This integration shall be effected as soon as practicable through common action based on mutual consent of the competent authorities expressed through the organization concerned.

Chapter XII. Budget and Expenses

Article 55.—The Director General shall prepare aud submit to the Board the annual budget estimates of the Organization. The Board shall consider and submit to the Health Assembly such budget estimates, together with any recommendations the Board may deem advisable.

Article 56.—Subject to any agreement between the Organization and the United Nations, the Health Assembly shall review and approve the budget estimates and shall apportion the expenses among the members in accordance with a scale to be fixed by the Health Assembly.

Article 57.—Health Assembly or the Board acting on behalf of the Health Assembly may accept and administer gifts and bequests made to the Organization, provided the conditions attached to such gifts or bequests are acceptable to the Health Assembly or the Board and are consistent with the objective and policies of the Organization.

Article 58.—A special fund to be used at the discretion of the Board shall be established to meet emergencies and unforeseen contingencies.

Chapter XIII. Voting

Article 59.—Each member shall have one vote in the Health Assembly.

Article 60.—(*a*) Decisions of the Health Assembly on important questions shall be made by a two-thirds majority of the members present and voting. These questions shall include the adoption of conventions or agreements, the approval of agreements bringing the organization into relation with the United Nations and inter-governmental organizations and agencies in accordance with articles 69, 70 and 72 and amendments to this constitution.

(*b*) Decisions on other questions, including the determination of additional categories of question to be decided by a two-thirds majority, shall be made by a majority of the members present and voting.

(*c*) Voting on analogous matters in the Board and in committees of the organization shall be made in accordance with paragraphs (*a*) and (*b*) of this article.

Chapter XIV. Reports Submitted by States

Article 61.—Each member shall report annually to the Organization on the action taken and progress achieved in improving the health of its people.

Article 62.—Each member shall report annually on the action taken with respect to recommendations made to it by the organization and with respect to conventions, agreements and regulations.

Article 63.—Each member shall communicate promptly to the Organization important laws, regulations, official reports and statistics pertaining to health which have been published in the state concerned.

Article 64.—Each member shall provide statistical and epidemiologic reports in a manner to be determined by the Health Assembly.

Article 65.—Each member shall transmit on the request of the Board such additional information pertaining to health as may be practicable.

Chapter XV Legal Capacity, Privileges & Immunities

Article 66.—The Organization shall enjoy in the territory of each member such legal capacity as may be necessary for the fulfilment of its objective and for the exercise of its functions.

Article 67.—(*a*) The Organization shall enjoy in the territory of each member such privileges and immunities as may be necessary for the fulfilment of its objective and for the exercise of its functions.

(*b*) Representatives of members, persons designated to serve on the Board and technical and administrative personnel of the Organization shall similarly enjoy such privileges and immunities as are necessary for the independent exercise of their functions in connection with the Organization.

Article 68.—Such legal capacity, privileges and immunities shall be defined in a separate agreement to be prepared by the Organization in consulation with the Secretary General of the United Nations and concluded between the members.

Chapter XVI Relations with other Organizations

Article 69.—The Organization shall be brought into relation with the United Nations as one of the specialized agencies referred to in Article 57 of the Charter of the United Nations. The agreement or agreements bringing the Organization into relation with the United Nations shall be subject to approval by a two-thirds vote of the Health Assembly.

Article 70.—The Organization shall establish effective relations and co-operate closely with such other intergovernmental organizations as may be desirable. Any formal agreement entered into with such organizations shall be subject to approval by a two-thirds vote of the Health Assembly.

Article 71.—The Organization may, on matters within its competence, make suitable arrangements for consultation and cooperation with nongovernmental international organizations and, with consent of the government concerned, with national organizations, governmental or nongovernmental.

Article 72.—Subject to the approval by a two-thirds vote of the Health Assembly, the Organization may take over from any other international organization or agency whose purpose and activities lie within the field of competence of the Organization such functions, resources and obligations as may be conferred on the Organization by international agreement or by mutually acceptable arrangements entered into between the competent authorities of the respective organization.

Chapter XVII Amendments

Article 73.—Texts of proposed amendments to this constitution shall be communicated by the Director General to members at least 6 months in advance of their consideration by the Health Assembly. Amendments shall come into force for all members when adopted by a 2/3rd vote of the Health Assembly and accepted by 2/3rd of the members in accordance with their respective constitutional processes.

Chapter XVIII. Interpretation

Article 74.—The Chinese, English, French, Russian and Spanish texts of this constitution shall be regarded as equally authentic.

Article 75.—Any question or dispute concerning the interpretation or application of this constitution which is not settled by negotiation or by the Health Assembly shall be referred to the International Court of Justice in conformity with the statute of the court, unless the parties concerned agree on another mode of settlement.

Article 76.—On authorization by the General Assembly of the United Nations or on authorization in accordance with any agreement between the Organization and the United Nations, the Organization may request the International Court of Justice for an advisory opinion on any legal question arising with in the competence of the Organization.

Article 77.—The Director General may appear before the court on behalf of the Organization in connection with any proceedings arising out of any such request for an advisory opinion. He shall make arrangements for the presentation of the case before the court, including arrangements for the argument of different views on the question.

Chapter XIX. Entry into Force

Article 78.—Subject to the provisions of chapter III, this constitution shall remain open to all states for signature or acceptance.

Article 79.—(*a*) States may become parties to this Constitution by (*i*) signature without reservation as to approval, (*ii*) signature subject to approval followed by acceptance or (*iii*) acceptance.

(*b*) Acceptance shall be effected by the deposit of a formal instrument with the Secretary General of the United Nations.

Article 80.—This Constitution shall come into force when twenty-six members of the United Nations have become parties to it in accordance with the provisions of article 79.

Article 81.—In accordance with article 102 of the charter of the United Nations, the Secretary General of the United Nations will register this constitution when it has been signed without reservation as to approval on behalf of one state or on deposit of the first instrument of acceptance.

Article 82.—The Secretary General of the United Nations will inform states parties to this constitution of the date when it has come into force. He will also inform them of the dates when other states have become parties to this constitution.

In faith whereof the undersigned representatives, having been duly authorized for that purpose, sign this constitution.

Done in the city of New York this 22nd day of July 1946 in a single copy in the Chinese, English, French, Russian and Spanish languages, each text being equally authentic. The original texts shall be deposited in the archives of the United Nations. The Secretary General of the United Nations will send certified copies to each of the Governments represented at the Conference.

CONFERENCES—*continued*

24th December, 47:

9 a.m.	—	12 noon.	Inauguration of All-India Medical Conference.
12 noon	—	1 p.m.	Election of Subjects Committee.
1 p.m.	—	3 p.m.	Lunch—Interval.
3 p.m.	—	4-30 p.m.	Opening of Exhibition.
4-30 p.m.	—	5-30 p.m.	Tea in Exhibition Grounds.
5-30 p.m.	—	7-30 p.m.	Subjects Committee I.M.A. Conference.
9 p.m.	—	11 p.m.	Subjects Committee I.M.A. Conference.

25th December, 47:

9 a.m.	—	10-30 a.m.	Inauguration, Radiological Conference.
10-30 a.m.	—	1 p.m.	Open Session I.M.A.
4-30 p.m.	—	6 p.m.	Inauguration of Obst. & Gynae. Congress.
9-30 p.m.	—	11-30 p.m.	Entertainment by medical students.

26th December, 47:

9 a.m.	—	10-30 a.m.	Inauguration of Surgeons Conference.
10-45 a.m.	—	1-15 p.m.	Inauguration of Physicians Conference.
2-30 p.m.	—	4-30 p.m.	Inauguration of Licentiates Conference.
4-30 p.m.	—	5-15 p.m.	Tea—Interval.
5-15 p.m.	—	7-15 p.m.	Open Session of the I.M.A. Conference.
9 p.m.	—		Boat Trip.

27th December, 47:

9 a.m.	—	12 noon.	Scientific Session I.M.A. Conference. discussion
12 noon	—	1-30 p.m.	Inauguration of Venereologists Conference.
2-30 p.m.	—	6 p.m.	Scientific Session of all Conferences.
8-30 p.m.	—		Subscription Dinner if possible.

28th December, 47:

9 a.m.	—	12 noon.	Scientific Session I.M.A. Conference.
2 p.m.	—	6 p.m.	Scientific Session of all Conference.
9 p.m.	—	11-30 p.m.	Entertainment.

29th December, 47:

9 a.m.	—	12 noon.	Scientific Session of I.M.A. Conference.
2 p.m.	—	5 p.m.	Scientific Session of all Conferences.
6 p.m.	—	7 p.m.	Concluding session of all Conferences participating.

30th December, 47:

9 a.m.	—	12 noon.	Scientific Session.
8 a.m.	—		Trip to Elephanta Caves.

NOTE :—*All the Conferences will be held in the Premises of J. J. Group of Hospitals, Byculla. Delegates will be lodged in Hostels attached to the Hospitals.*

DR. CHAMANLAL MEHTA,
Secretary (I. M. A.) Shri Nivas, Sandhurst Road, Bombay 4.

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References: A. Jannings, W. H. Patterson (Lancet 1942 Vol. 11, No. XI).—W. Macartney, Luxton & Ramsay (Lancet 1942, 30th May, P. 639).—B. A. Peters, M. L. Easby, (Brit. Med. Jour. 1943, 4311 p. 230).—O. Acklin (Practice No. 44, 1944).—K. Meier (Swiss Med. Weekly, No. 50, 1945).—W. Junet (Swiss Med. Weekly No. 3, 1946).



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NE-2

LETTERS TO THE EDITOR

The members of the Chittagong Branch of the AIMLA request you to publish in the *journal* the following:

1. What is the future policy of the association with regard to its branches in Pakistan?

2. Does the association think that they can sufficiently influence the Pakistan Government so as to safeguard the interests of the licentiates of Pakistan. If so how does the Association propose to do it; and has there been any discussion with the Pakistan authorities in this line?!

3. What is the Association's, suggestion as to the course of action that should be taken by the branches, so as to safegaurd their interest in Pakistan?

4. We think time is overdue for all the branches in Pakistan to be careful about the above questions, so that they can determine what best to do.

K. P. GHOSH
Secretary,
Chittagong Branch.

In pursuance of the general policy adopted by the All India Medical Licentiates' Association, in respect of pay and status of the Licentiates serving in the Provinces and the Indian States, a deputation of the Licentiates on behalf of the Provincial branch waited upon the Minister and the Inspector-General of Hospital, from time to time and explained them the view point of the Association, particularly stressing the need of increase in the pay and the revision of grades of the Licentiates, serving in the Medical Department, of the Holkar State.

It has always been the policy of the Government of His Highness the Maharaja Holkar, to help to redress the grievances and put an end to perpetual injustice being done in the past. His Highness the Maharaja Holkar, personally took keen interest in the welfare of the Licentiates serving in the State, and graciously sanctioned the following grades for the Medical Department to take effect from the 1st of September 1947:

(1)	Pathologist, Ophthamic Surgeon, Radiologist, Physician, Second Surgeon and Gynaecologist ...	Rs. 500-25-700 each
(2)	Tuberculosis Specialist and Third Surgeon ...	Rs. 400-25-600 each
(3)	Fourth Surgeon ...	Rs. 300-25-500
(4)	District Medical Officers and Medical Officers ...	Rs. 200-25-450
(5)	Assistant Medical Officers ...	5 (220-10-250) 10 (200-10-220) 35 (85-5-150 E. B. -10-200)
(6)	Assistant Gynaecologists ...	Rs. 100-5-150 E. B.10-250)

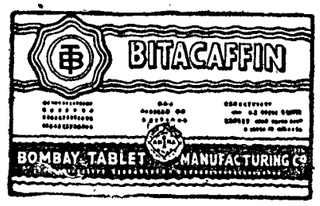
In Rajputana nearly all the States have offered the same scale of pay, long before, but there are still many States in Central India. Those that have not fallen in line with the premier States of Rajputana and that of Indore, the Association is trying to approach the authorities of these States and stress upon them the need of removing the long-standing grievances of the Licentiates.

The above mentioned change in the grades of the Licentiates is mainly due to the fact that the Licentiates stood solidly behind the Association and it is hoped that the Licentiates of those States in which the scales of pay has not been increased will solidly stand behind the Association, and join as its members if they have not already done so.

R. A. BHAGWAT
Prov. Secretary.
C. I. & Rajputana, Branch,
A. I. M. L. A.

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35TH CONFERENCE

OF

THE ALL-INDIA MEDICAL LICENTIATES' ASSOCIATION

The Conference will be held at Bombay in the premises of J. J. Group of Hospitals, Byculla, on the 26th and 27th December, '47.

Delegates attending this conference should inform Dr. A. D. Patel, General Secretary, Reception Committee, 1, Nagindas Mansions, Girgaum, Bombay 4, (Telegraphic Address: Mediest) the date and time of their arrival, 20 days in advance of the date of conference. Those who want to stay for more than two days, should accordingly inform the General Secretary Dr. A. D. Patel who will arrange with the Indian Medical Association for Boarding and Lodging on payment of Rs. 10/- per day.

Owing to ration and other difficulties delegates are advised not to bring their families.

Those who want to move resolutions are requested to forward them to Dr. V. D. Sathaye, General Secretary, A. I. M. L. A., 502, Narayanpeth, Poona, so as to reach him on or before 1st December, 1947.

PROGRAMME

26th December, 47:			
	10 a.m.	— 1 p.m.	Delegates Meeting.
	1 p.m.	— 2 p.m.	Lunch.
	2-30 p.m.	— 4-30 p.m.	Inauguration of the Conference.
	4-30 p.m.	— 5-15 p.m.	Tea.
	5-15 p.m.	— 8 p.m.	Subjects Committee.
	8 p.m.	— 9 p.m.	Dinner.
	9 p.m.	— 11 p.m.	Subjects Committee.
27th December, 47:			
	9 a.m.	— 1 p.m.	Open Conference.
	2-30 p.m.	— 6 p.m.	Open Conference.
	6 p.m.	— 8 p.m.	Scientific Session.
	9 p.m.	— 11 p.m.	Scientific Session.

GENERAL PROGRAMME OF OTHER CONFERENCES TO BE HELD AT BOMBAY.

22nd December, 47:			
	9 a.m.	— 1 p.m.	Meeting of Provincial Secretaries of I.M.A. and of W. C.
	2-30 p.m.	— 5 p.m.	Meeting of Working Committee I.M.A.
	5 p.m.	— 5-30 p.m.	Interval—Tea.
	5-30 p.m.	— 7-30 p.m.	Meeting of Working Committee.
23rd December, 47:			
	9 a.m.	— 1 p.m.	Meeting of Central Council.
	2-30 p.m.	— 5 p.m.	Meeting of Central Council.
	5 p.m.	— 5-30 p.m.	Interval—Tea.
	5-30 p.m.	— 7-30 p.m.	Meeting of Central Council.

[*Next Page*

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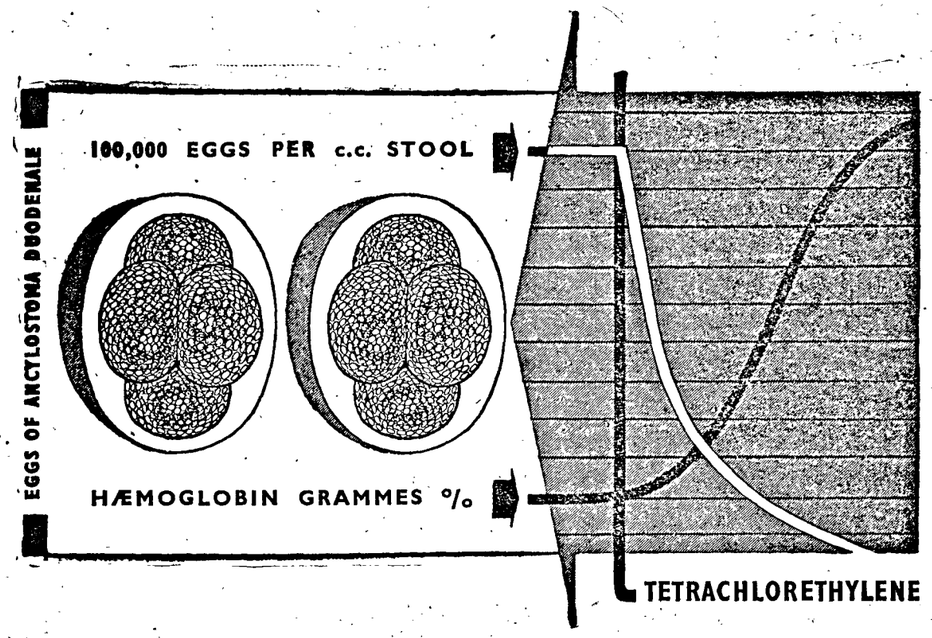
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Natural mixed Tocopherols equivalent in biological activity to Alpha Tocopherol in each capsule ...	5 mg.

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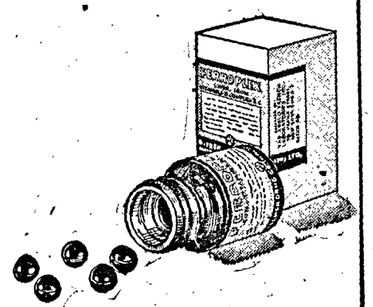
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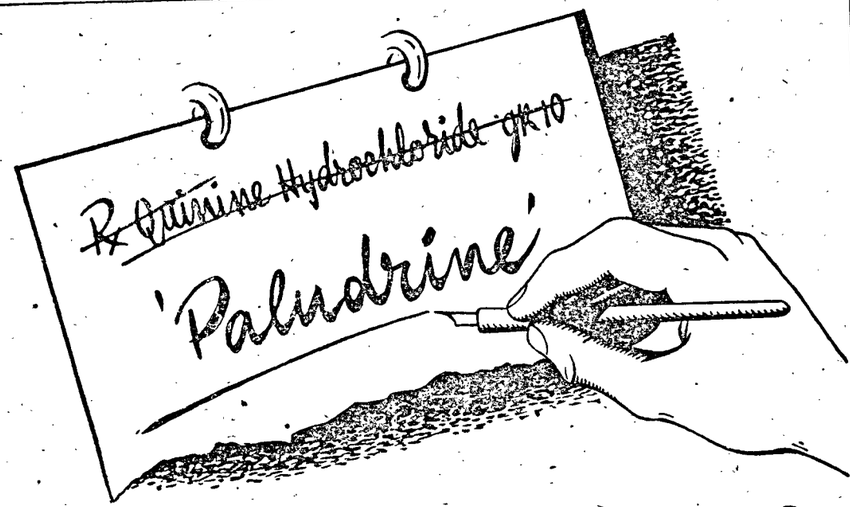
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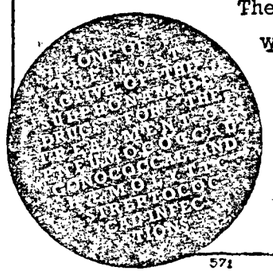
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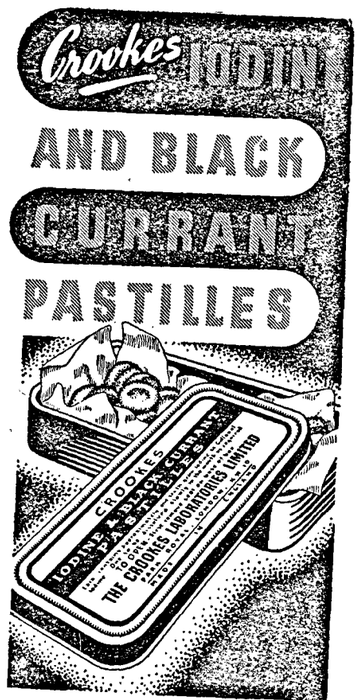
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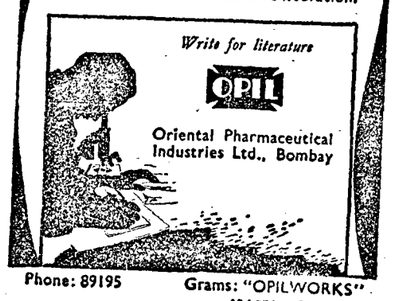
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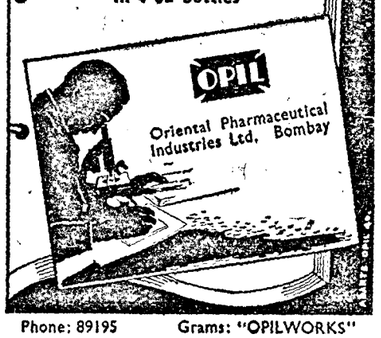
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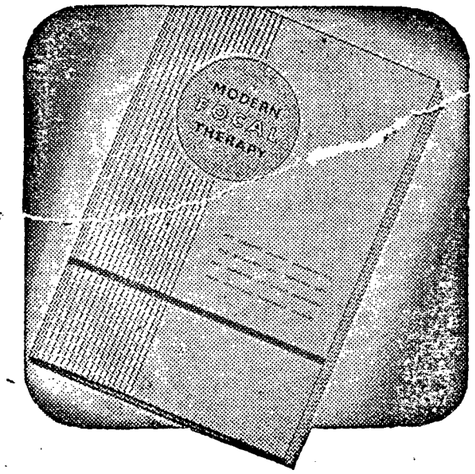
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(WITH MEDICO-POLITICAL SUPPLEMENT)

Vol. 41, No. 12 December 15, 1947

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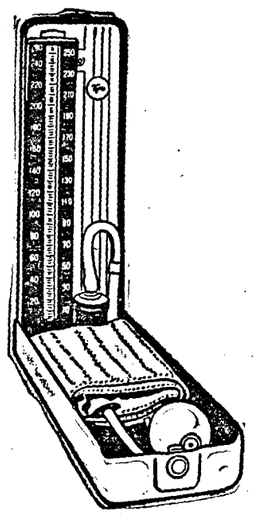
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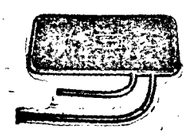
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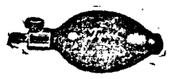
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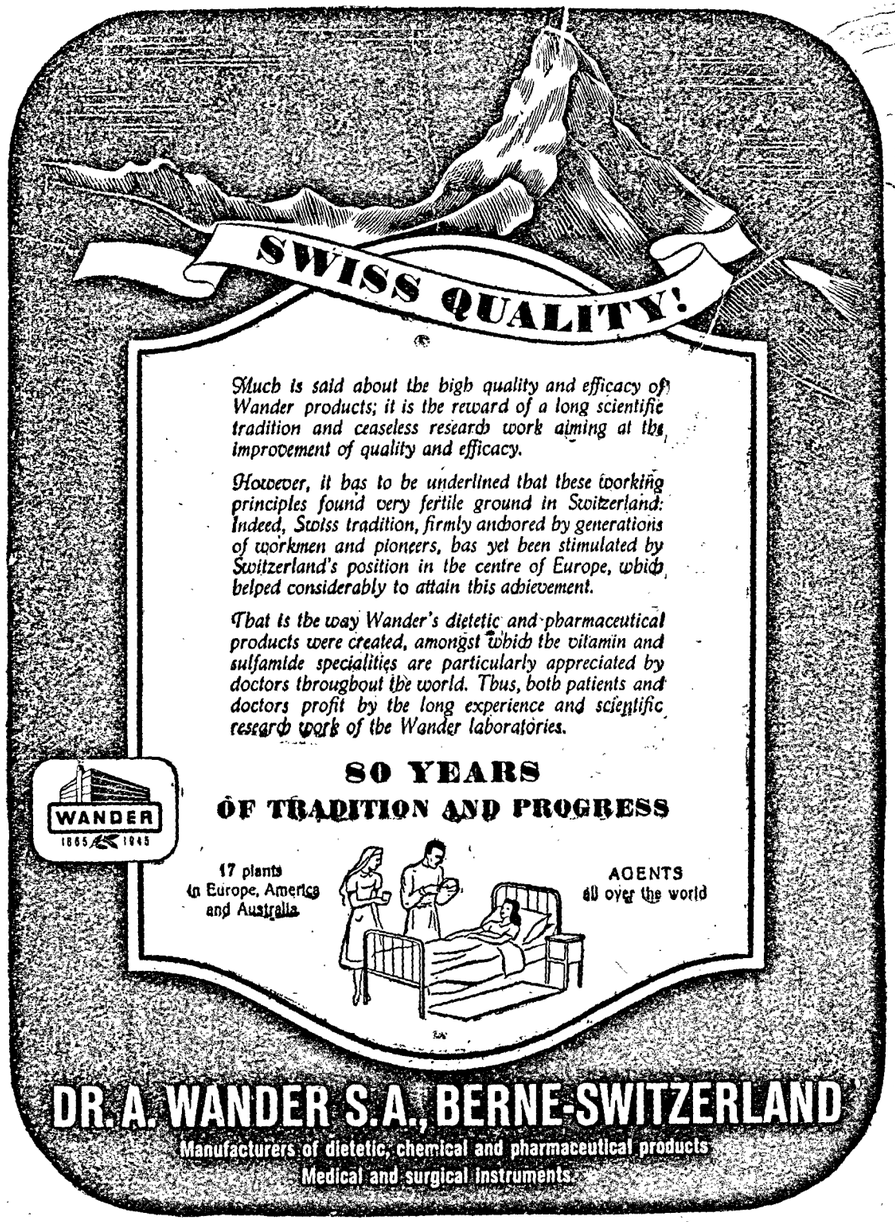
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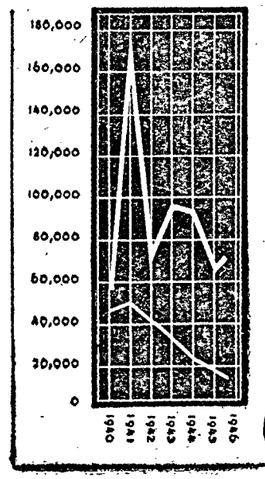
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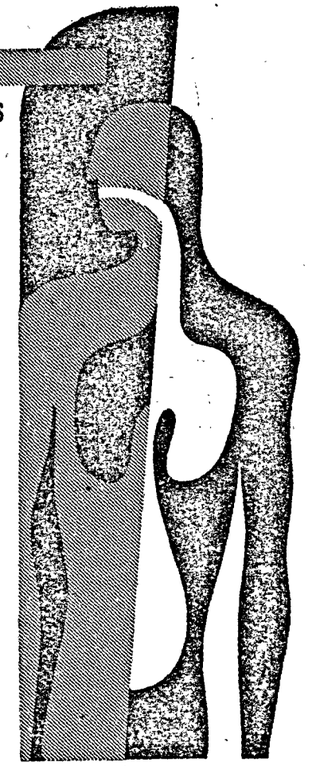
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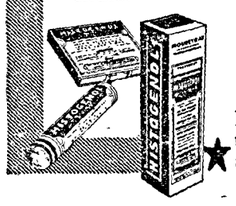
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* Santon Gilmour. (1937) *Tubercle, vol. 19, p. 105.*

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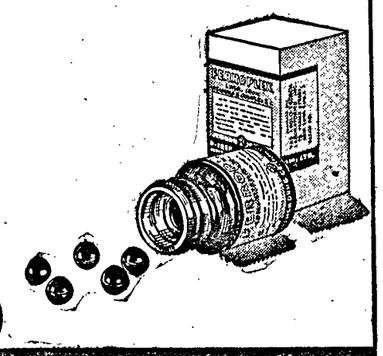
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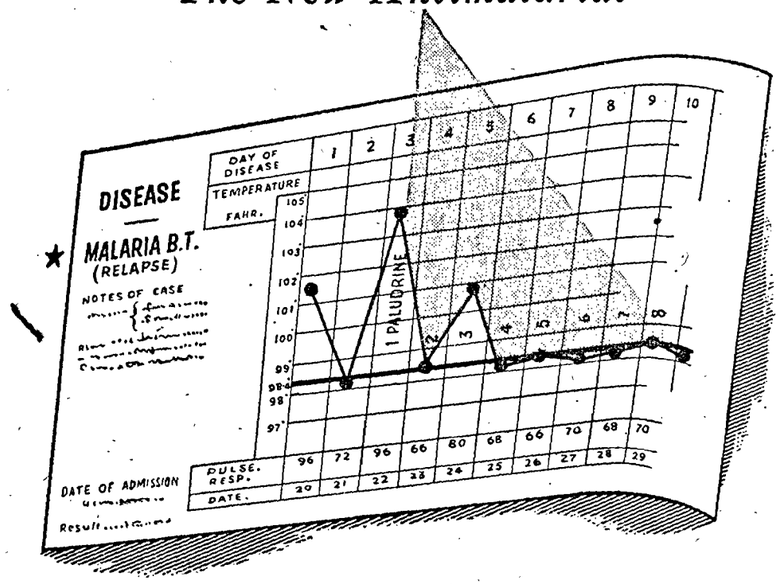
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References: O. Acklin (Therapeutic Review No. 4, 1945).

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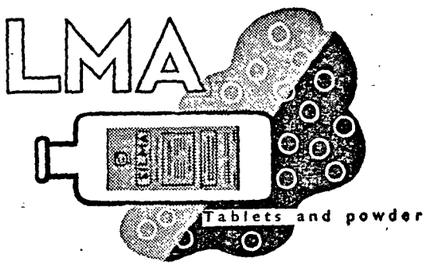
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Indian Medical Journal

(Journal of the All-India Medical Licentiates' Association

Vol. 41. Madras: December 15, 1947. No. 1.

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Indian Medical Journal

(Journal of the All-India Medical Licentiates' Association)

Vol. 41. Madras, December 15, 1947 No. 12

IMPORTANT NOTICE

As the Treasurer of our Association, Dr. Khan Chand Wohra, is held up at Rawalpindi in Pakistan and as normal communication to him is not possible owing to disturbed conditions, all the members and subscribers to the Journal whose subscription has fallen in arrears are requested to remit the same to the Office of the Indian Medical Journal, 32, Sullivans Garden Street, Mylapore, Madras 4.

No V. P. P. could be issued, as is usually done, since all the records are with the Treasurer. We appeal to the members not to await any V. P. P., in recovery of their subscription, but to remit it voluntarily to this office. This is urgently essential in the interest of the Association.

All the Bills of the Branch Secretaries and other office-bearers, passed by the Finance Committee, will be paid by this office until further notice.

(By Order of the General Secretary)

A. VISWANATHAN,
Editor,
Indian Medical Journal
Madras, 4.

Changes of address should be sent to this office only and to none else.

Members are requested to quote their roll numbers while remitting their subscription or intimating change of address.

OUR MONTHLY SURVEY

Marasmus Syndrome *:—The G. H. Q. (I. A.) Medical Research Organisation has brought out a monograph on *Marasmus Syndrome in the Indian Soldier* which is of great interest and value to the profession. Clinical material for the marasmus research was partly drawn from the repatriated Indian prisoners and partly from the units engaged in the then anticipated Malayan Campaign. Nearly 2000 patients were examined and from a study of these clinical impressions were formed. A small group of 50 patients were selected, on clinical grounds only, for a more intensive and exhaustive investigation, from the laboratory as well as the clinical points of view. Clinically the cases of marasmus studies fell into five main groups.

(1) *Marked Wasting but little evidence of specific vitamin Deficiency*:—Most of the cases examined were of this type nearly 60 per cent. They showed a low blood volume and low blood pressure, but improved rapidly on a high caloric diet.

(2) *Severe hypoproteinaemia with oedema and massive anasarca*:—This formed about 1 per cent of the cases examined, and showed a low plasma, low blood volume, and plasma protein concentration, particularly the albumen fraction. These cases responded dramatically to transfusion of concentrated plasma.

(3) *Deficiencies of Vitamins of the B 2 group*:—Riboflavin deficiency was characterised by angular stomatitis, sore, swollen and bright red tongue, and impaired gastric acid production and gastric motility. The nicotonic acid deficiency was characterised by loss of appetite; abdominal distension after food; a small, pale, mauve coloured tongue; tympanitis and diarrhoea; and impaired gastro-intestinal absorption. Incidence of these cases was about 10 per cent and they responded well to specific therapy.

(4) *Peripheral Neuritis*:—Incidence was about 20 per cent and they recovered fairly rapidly except where mascular contracture was developed.

(5) *Macrocytic (Nutritional) anaemia*:—The incidence of this condition was about 5 per cent. These cases were treated with T. C. F. Liver extract with excellent results.

The report is well documented and each case is described in fair detail. Full details of the biochemical investigations made are given under separate section with commendable clarity and precision. It is a well-planned and well executed investigation—really a great credit to the Medical Research Organisation of the Indian Army.

Anaesthesia:—This is the name of the Journal of the Association of Anaesthesists of Great Britain and Ireland, published quarterly from London. It is in the second year of its career. The current number (Vol. 2. No. 3) July, 1947 contains excellent and practical articles on various aspects of anaesthesia. Stanley Rowobothan gives a brief review of "A hundred years of anaesthesia;" F. F. Wady writes on "Spinal analgesia for the diagnosis of arterial dysfunction in the lower limb"; Macintosh and Mushin give their "Observations on the Epidural space"; S. F. Durans writes on "High Extradural segmental block". We think this journal will be highly useful to the anaesthesists of our country. Those who desire to subscribe may write to the Secretary, The Association of Anaesthetists of Great Britain and Ireland, 45 Lincoln Inn Fields, London W. C. 2.

* Investigations on the Marasmus Syndrome in the Indian Soldier by the Medical Research Organisation, G. H. Q. (I. A.)

ADDRESSES AND ARTICLES

Saline Treatment of Cholera.

BY

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History.—Saline, introduced in the treatment of Cholera, dates back to nineteenth century, first used as isotonic solution in 1831-32 by Latta and Mackintosh in Edinburgh.

Twofold are the changes of blood in Cholera, in the way of loss of fluid and of depletion of chlorides from the system. Frequent motions and vomitting cause dehydration of the body. Thus one half to two-thirds or even more fluid may be drained out of the blood, and the chloride loss may be greater in proportion to the fluid loss. A patient may be deprived of chlorides as much as 9.7 gm. through vomitting and 34.6 gm. in motions within 24 hours. Hypochloraemia pulls up blood urea-nitrogen from the normal (12 to 15 mg. per cent.) to 30 mg. percent or more. These in addition to the action of cholera toxins set up an eccentric current, the intestinal flux, and so infusion of isotonic saline shows no progressive improvement because dehydration cannot be prevented in such a pronounced depletion of electrolytes. The death rate recorded is about 84 per cent with isotonic saline,

This led Sir Leonard Rogers to think of departure from isotonic to hypertonic saline. He found that rapid replacement of the lost fluid and the lost chlorides, the salt in higher concentration, somewhat above the normal point in blood caused the vicious circle to break off by the physical process of osmosis. Here started a new era in the treatment of cholera by saline between the years 1906-15 which still holds good—rather the best with the introduction of a few adjuncts by the recent advances of science and some modification of Rogers' original formula.

Aim of treatment.—In cholera the pivotal points of treatment are :—

(1) to counteract the effect of toxin and its elimination from the body.

(2) to prevent the onset of uraemia.

(3) to destroy vibrio cholera.

Role of Sodii Chlor :—Sodii Chloride, a main ingredient of the saline, is an essential chemical compound of the human body. Chloride of Sodium combines with the cholera toxin and is excreted in urine by its diuretic action which it pharmacologically does possess. Hence as a detoxicating agent it is said to be useful and has been advocated intravenously in Uraemia, Septicaemia and Delirium tremons. Proper upkeep of the heart's action demand common salt. Given early in the disease, it prevents cardiac weakness and thus indirectly prohibits the tread of collapse due to by cardio-vasomotor weakness.

To sum up our views, saline, plain or alkaline with glucose will meet the necessities for combating cholera toxins and uraemia, as well as to help destruction of the causative organism indirectly by maintaining body resistance. Hence saline is the key-note in the treatment of cholera.

Bacteriophage.—Of course d'Herelle, Chopra, Chatterjee and others suggest Bacteriophage as a specific to destroy cholera vibrio but its efficacy depends upon having the proper preparation of polyvalent phage which should contain " all the probable types of lytic principles " and its field is limited to cases revealing agglutinating vibrios in the stool.

Sulphonamides.—In recent days Sulphonamide preparations have been advised orally in addition to saline treatment. These remedies are said to be vibriostatic and also vibriocidal to some extent Sulphanilylguanidine, Sulphathiazol and Sulphadiazine were tried with encouraging results. Sulphaguanidine being nonabsorbable is preferable. Reduction of mortality and the number of stools, improvement of uraemia and general symptoms were noticed more in cases under combined treatment with Sulphanilylguanidine and saline than with saline alone.

Various aniline dyes *e.g.*, Malachite Green, Crystal violet and Gentian violet were tested as vibriocide but without evidence of clinical improvement.

Mode of saline administration.—Saline may be given orally, rectally, by intraperitoneal injection, subcutaneously, and as intravenous transfusion. Following are the types of saline used :—

(1) Normal Saline :—	Sodium Chloride ...	90 grains.
	Redistilled Water.	1 Pint.
(2) Hypotonic saline :—	Sodium Chloride ...	60 grains.
	Redistilled Water.	1 Pint.
(3) Hypertonic saline :—	Sodium Chloride ...	120 grains.
	Redistilled Water.	1 Pint.

(4) Alkaline saline :—Sodii Bicarb 60 to 180 grains dissolved in a pint of hypotonic, normal or hypertonic saline. Sodii Bicarb should be sterilised by autoclaving as boiling converts it into soda carbonate. Solution of 7½ per cent ready made ampoules can be had where autoclaving is impracticable.

A decrease in blood sugar is frequent in cholera. Therefore Glucose may be added to any of the above solution in desired amount; usually 1 oz. to a pint of alkaline isotonic saline is used.

Rogers' original formula of hypertonic saline containing Sodii Chloride 120 grains, Pot. Chloride 6 grains, Cal. Chlor. 4 grains in a pint of water was based on the conception of Ringer's solution keeping the heart beating longer when perfused through it. But Chlorides of Potassium and Calcium are not used now a days, as hyperpotassaemia is a frequent precipitent of cholera and Calcium Chloride causes a sedimentation in alkaline saline.

Indeed calcium is needed as a routine, as serum calcium is lowered, and for its lessening cell permeability in addition to the action upon heart and lungs as tonic and sedative action over the nerves. Calcium-galacto-gluconate is used in place of the latter often separately, in 5 to 10 cc of 10 per cent solution intramuscularly or intravenously.

(5) Concentrated saline, comprises 10 to 20 per cent sodii chloride solution in distilled water.

(6) Gum solution, recommended by Bayliss in cholera, being colloid in nature slows down elimination of toxins and has therefore become obsolete.

Given orally, constant vomitting allows little saline to be retained. When occasionally retained if given in slips, the quantity falls far below the desired amount. It is helpful only when vomitting ceases towards recovery. Hypotonic glucose saline is the type preferred for oral route. Lactate Ringer's solution (Hartman's) is also satisfactory.

Subcutaneous saline is indicated (1) where vein is not detectable and open intravenous way impracticable, (2) presence of circulatory or pulmonary concomitants rendering intravenous saline dangerous *e.g.*, oedema lungs, asthma, pneumonia, bronchitis, cardio-vasomotor weakness or valvular disease of the heart; (3) rigors after insufficient quantity of intravenous saline; (4) hyperpyrexia with raised rectal temperature; (5) as a supplementary to intravenous saline in repeated collapse or the like; (6) milder cases with sp. gravity of blood not increased; (7) anuria with feeble good pulse; (8) presence of tympanitis.

Drawbacks of such bulky subcutaneous injections are pain, poor absorption and danger of sepsis. So long there is pulse at the wrist it is expected to be absorbed but with feeble pulse absorption is poor or none at all. Subcutaneous saline may be given under the axilla and breasts, in thighs, and over abdominal region observing strict asepsis and changing the direction of the needle by slight withdrawal after every 5 to 6 ounces in-flow, and when completed, the point of insertion of the needle should be sealed with collodium or Tr. Benzoin Co. and the part lightly massaged. Type of saline given under the skin should be isotonic. Hypertonic saline causes local irritation.

Rectal saline may be given early in mild cases where the pulse at the wrist is good. Four to ten ounces of alkaline isotonic or plain normal saline with or without 5 p. c. glucose by Murphy's drip method or through an all glass enema syringe to which a rubber catheter (Jacques No. 10) is attached may be given high up rectally according to the need. It may be pushed on every 2 to 4 hours to the patient with elevated hips, so long reactionary stage does not arrive. One to two ounces is the quantity at a time for children. Absorption of saline from rectum has been estimated to be fairly identical with that when given orally. Frequent stools hinders its administration. It comes to be a source of benefit if retained even for ten minutes at each sitting and is prescribed as a routine in the stages when retained. Urination is the indication towards improvement and continuance of rectal saline. At least a pint of urine within 24 hours should be aimed at and the injection stopped when urination becomes free and clear.

Rogers, Vrughan and others tried intraperitoneal injection of saline in cholera with some success. It is a means when subcutaneous injections fail and intravenous impossible. A small incision through the skin and fascia, one inch below the umbelicus is made and a canula, a specially devised one preferred, is inserted and as much as 3 pints of hypertonic saline can be introduced through it. The wound is sutured when the injection is done with.

The effect of intravenous transfusion is marked and rapid. It may be given by closed method as well as by open way. The closed method is better if collapse is not advanced to make detection of the vein impossible. It is wise to give adequate saline earlier, as smaller doses in early stages are better than larger ones in profound collapse. Time and quantity of saline should be guided by the sp. gravity of blood. Calculation of blood pressure as well as estimation of the fluid and cellular elements of the patient's blood by haematocrite are also helpful.

Blood pressure below 70 Hg. demands saline. Repetitions are justified if the pulse pressure remains below 20 m.m. Hg.

The following table gives a general idea for the amount of saline to be calculated by sp. gr. estimation.

Sp. Gr. of blood.	Quantity of saline required.
1058 to 1061	1 to 1½ pint.
1062.	2 pints.
1063.	3 ,,
1064.	4 ,,
1065.	5 ,,
1066. and above ...	6 ,,

Not more than 3 pints should be given at one sitting. Frequent repetitions are better than larger amounts at a time. This will allow the cardio-vasomotor system to adapt to the changes gradually as it does to gradual loss of salts and fluids. The rate of saline inflow must not exceed 4 ozs. per minute; one ounce a minute is safe and preferred. Vasomotor contractions in certain patients impede the flow of saline which may be eliminated by injections of ½ to 1 cc. Pituitrin. When the loss of fluid is the cause of collapse saline injection may be repeated as often necessary as indicated by the sp. gr. of blood or Haematocrite readings. But when it is the outcome of cardiovasomotor weakness, bulky saline infusion may be dangerous, even fatal. Collapse recurring due to cardiovasomotor weakness is a bad omen and no stone should be left unturned to tone up the vascular system. Here, in such cases, small quantities of concentrated saline with glucose and calcium may save life.

Temperature of saline is as important as the quantity. Rectal temperature should be the guide. If the rectal temperature is 103° F. or above intravenous saline should not be given before the body temperature is lowered by sponging and 15 to 20 ounces of iced rectal saline.

If the rectal temperature is :—	Temp. of saline should be.
100° F. ...	Room Temp. (80° F)
98° to 99° F. ...	98° F.
97° F. or less ...	100° F. or a little Higher.

It has been noticed that unpleasant reactions are more frequent with saline of higher temperature than with comparatively lower ones.

It has already been said that Sodii Chloride is diminished from the body. So also serum calcium

and blood sugar. On the other hand volume of erythrocytes, percentage of haemoglobin and potassium content of blood are increased. There is also an increase in urea and non-protein nitrogen. As collapse sets in, the systemic peripheral circulation begins to fail resulting in congestion of the splanchnic area and glomeruli of kidneys producing failure of renal functions. Sellards, Rogers and Shorten found that alkali reserve of blood is diminished in cholera and this decrease may amount from N/45 to N/100. If the alkalinity falls to N/100 or less, the unfortunate patient passes the thereshold point to helplessness. Such tendencies to acidosis call for alkaline saline. Every case should receive half to one pint of alkaline saline in the first dose and the rest of the necessary amount as hypertonic.

The increase in non-protein nitrogen in blood owing to hypochloraemia is lowered by sodium chloride in saline as the lowered alkaline reserve is compensated by sodii bicarb especially if glucose is added to the saline.

Reaction of urine should be the indicator of the need of alkaline saline. Alkalies can be administered safely so long as the urine is acidic.

Soda and glucose prevent liver damage and also renal injury not uncommon in cholera.

Contra-indications of saline

(1). High temperature.

(2). Cardiovasomotor weakness or valvular disease of heart.

(3). Lung complications.

(4). Tympanitis.

(5). Pregnancy.

If there are severe rigor, restlessness, persistent cough, suffocation; intense headache etc. the patient should be watched very carefully and the rate of inflow slowed down or stopped. If they pass off, transfusion may be resumed cautiously but if persisting or reappearing intravenous saline must be stopped to avoid disaster and substituted by subcutaneous or rectal saline.

Reactions after intravenous saline.—Reaction after intravenous saline in the shape of rigor and hyperpyrexia is sometimes met with which are due to :—

(1) Pyrogen in water used.

(2) Rapid inflow of saline.

(3) Discrepancy between the temperature of the saline and that of rectum.

(4) Absorption of toxin from the intestines.

Concentrated saline is an introduction to a new phase in saline treatment of cholera, hypochloraemia being more important than dehydration. It can easily be adopted, it can without difficulty be used in field practice and can also be administered in cases where bulky saline is contraindicated. Concentrated saline comprises 10 to 20 p.c. solutions which can be injected in quantities of 20 to 40 c.c The solution, at body temperature, should be given very slowly. Burning sensation for a short distance along the course of the vein may be experienced by the patient during injection. Glucose and soda bicarb solutions can be easily combined with concentrated saline. Concentrated saline with glucose given in cardiovasomotor weakness in cholera saved lives in our hands. It is really astonishing to find wonderful results after a single injection of concentrated saline in vein, the percentage of recoupment being noteworthy if given early in the disease. Subsequent injections of concentrated salt solution should be discontinued if hyperprexia, rigors, restlessness and coma develop after the first injection. Of course these reactionary symptoms are exceptionally rare.

Saline in pregnant patients :—Subcutaneous saline supplemented by rectal injection should be preferred. Only in urgent cases intravenous route may be selected but cautiously and not more than a pint of alkaline glucose saline should be given. Frequent repetitions of calcium-galacto-gluconate and glucose solutions in small quantities with 10 to 20 c.c. concentrated saline may be of use. Rate of miscarriage is high in pregnant cholera patients.

Children do not bear intravenous saline well. Subcutaneous and rectal routes are better here also. An ounce per year of age should be the dose of intravenous saline for children. Transfusion of saline has been advocated through a sternal puncture with advantage.

General measures.—With the onset of the malady the patient should be hospitalised or isolated in a suitable place for proper management; the saline outfits kept ready for the time of need.

Sp. Gr. of blood is the index for adoption of saline. Every repetition should be started with half to one pint of alkaline saline. Total quantity of saline depends upon the conditions of an individual case; it may be 1 pint, may be 30 pints or more in a day.

Atropine sulphate 1/100 to 1/200 gr. subcutaneously has a definite role in saline treatment, although not used as a routine now-a-days.

Conclusion:—The success of saline treatment depends upon the judgment and skill of the physician. The earlier the treatment is started, better the results obtained. The patients should be kept lying in rest with foot of the bed raised. He should be warmly clothed and protected from chill. He should be carefully nursed. Rectal temperature should be recorded.

Other remedies according to the side effects of the disease should receive attention from time to time.

Sterilisation of the outfits and the solutions as well as perfect aseptic measure in carrying out the operations are no less importment.

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Blood Grouping and Blood Transfusion*

BY

DR. V. IRAVATHAM D.L.Sc. D. T. M. (Cal)

Trichinopoly.

Historical.—After Harvey's discovery of the circulation of the blood, Sir Christopher Wren in 1650 injected opium, beer, etc., into the veins of dogs, using quills as cannulae, but the first transfusion of blood was given by Richard Lower, in 1665; he transfused blood from one animal to another of the same species, using dogs mostly as his experimental animals. The credit, however, for performing the first transfusion in man is usually given to Denys de Montpellier, physician to Louis XIV.

After this, transfusion was indiscriminately used as a curative agent in all diseases and in many cases animals were used as donors. So many deaths followed this indiscriminate use of transfusion that the operation was banned by the Royal Society in England and by the Academie de Medicine in France, and was condemned by the Pope as immoral. Blood transfusion then fell into disuse as a therapeutic measure for about 150 years, being revived in 1818 by James Blundell, an obstetrician in Guy's Hospital. For the first time, he gave transfusion through a syringe in cases of postpartum haemorrhage and claimed immediate success. In 1900, Landsteiner, an Austrian biochemist, made the crucial discovery of the presence of iso-agglutinins and iso-agglutinogens in the blood. On the basis of Landsteiner's discovery, Jansky, a Czechoslovakian, and Moss, an American, independently showed (1907-08) that the blood of the human race belonged to one of four groups I, II, III, and IV with the difference however that Jansky's groups I and IV corresponded, respectively, to groups IV and I of Moss; groups II and III being identical in the two cases. To do away with the confusion caused by the two different nomenclatures, recently an international committee of the Health Organization of the League of Nations introduced a simplified and rational nomenclature for the four main blood groups which they called A B, A, B, and O. The international nomenclature of the blood groups and those of Jansky and Moss are shown in the table below.

*By arrangement with *Miscellany*, Trichy.

International nomenclature.	Moss nomenclature.	Jansky nomenclature.
AB	I	IV
A	II	II
B	III	III
O	IV	I

Haemoagglutination and blood groups.—The transfusion of blood requires the use of compatible blood, that is, blood in which the corpuscles of the donor are not agglutinated, or haemolysed, by the plasma of the recipient (the patient), and the corpuscles of the recipient are not agglutinated, or haemolysed, by the plasma of the donor.

Transfusion of different elements of blood.

1. Whole blood.
2. Citrated blood.
3. Plasma.
4. Resuspended corpuscles.
5. Defibrinated blood.
6. Placental blood.
7. Cadaver blood.

Indications for Transfusions.

1. *After acute haemorrhage.*—To make good the loss sustained by an acute haemorrhage, the transfusion of whole or citrated blood, either preserved or fresh, is the most effective. The amount to be transfused will be dependent on the amount lost, but anything less than 500 c. cm. is unlikely to be effective.

2. *In shock.*—When this follows haemorrhage, it is probably most effectively treated by transfusion of whole citrated blood, but shock with or without any blood loss, following burns for example, which is due to haemoconcentration and stagnation of the blood in the internal organs, is more effectively treated with plasma alone, fresh or reconstituted from dried plasma.

3. *As a prophylactic measure against shock.*—In weak or exsanguinated patients, even if their condition would not ordinarily demand transfusion. this is often a very valuable procedure to prepare them for a surgical or obstetric operation: blood or plasma is given according to the blood state of the patient.

4. *In anaemia.*—Blood transfusion is indicated to replace blood lost by haemorrhage or destroyed by other processes, to maintain life in the case of aplastic anaemia, and or stimulate blood formation. Whole blood, citrated blood, or resuspended corpuscles can be used. In anaemia, repeated small transfusions of 300 to 400 c. cm. are usually better than a single big transfusion, say, 1000 c. cm.; in either case slow administration is to be recommended.

5. *For supplying other deficit elements viz.*, platelets in thrombocytopenic purpura, leucocytes in agranulocytosis, or fibrin in some cases of clotting deficiency, transfusion of whole blood will sometimes be effective.

6. *For counteracting toxins or increasing passive immunity.*—This is a procedure that was at one time in favour, particularly in America; the bloods of convalescents or of others who had received injections in order to raise the antitoxic value of their

blood, or to produce active immunity, were used as specific transfusions in certain cases. However, the new chemotherapeutic agents introduced in the last few years have put this procedure into the background.

Blood Substitutes

The present international conflict has intensified the interest in agents which might serve as substitutes for whole blood in the treatment of shock, burns and hemorrhage, a triumvirate of acute emergency conditions common to both military and civil practice.

The studies of a large number of investigators during recent years have established the fact that plasma is a satisfactory substitute for whole blood, and that its effectiveness is equal and frequently superior to that of whole blood in the treatment of any condition in which transfusion is indicated, with the exception of impaired oxygen-carrying capacity of the red cell, and severe anemia.

Although stored citrated blood unquestionably has fulfilled a great therapeutic need, and has proved to be a technically acceptable substitute for unmodified blood, its potential field of usefulness is limited since study has shown that it is relatively unstable. Without entering upon a quantitative consideration of the nature of this instability, we summarize briefly some of the more important changes which occur with respect to qualitative trends. When whole citrated blood is refrigerated under optimum conditions there is a gradual drop in the total erythrocyte count which reaches from one to one and one-half million red cells per cubic millimeter, in about thirty days. The longer the blood is stored the shorter will be the survival time of the red cells in vivo following transfusion. On this basis, blood stored longer than seven days is relatively inefficacious for the primary purposes of transfusion. The total leucocyte count falls 50 per cent, during the first twenty four hours, and by the tenth day no intact cells remain. The most fragile are the polymorphonuclear leucocytes. There is a marked increase in erythrocyte fragility, which may be controlled to some extent by the type of buffered diluent which is used, dextrose citrate buffer solution apparently being the most satisfactory. The prothrombin falls off rapidly to a therapeutically ineffective level, and thereafter a gradual loss continues. Potassium diffuses from the red cells into the plasma at an initial rapid rate, and then more slowly until equilibrium has been established. Stored blood is, therefore, contraindicated in those conditions associated with hyperpotassimia, such as renal and hepatic insufficiency, typhoid fever, influenza, pneumonia, parathyroid, tetany, Addison's disease, severe burns, and intestinal obstruction. As the potassium content of the plasma rises, the sodium content decreases, probably because of diffusion into the red cells. There is a gradual loss in total effective bactericidal activity which becomes most marked, after from seven to twenty-one days of storage. It would therefore appear that while stored blood is relatively effective in the treatment of acute hemorrhage it is inferior in the treatment of acute and chronic infections, hemorrhagic states, and the anaemias. When used for these purposes the storage period should not exceed seventy-two hours.

Taylor and Waters have outlined the properties of a transfusion fluid requisite to the restoration and maintenance of circulating blood volume as follows:—

"(*a*) The molecule of the dissolved substance must be of such a size that the fluid will not leave the vessels too freely.

(b) The solution must exert an osmotic pressure and possess a viscosity approaching as closely as possible that of whole blood. These qualifications depend upon molecular size and shape.

(*c*) It should be as nearly as possible isotonic with the contents of the erythrocytes.

(*d*) It must of course be nonantigenic and innocuous in every respect. In addition it should be readily available, preferably cheap, and capable of being quickly and easily prepared for intravenous administration.

In 1916 the use of gum acacia obtained from acacia senegal was suggested by Bayliss but although the substance was shown to have a limited effectiveness in the treatment of shock, unfavourable reactions and an understanding of its fate within the body have largely discouraged its use.

At one time ordinary gelatin was proposed, but was discarded because of its antigenicity.

Pectin, which has been suggested by Hartman and his coworkers, is derived from citrus fruits. It is a colloidal carbohydrate of high molecular weight, which, together with the mother substance protopectin, is found in plant cells in combination with cellulose, from which the pectin can be separated by hydrolysis.

Recently as the result of the brilliant work of Cohn much interest has been aroused in the use of the albumin fraction of human plasma in the treatment of traumatic shock. Plasma consists largely of water, each litre containing about 900 cc. Next to water, the main constituents of plasma are the proteins with molecules which are extremely large and of high molecular weight. The functions of these proteins are diverse, having to do with the clotting of the blood, immunity from disease, and the maintenance of osmotic pressure of the blood and, hence, the water balance of the body; some are hormones and enzymes, of which the functions have not yet been determined. It is possible to separate this complex series of proteins by precipitation under varying conditions of temperature and hydrogen-ion concentration, so that separate fractions consisting of fibrinogen, gamma globulins, prothrombin, alpha and beta globulins, and the serum albumins may be obtained.

The albumin fraction makes up approximately 65 per cent, of the proteins of the blood, and *et cetera* 85 per cent of the osmotic pressure provided by normal human plasma. By definition the albumins are water soluble; one hundred cubic centimeters of buffered saline solution which contains 25 gm. of human albumin exerts approximately the same colloidal osmotic pressure as 1,000 cc. of whole blood, or 500 cc. of normal plasma.

Attempts have been made by several investigators to use bovine plasma as a substitute for human plasma or whole blood, but the procedure has been found impractical because of the marked reactions which have occurred in a considerable percentage of cases.

Numerous other agents have been tried some of which should be mentioned here only for the sake of completeness. Gelatin was among the first but is, of course, unsatisfactory since it is definitely antigenic. Crystaline hemoglobin has been tried in the search for a blood substitute for use in the treatment of shock which would not only restore the blood volume but transport oxygen as well. Although fairly large amounts may be administered without causing undue reactions the amounts needed in the treatment of shock are dangerous. Various cases in hydrolysates have received intensive study, but are merely an incomplete source of supply for the amino acids and polypeptides used in the synthesis of the plasma proteins, and are of little or no value in the treatment of an acute condition such as shock.

Prior to the advent of plasma, the transfusion of whole blood was used widely and frequently promiscuously. The results were often disastrous rather than beneficial and it is now generally recognised that the transfusion of whole blood should be limited to cases of severe hemorrhage, certain diseases of the blood, in which there is a definite hemorrhagic tendency, and acute poisonings which decrease the oxygen-carrying capacity of the erythrocytes, such as carbon monoxide and nitrobenzol; it may be used as a palliative in various severe forms of hypoplastic anemias.

Plasma, on the other hand, has been found to be more effective than whole blood in the treatment of:

1. Shock, unless accompanied by extreme blood loss.
2. Severe infections, as a means of supplying specific and nonspecific antibodies.
3. Various conditions associated with hypoproteinemia, such as nephrosis, chronic infections, repeated paracentesis, severe burns, ulcerative colitis, and certain liver diseases.
4. Many blood dyscrasias, especially those characterized by hemolytic tendencies or fibrinogen deficiency.
5. Cerebral edema accompanying various injuries and toxemias.
6. Acute hemorrhage in emergencies until whole blood becomes available.

At the present time plasma is available in three basic physical states, each of which has its advantages as well as some disadvantages with respect to the particular circumstances under which it is to be used. The first is plasma which has been stored under refrigeration as a simple liquid; this form has proved useful in hospitals which operate blood banks and hence have a relatively low cost and readily available supply of raw material. Liquid plasma, prepared by means of a closed system and scrupulous aseptic technique, is both safe and satisfactory over limited periods of time. While this method is undoubtedly economical when operated in sufficient volume by large hospitals, it has been stated, "to operate a successful blood bank the hospital must do at least 750 to 1,000 transfusions a year, otherwise, it alternates between an excessive supply of blood which goes to waste and shortage"

Plasma, regardless of the method of preservation, possesses certain definite practical advantages over other blood substitutes. Plasma may be defined as that fluid portion obtained from whole blood containing an anticoagulant such as sodium citrate, after removal of the red and white corpuscles by centrifuging of sedimentation. It contains all of the proteins *i. e.*, albumin, globulines, and fibrinogen, which normally occur in the fluid portion of the circulating blood. Serum differs from plasma in that it is obtained from coagulated blood, and therefore does not contain fibrinogen. At the present time, medical thought is somewhat divided with respect to the relative efficacy of serum and plasma, but a recent review from the literature would indicate that the reactions from serum significantly exceed those following the administration of plasma. However, from a practical standpoint, serum is easier to prepare than plasma, since it can be rendered sterile by candle filtration, whereas plasma cannot.

It has been shown that because of the high osmotic pressure exerted by the plasma proteins, plasma does not diffuse from the circulation as readily as do crystalloid solutions; consequently, plasma is far more effective in restoring and maintaining the circulating blood volume.

An advantage of plasma over the blood substitutes is that it may be quickly and simply administrated, under adverse conditions if necessary, as no complicated apparatus or assistance is required. Plasma is safe, as large amount of citrated plasma have been rapidly and repeatedly administrated without causing untoward reactions. It should be remembered that regardless of what fluid is given parenterally, there will always be a certain incidence of reactions from one cause or another. This is an involved subject and will not be entered into here (since it has been admirably discussed by other workers.) It appears fair to say, however, that the general incidence of reactions for all forms of plasma administered under all conditions is in the neighbourhood of 5 per cent; for special series and for certain desiccated forms the reaction rate has run consistently in the neighbourhood of 1 per cent; this is a record which would be difficult to excel with any infusion medium.

Another therapeutically important fact is that plasma, in contradistinction to whole blood, does not further increase the haemoconcentration which invariably accompanies shock and severe burns.

These considerations led to the selection of plasma, and its procurement and storage in large quantities for the use of the armed forces; and the part which this has played in the saving of lives on the U.S.S. Kearney at Pearl Harbour, and elsewhere throughout the world has long since passed into legend.

One of the greatest indications for the administration of plasma, in military and to no less a degree in civil practice, is shock. Shock may be of many types which depend upon the precipitating factors. While there is considerable division of opinion with regard to the mechanism of shock, there seems to be general agreement with the teachings of Moon and others that the loss of plasma through the capillary walls into the extravascular tissue spaces with a decrease in blood volume is constant. The decrease in blood volume results in the fall in blood pressure which is characteristic of shock. However, Moon and his associates have demonstrated in a series of patients suffering from shock due to various causes that haemoconcentration precedes the fall in blood pressure and gives warning of a circulatory collapse. The essential aim in the treatment of shock, regardless of whether the condition is hematogenic, neurogenic, or vasogenic in origin, is the restoration of blood volume.

Another condition of major clinical importance in which plasma is indicated is a severe burn. (Five thousand deaths occur in the United States each year as the result of burns and many of these deaths might have been prevented by the early and adequate administration of plasma). Severe burns are a common cause of shock particularly on the battlefield and in the heavy industries. The physiological changes which occur in both situations are similar.

Plasma is also of value in the emergency treatment of acute haemorrhage, since no time is lost because of the necessity of grouping and cross matching. The underlying physiological principles which have already been outlined in connection with shock and severe burns apply also to acute haemorrhage, but there are in addition certain other physiological changes involved.

One of the most important questions in connection with administration of plasma is that of how much should be administered in a given case. No definite dosage schedule can be outlined as many factors, such as the age and weight of the patient, the blood protein level, and the condition under treatment, must be taken into consideration. The important thing is to give the plasma as promptly as possible, and in sufficiently large amounts to reverse the abnormal physiological changes which have occurred. We have never seen a report of too much plasma being administered but we know of many instances in which too little has been given.

Clinical value of the Appearance of Tongue

BY

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Guntur.

We all know that talking is one of the chief functions of the tongue. Without its direct aid, we cannot pronounce any word properly. The value of tongue in this direction is inestimable. By its abuse in speech we learn from history that kingdoms are lost and by its right use every precious thing is gained. People are provoked by a rude tongue into revolt and disorder and how a sweet tongue can work miracles is evidenced by Mahatmaji's post prayer talks in riot affected areas in Bengal and elsewhere. It is common knowledge how sometimes we have failed to get the favour of persons in power by merely not being able to talk convincingly and pleasingly, though our cause is righteous and honest. Now, let us consider its value in sickness and see how far its condition can help us in diagnosing diseases.

Some doctors may not care to put stress on, or give necessary importance to, the appearance of tongue while examining the patient. In many of our bodily ailments, tongue shows characteristic changes and it obviously plays an important role in the clinical diagnosis of many diseases. As such the examination of the tongue, amongst other things, as a routine procedure should form an important item. There are some who believe that characteristic changes in appearance of the tongue are only peculiar to diseases of the alimentary canal but in reality it is not so, and it manifests changes in diseases of other systems also. Therefore, while making a systematic examination of the patient, we should not forget to look carefully at the tongue to find out any changes from its normal condition, regarding (1) colour, (2) secretion, (3) furring or coating, (4) movements, (5) size, (6) scars, fissures or ulcers and (7) temperature and so on.

It is not necessary to describe in full all the pathologicol characteristic changes of tongue which occur in various diseases, but I should like to narrate briefly certain of them which may be found in some of the common diseases which we come across in our daily practice.

1. "*Blotting paper*" *tongue*; This is often seen in a characteristic way particularly in advanced cases of ankylostomiasis, perhaps due to grave anaemia. Sometimes also it may be found after profuse bleeding.

2. "*Raw Beef*" *tongue:* It is found in advanced stage of Diabetes Mellitus, in which the tongue becomes much red and dry looking like raw-beef. This peculiar appearance is due to exfoliation of the superficial epithelium of the tongue, because of its dryness owing to polyuria.

3. *Blue tongue*: It is present in cynosis as in pneumonia, congenital heart diseases and asphyxia.

4. *Yellowish tongue*: Found in jaundice indicating biliary and liver diseases often. It may be caused by Mepacrine given for malaria and also in some cases after Penicillin administration.

5. *Black pigmented tongue:* Peculiar to chronic Malaria and also sometimes to Addison's disease.

6. "*Typhoid tongue*": In typhoid fever, the tongue becomes dry and coated with creamy fur. Its tip and margins, particularly the tip, look much red.

7. *Toxic tongue*: It is markedly red and dry, sometimes heavily coated and dry, and when made to protrude shows tremors.

8. *Dyspeptic tongue*: The tongue is wholly or partially coated, often with longitudinal fissures here and there on the surface and the margins are indented.

9. *Constipation tongue*: In habitual constipation a thick dirty white coating is seen on it.

10. *Tongue in Stomatitis*: In this common condition tongue is seen becoming red, profusely moist, ulcerated and painful, but in the thrush which is found in very weak children, it is almost covered with a dry greenish-white membrane which when separated leaves the surface ulcerated and bleeding.

11. In different diseases of nervous system as facial paralysis, movements of the tongue are mainly affected; and they become either defective and irregular or lost completely.

12. In sprue it has got its characteristic appearance of being bare and polished along its centre. It is clean and devoid of fur. Red and swollen during exacerbations, otherwise it is small, pointed and looks yellowish.

We can fairly estimate the prognosis of a disease from the condition of the tongue. (1) If, at the onset of a disease the tongue gets a dirty coating and is moist and then gradually becomes dry and blackish in appearance, it indicates a serious condition. (2) When in the course of a disease, the tongue is found gradually becoming moist and clear, it really indicates a favourable prognosis towards recovery. (3) If the central portion of the root of the tongue gets devoid of its furring, which has been previously present, and becomes bright red, it shows a prolonged course and that recovery is not likely to occur soon. (4) If during the course of an illness, the tongue is getting clear to some extent and then again becoming covered up with a dirty coating, it is an indication of re-inforced infection; or if the fur on the tongue disappears soon and its surface becomes fissured, glistening and blackish then it shows a very bad prognosis.

Thus, we see that a close examination of a patient of his tongue plays a most important role in helping us to form an idea towards a correct diagnosis and prognosis of some diseases of daily occurrence. Therefore I urge that it is essential that we should not leave out the examination of the tongue without assessing the value of its pathological condition whenever we have to see the sick man with a view to knowing how he is making progress towards his recovery.

The Doctor*

BY

R. K. NARAYAN

Every normal person at eight years of age dreams of becoming a locomotive driver, and at eighteen of becoming a doctor. The first ambition fizzles out very soon for obvious reasons, but the latter, the desire to be a doctor, persists till the rigours of admission to the company of the elect drives one away to the hospitable, if laborious, History and Economics group. And then one spends the rest of one's life, looking back with a sigh upon this abandoned ambition.

Doctors ever remain a favourite subject with me. I can sense one a hundred yards off. How? Not through observing the irrepressible stethoscope, sticking out at the pocket,—that anybody with a pair of eyes could do. It is not even by sniffing the air for the aroma of disinfectant that surrounds a doctor like an aura. It is by sensing something far deeper. The impress of a profession on a personality is something subtle and can hardly be described in so many words. It may be compared to the convoluted grains one sees on a seasoned teak plank. Such a pattern on a piece of wood is verily its autobiography: if only we could learn to decipher them, we should read in them the story of its birth as a plant, its growth, its forest companions, and of the varied saps that it drew up from the bosom of the earth, and all the buffeting it has had from capricious wind and weather, as it struggled its way upward. I suddenly find that this simile is growing out of proportion, I fear that I may spend the rest of this evening talking of trees. I have set out to speak of doctors. And this simile occurred to my mind naturally. No other profession (except a musician's or an artist's) soaks so completely into one's blood as the medical. For example, a lawyer can afford to forget his clients and their bundles of paper when the court closes for the day. So also the engineer. He might be engaged in building the most complicated bridge, but he can set aside his scales and figures and play a game of cards without thinking of the matter for a while.

But not so the doctor.

He is all the twenty-four hours a doctor, and all the days of the year a doctor.

There is no such thing for him as forgetting his profession. On the day he stepped into his college as a fresh medico, he set aside every other interest, and the system took him in wholesale. He got into the habit of leaving home when all others were still asleep. Spick and span in his suit on his cycle, and he was off—meeting the rising sun on the way. Thereafter he cut up corpses, listened to lectures, took down notes, watched sick-beds, and returned to his room only to burn the midnight oil in the company of a bleached skeleton or a part thereof, with the mighty Gray's Anatomy on his lap. It was a life of unremitting labour. His home, domestic relation-

* Broad-cast by the author on 9-11-47. *Courtesy*: *A. I. R., Madras.*

ships, etc., and the outside world in general, gradually faded out as something unimportant and made him generally a nonconformist; so that his behaviour in society did not always appear quite normal. I think it was Dickens who said, 'Blasphemous as a medical student'. The Medico exhibits a contempt for the orthodoxies of life, he is sometimes inclined to be loud, and deliberately jovial, and utter remarks calculated to shock elderly persons. But all such behaviour must be viewed indulgently, because it is more than balanced by the earnestness with which he pursues the study of medicine. If he shows indifference to ordinary people, he has a wholesome regard, or even terror, of his masters. Thus he spends five years.

His next stage. He steps on into the world full of hopes and plans. But his real troubles start only now. What was till now only an academic affair suddenly becomes an unmitigated reality. It was all very well standing behind the surgeon and watching an operation, or discussing the intricacies of Materia Medica in the dining hall: it was a different thing striding through the wards as a house-surgeon and cross-examining the duty-nurse—in all this the sickman was only a partial reality—an object of study or training, belonging to an institution. But now, whether he has hung up a board as an independent practitioner or whether he accepts a job in hospital, sickness becomes a responsibility. When he finds the first tongue put out at him, he is, frankly disconcerted. I have it on the confession of many medical friends that a normally sensitive young doctor is seized with a desire to run away when he is face to face with his first independent case. I have made deep and exhaustive enquiry into this matter, and it seems to be the invariable rule for the young doctor secretly to wonder if he is going to send his patient home alive at all. But it is a passing phase. It is only a question of time before the doctor understands sickness and humanity and his own place in the scheme. He realises soon that much of his day's work consists in keeping up his patient's morale. He must choose his words with care and deliver them with the necessary softness and nuance like an actor. "Oh, doctor, when will I be able to move about like the rest?" asks the cripple. And he ought to answer if he could afford to be blunt: "I'm not an astrologer do you see? It may take years. Don't ask how many years, I don't know it any more than you do. It's Nature's secret." Well, he cannot afford to say so. So he answers with a lot of cheer in his voice. "Say in about six months you should be able to run about." Sometimes he is urgently summoned by telephone to the bedside of a chronic patient. He feels the pulse, looks under the eye, taps the chest, and looks solemn, while he feels like crying out to the patient: "You fat-head! Nothing wrong with you. It will do you good to eat less; it will do you good to swing your arms and walk three miles a day or run as if a tiger were behind you. Go on, exercise this miserable body of yours. It will do you good to think less and less of your bank-book. I see nothing wrong with you. The remedy lies in your own hands." But he knows he can never say so. Not that he is afraid to speak the truth. But he knows his patient will not relish it. It may make him more ill. So he unscrews his pen and writes down a palliative, whispering softly: "Have a light diet. Avoid all excitement, and try to get as much fresh air as you can." He is in duty-bound to give every ailment a name and administer the appropriate medicine for it. Otherwise he is in danger of gravely irritating his patients. Axel Munthe mentions in his book how a certain disease called colitis was very much in fashion in Paris at one time and how he came near being lynched by his fellow professionals as well as by his clients when he attempted to tell them that there was probably no such disease as colitis. A doctor has to give the public what it wants, very much like a film-producer or a popular journalist. A new fad becomes the rage in each season, and every sort of ailment must be traced to it. If I remember right, 'Calcium Deficiency' came into vogue about ten years ago. You suffer from redness of eyes. Well, it is due to calcium deficiency. If you feel cramps at your ankles you are again a victim of calcium deficiency. You suffer from defective memory or feel like heaving a stone at your neighbour. That is again calcium deficiency. You have only to begin: "Doctor, I have——" You don't even have to finish your sentence, before you are told: "I'm afraid you are in for it. Take a lot of calcium— —" Calcium Deficiency may reign supreme in one season and give place to Vitamin B. During certain seasons, the doctors will declare lack of Vitamin B to be at the bottom of every mischief. The patent medicine manufacturer keeps his ears alert and the label on his bottle promptly proclaims that it fills up the latest deficiency. There are other medical fads too. At one time many doctors, of more surgical cast of mind, used to believe that a race of superman could be created by the removal of tonsils. If it was not tonsils, it was some gland in the body. You just scissor off the impediment and lo! you become radiant and long-lived. For such a doctor a human being seemed not different from a tree, shooting off clumsy, ill-arranged branches, which needed drastic trimming. It speaks for the hardihood of the human race that it has so far survived every kind of experimental fad tried on it.

I can now hear my doctor thumping his table and saying: "You ingrate! What is this you are saying about us? Do you think we are unscientific quacks? How do you think you were saved when your septic throat took you to the edge of your grave? Who do you think pulled you out of pneumonia? You think you were saved by your own wit?"

Oh Doctor, I am so sorry you feel hurt. I'm not referring to you. I'm sure you are very good in your own way. When there is any real crisis I know you will roll up your sleeve and prepare yourself for a real fight with disease and pain. With your sterilizer, needle, knife and bottle, you will step into the arena. I know, at such moments, it will be a fight to a finish—the last round. Either the patient or the disease must go. You will tax yourself to the utmost. You will forget food, sleep, home and your family. When you succeed in the end, you will feel a joy unequalled in the world. When you see your efforts prove fruitless you will show a resignation exhibited only by the greatest philosopher. You will pick up your bag and mutter before going; "We did our best," the saddest words ever to come from human lips.

Well, I'm not referring to you. As in other things, there are different types even among doctors. You, the family doctor, is a type as much as the champion of vitamin or calcium, and I have said nothing yet about the specialist. He knows more and more about less and less. Is that not the definition of an expert? A human being is just an ear or a bone or a heart for him. He can only tackle the jurisdiction of which he is the master and not a hair's-breadth beyond it. A story constantly occurs to my mind which I shall write down some day. It is a modern fable. A man went about with an excruciating pain, say somewhere between his left ear and eye. He was packed off to the eye-specialist who probed and found that the pain was not within his boundary aud turned him on to an ear-specialist. The ear expert declared the pain had nothing to do with his portion, and suggested perhaps he should consult a bone-specialist. The osteopath found all the bones in perfect order and advised him to see a mental doctor. This latest kept him under observation and declared that the pain was the result of auto-suggestion, and advised him to train himself not to think of it; he also threw in a suggestion, just to eliminate the possibility, that he had better see a dentist and have all his teeth pulled out. Thus goes on the story of the sufferer. I have not decided how it should end, but I am sure if it is continued it will run into a long serial. And even then I may not be able to conclude it satisfactorily, unless perhaps a doctor came in to my rescue.

SELECTED ARTICLES

Penicillin in General Practice,—BY G. L. ROBINSON, M.D., M.R.C.S., L.R.C.P., (*From the Overseas Post-graduate Journal, October, 1947*).

Introductory

This lecture purports to be no more than an elementary summary of what is generally known about penicillin at the present moment, and it is as well to state at the outset that a good deal of that knowledge is still of a tentative nature. In treatment particularly, the establishment of a remedy and its method of use depends not upon the reported cure of a few, but of a statistically significant number of cases—a criterion which has not yet been fulfilled in the case of many diseases now coming under penicillin treatment.

You will find, therefore, that you are in some sense thrust into the position of experimenting upon your patients, that cut and dried procedures are not yet wholly the guide but are going to be partly the result of your efforts. Ordinary streptococcal tonsillitis may serve as an instance; does it always, as some say, or does it sometimes, as others say or does it never yield to penicillin lozenges? With Vincent's organisms, the kill by the lozenge is definite, but with the more invasive streptococcus perhaps it is necessary to give injections of penicillin as well and, if so, perhaps the more comfortable sulphonamide tablet may prove no less efficient. That is one thing which you in your practices will find out.

Now let us proceed to follow the synopsis which is provided because the subject involves a good deal of detail and of figures not easily carried in the head.

History

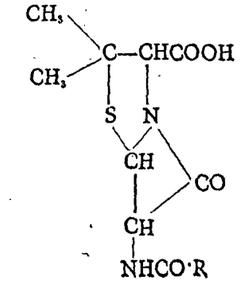
1. *Early Work.* The green mould penicillium notatum was described by Westling in 1911. It consists of the usual mass of microscopic threads, some with fingers (the penicillus) from which spores are shed. Most creatures tend to regard their neighbour with rather a jealous eye; if you are a viper you may make a venom which will clot his blood; if you are a man you may put a lock on the front door or turn yourself into a limited liability company; if you are a mould you may make an antibiotic. There are many examples of such antibiotics: gramicidin, the product of a bacillus, streptomycin, that of a soil fungus, helvolic acid, that of a mould, active against tubercle bacillus yet, unfortunately, poisonous to the liver. The antibiotic principle of penicillium notatum was observed by Fleming in 1928, who named it penicillin, who found it active against a wide variety of bacteria *in vitro* and who produced crude unstable solutions of it.

2. *Second Attack.*—It was the arrival of the sulphonamides in the 1930s that exploded the popular medical myth of the therapeutic invincibility of bacteria ensconced in the tissues and revived the old notion of *therapia sterilans magna.* This led to a second investigation of penicillin by a group of workers under Florey in Oxford, who succeeded in producing a stable, dry, concentrated penicillin, publishing their results in 1940.

Present Stage.—Owing to war conditions here, mass production was started by the Americans, who used a new strain of penicillium (chrysogenum instead of notatum) more suited to deep culture, which they substituted for the earlier surface method, developing the thoroughly practical engineering process now adopted also in England.

Method of Manufacture

Large hermetically sealed tanks are charged with cornsteep medium and sterilized by blowing steam through them. After inoculation the process of deep fermentation is maintained by bubbling sterile air through the culture and by controlling the temperature. When the yield is maximal the fluid is filtered from the mould, concentrated by organic solvents and absorption procedures till it contains about 10 per cent solids, and dried frozen with the penicillin in the form of calcium or sodium salt.



Chemical Properties

In the probable structural formula there is a carboxyl group showing that penicillin is an acid, capable of forming salts and esters, and a letter R indicating the position of different chemical groups in the four different varieties of penicillin known as I, II, III and K.

Pharmacology

1. *The Unit.* One Oxford unit is the minimal inhibitory dose for the standard Oxford staphylococcus in 50 ccs. of broth. This unit equals, and is now replaced by, the International Unit, which is 0.0006 mg. of crystalline sodium penicillin II.

2. *Action.* Penicillin destroys certain bacteria in their growing phase. Sometimes they can be seen to swell up before disintegrating under its influence. The chemical nature of this action is at present unknown. In the synopsis (see Appendix A) is given a list of micro-organisms arranged in penicillin-sensitive and penicillin-resistant groups. But, like human courage, penicillin-resistance is not an absolute quality possessed by one and not another. Some have more, some less, and the display may vary with circumstance. Courage in battle has been ascribed particularly to the male, but you must all have noticed how the roles have reversed in the donors' panels. There are reports that meningitis due to Pfeiffer's bacillus (haemophilus influenzae) has been cured by intrathecal injections of large doses of penicillin. Thus it seems that, faced with a penicillin lozenge, Pfeiffer's bacillus may survive, yet boxed up with penicillin in the meninges (from which the leak is slow) it may perish. Another situation where penicillin acts at an advantage is the urinary tract, into which it can be poured (so facile is its excretion) like Niagara Falls, and where it has been said to be capable of sweeping away even the highly resistant proteus.

However, it is not wise to concentrate on exceptions. The golden rule is that before treatment with penicillin you should establish the sensitivity of the organism you are attacking. Roughly speaking, an organism may be said to be sensitive if it is not more than ten times as resistant as the standard Oxford staphylococcus.

3. *Path of Penicillin in the Body.* Penicillin is very rapidly absorbed after injection, penetrates everywhere except to the tears and cerebro-spinal fluid, and is quickly excreted. Saliva and the interior of the red blood cells are less penetrable than other tissues; normal or acutely inflammed serous sacs are penetrated, but chronic collections of pus with fibrous walls are largely isolated from the action of penicillin. The placenta is readily permeable.

Sixty per cent of injected penicillin is excreted by the tubules of the kidney. Hence there occurs a delay in excretion if the tubules are overworked, as in nephritis, or the administration of some other tubularly excreted substance (such as amino-hippuric acid) simultaneously with the penicillin. Ten per cent. of injected penicillin is excreted in the bile, but in treating biliary infections it must be remembered that disease in this quarter may be caused by insensitive coliform bacteria. The remaining 30 per cent of injected penicillin is destroyed in the body by some unknown process.

4. *Toxic Effects.* Penicillin is completely non toxic, locally and systemically. This means that if the dosage is pushed up to some fantastic figure, and the preparation is pure, the symptoms produced will be those of poisoning by the metal (usually calcium or sodium) with which the penicillin is combined to form a salt.

Thus the only reaction to be expected from penicillin itself will be one of allergy. About 5 per cent. of our population are said to give positive intradermal tests to penicillin at the present moment. True allergic reactions have been reported (usually in the form of rashes) and are sometimes ascribed to previous sensitization by moulds. Probably most allergic reactions are due, like the other types of reaction observed, to impurities. As preparations get purer, reactions get fewer.

If a penicillin reaction threatens to curtail treatment, it is worth while testing the effect of the vehicle alone and of the penicillin alone and then, if the latter is positive, of a different make of penicillin before abandoning treatment. Reactions are commonly so trivial that treatment does not have to be interrupted. It is probably in general practice that most judgment will be required in these matters, for it is easier to ignore a reaction in a severe hospital case, such as a child with staphyloccal osteomyelitis and pericarditis, which is, moreover, under constant surveillance.

Other unpleasant effects due to impurities in the preparation are:—

(*a*) Thrombosis of veins in intravenous treatment.

(*b*) Local pain on injection.

(*c*) Penicillin fever (slight degrees of which are by no means uncommon and have to be distinguished from the pyrexia of the disease under treatment).

(*d*) Meningeal irritation in intrathecal medication (which may progress to actual damage).

(*e*) A slight, and still doubtful, ecbolic action.

In other words, there is still a variable amount of irritant impurity in penicillin preparations which may be expected to lessen as time goes on. In England and the U.S.A. official tests of all batches are performed on mice so that gross degrees of toxicity are excluded.

There is also one local effect which you will meet quite commonly: this is the sore mouth which follows treatment by penicillin lozenges. Discomfort may be considerable for about a week, though there is no danger. The cause is said to be the extinction of the normal flora by the action of penicillin itself.

Finally, one should bear in mind that it is possible to get a Herxheimer reaction from penicillin, just as in the case of other anti-syphilitics, and that hepatitis may be caused (and has already been reported) by the transmission of infected blood from one patient to another. The prevention of the latter consists in sterilizing the syringe as well as the needle between patients.

5. *Effect of Animal Tissue on Penicillin Action.* Blood, pus, lymph and bacterial bodies do not decrease the power of penicillin. This is not even true of sulphonamides where, for instance, bacteriological assay is hindered by the anti-sulphonamide action of the peptone employed in the culture medium.

6. *Destruction of Penicillin.* The purer the penicillin the more stable it becomes. It is especially sensitive to heat, water, acids, alkalis, oxidizing agents and heavy metals. Bearing these facts in mind it enables one to predict its behaviour under various circumstances; instability in acids, for instance, would indicate its destruction in the stomach, and it follows also that aqueous solutions would be less stable than oily suspensions where water is excluded. Since the sodium salt is hygroscopic, the calcium salt should be the more stable. In fact, an oily suspension of the calcium salt will last for six months at cool room temperature, whereas aqueous solutions lose much potency in one week, even in the refrigerator. A point worth remembering in connection with penicillin drips is that certain kinds of tubing made from impure rubber may inactivate the solution.

Another special point is the liability of penicillin to be destroyed by the enzyme 'penicillinase,' which is made by certain bacteria, notably of the coliform group. The enzyme is not, by the way, the cause of penicillin resistance, since some bacteria which can make it are sensitive to penicillin. There are three practical conclusions to be drawn about penicillinase. One is that it is no good giving penicillin by the rectum where coliform bacteria abound. Another is that the persistence of a penicillin-sensitive microbe under treatment may be due to an accompanying penicillinase producer. The third is that if your penicillin preparation should happen to be contaminated by a penicillinase producer it will become inactive.

7. *Acquired Resistance to Penicillin.* In the laboratory and in the animal body a germ may become trained to resist the action of penicillin. There is no difference between this kind of training and any other kind. It is a question of becoming habituated by starting with small doses and working up, just as Thomas de Quincey did with his opium, or a professional juggler does with his plates. When de Quincey stopped his opium his acquired tolerance decreased. The juggler who does not practice drops a plate on his nose. In the same way acquired penicillin resistance is only temporary, often quite short, so that effective therapy can be started again after a rest. But the solution of the problem in practice lies in giving big enough doses from the start, so that tolerance is never established.

This phenomenon must be distinguished from the inborn power to resist penicillin which is very occasionally found in individual strains of penicillin-sensitive organisms.

Methods of Assay

Three main assays are required: tests of strength of preparations, of concentration of drug in body fluids and of resistance of a pathogenic microbe compared to that of standard organisms. All methods depend on comparing degree of inhibition of bacterial growth on solid or in liquid media with that of standard bacteria and standard penicillin solutions. Rough quantitative results suitable for controlling treatment are thus obtained. And sooner or later, after many cases where the laboratory merely tells you what you already know, you will come to a case where success or failure depends upon these assays.

Therapeutics

The synopsis gives a list of official and unofficial preparations of penicillin (see Appendix B) with their times of endurance. Generally speaking, penicillin should not be mixed with other drugs, but it is useful to remember certain permissible combinations; sulphonamides are compatible when solid, but not in solution; novocain and cocain are compatible, but adrenalin in its usual acid solution is not, therefore any novocain used must be free from it; NAB is compatible; alcohol is compatible only up to 25 per cent, above this strength it rapidly destroys penicillin; chloro-cresol and phenoxetol are two antiseptics which are not destructive of penicillin in concentrations up to about 5 per cent.

Treatment

1. *General.* Penicillin represents as great an advance in treatment as did anaesthetics in the control of pain or the great bacteriological decade of 1880-90 in the diagnosis of disease. You now have in your bag a magic strong enough to deal with severe illness, and your patients know it. Hospitals are overcrowded. Patients do not like hospitals. One would expect, therefore, a tendency to reversal of the flow of cases which the practitioner sends to hospital. Whether the practitioner resists the tendency or not, whether the tendency is good or bad, it must be there. In some years' time when, say, the fluctuations in mastoid operations have been statistically analysed, it may be shown that the tendency has or has not become a fact.

This new penicillin work carries into general practice some of the responsibilities, the rewards and the requirements of hospital practice. The particular requirement which at once crops up is the laboratory. If you are to use penicillin in a scientific manner, which is the only way to use it, you need a laboratory upon your visiting list. To ignore laboratory help is like tying a bandage over your own eyes, and if you can draw the large number of syringes you are going to use, guaranteed clean, sharp and sterile from the laboratory sterilizing department, so much the better.

2. *Route and Dose.* The object of systemic penicillin treatment is to produce and maintain for as long as necessary, a bactericidal concentration in the blood stream. This concentration, which can be measured in the laboratory, amounts to from one-tenth to one-quarter of a unit per cc. of blood. It may be produced by the following subcutaneous or intramuscular dosage:—

Aqueous, three-hourly	...	20/60,000 units
Oily, twice daily	...	120/200,000 ,,
Oily, once daily	...	100/500/3,000 ,,

There is definite evidence that the higher dosage shortens the illness; it is less likely to lead to penicillin resistance on the part of the microbe; it can harm nothing but the microbe and purse. Therefore, if there are to be two schools in penicillin therapy, common sense would recommend the high dose and not the low dose school.

Attempts to prolong the penicillin action by increasing the intramuscular dose of aqueous solution are unavailing, in spite of statements that extra dosage at night will last till morning. Here are some figures which show that the problem is like that of the Atlantic liner where, for every extra knot of speed above a certain level the amount of extra fuel required becomes increasingly greater; 10,000 units maintain the blood bacteriostatic two hours, 25,000, three hours and 100,000, four hours.

It has been said that penicillin therapy is like trying to fill a bath with the plug out. To counteract this rapidity of excretion the intermittent three hourly intramuscular method is sometimes replaced by a drip. Intravenous drips, abandoned because of thrombosis of veins by impurities in the penicillin, may come in again now that preparations are purer. For the same reason subcutaneous injections, whose pain was caused by impurities may, again compete with the intramuscular route, for their absorption is slightly slower. The most popular form of drip hitherto used depends upon a periodical twitch being given to the plunger of a syringe connected by a rubber pipe to an intramuscular needle; this may be done manually or by some form of clock. The site of the needle has to be changed every two days or so. Patients usually prefer an intermittent method in which the site of injection is varied by some such routine as left deltoid, triceps, buttock, thigh, right deltoid' triceps, buttock, thigh. Pain may be avoided by drawing 1 cc of novocain solution into the syringe after the penicillin, so that it is injected first.

Local injections may be required into abscesses or serous sacs. Except perhaps in cases of achlorhydria it is useless to give penicillin by the mouth. A certain amount of sporadic absorption has, however been observed by this route, and there are still possibilities of the method being developed in time.

Transpulmonary administration of penicillin aerosol by means of some form of inhaler, such as the Collinson, or even a hand atomizer, is an effective method of giving penicillin, and probably has a future. A few cubic centimetres of solution at 80,000 units per cc. are suitable for one session.

Intermittent intramuscular injection of an oily suspension is at the present time the method of choice in general practice. A dose of 3 to 500,000 units once a day suffices to keep the blood bacteriostatic. For the average adult of 150 lbs. weight this means a dosage of 2,500 units per lb., from which figure the dose for children may be calculated.

Treatment of Particular Diseases

(i) *Spirochaetoses*: This group of dissimilar diseases includes Vincent's angina, syphilis, yaws, rat-bite fever, Weil's disease and relapsing fever. All are brought under one head through being caused by various spirochetes which are all sensitive to penicillin. Vincent's angina yields extremely well to lozenges only. The treatment of syphilis is a speciality in itself. The duration of treatment for the other members of the group is from seven to ten days.

(ii) *Meningitis*: Penicillin is stopped by the choroid plexus and must, therefore, be given intrathecally to meningeal cases. Purely cerebral disease can be reached by the blood stream. In special circumstances, cisternal or even ventricular puncture may prove necessary. In cases treated by lumbar puncture, 10 cc. of fluid are withdrawn and replaced by an equal volume of penicillin in saline at a strength of 1,000 units per cc. The procedure is repeated daily for a week. Fulminating pneumococcal cases require ten times this dosage, and it is said that cases due to Pfeiffer's bacillus may be cured by similar high dosage.

(iii) *Chests*: In the case of pneumonia the question resolves itself into one of sulphonamides versus penicillin. A reasonable solution is to give sulphadiazine of sulphamezathine for two to three days, holding penicillin in reserve. A dose of 120,000 units in 10 cc. after aspiration (and sending the pus to the laboratory) is suitable for an early empyema, giving effective concentrations in blood and pleural cavity for 24 hours. If, however, the pleura is fibrosed the penicillin will remain longer in the cavity, not being absorbed into the blood stream, but surgery may be needed in addition. In secondarily infected tubercular empyema it may be possible by means of local penicillin to avoid operation with its resulting tubercular sinus. In bronchitis, bronchiectasis and lung abscess, aerosol penicillin is indicated.

(iv) *Throats*.—It may or may not be necessary (probably it is) to augment penicillin lozenges by intramuscular injection in cases of streptococcal tonsillitis which are deemed worthy of specific treatment. In diphtheria, antitoxin must also be given. For diphtheria carriers, penicillin is the treatment of choice.

(v) *Skins*.—Skin disease, among the most frequent in general practice, is on the whole that in which penicillin, in whatever form has given the most variable and disappointing results. Local treatment is successful in impetigo and in other open septic conditions maintained by penicillin-sensitive microbes.

(vi) *Burns*.—Lanette was penicillin cream in an excellent dressing in the early stage of a burn. Penicillin-resistant invaders may be discouraged by using cream incorporating 2 per cent. of phenoxetol. But it is generally better to avoid these tough secondary invaders by stopping the penicillin treatment once granulations are present, and then treating the burn on orthodox lines until the time of skin grafting (if this proves necessary), which should be preceded by a second short course of local penicillin. This avoids delay in separation of the slough, which has been observed with continuous penicillin treatment. Very deep burns will require treatment as for wounds by systemic as well as local penicillin.

(vii) *Haud Infections*.—Paronychia should be treated by penicillin cream, with or without operation. Deeper infections involving cellulitis, tenosynovitis or spreading lymphangitis will require systemic penicillin treatment as well.

(viii) *Prophylaxis*.—A prophylactic course of systemic penicillin is now given as an 'umbrella' for such operations as the extraction of infected teeth, the opening of joints, grafting procedures, and tonsillectomies. In mouth operations, lozenges may also be used and have already been shown to cut short the painful period following the removal of impacted wisdom teeth.

Major wounds should receive systemic penicillin, fractures involving the central nervous system may require intrathecal penicillin, and haemothorax is treated by intrapleural penicillin.

Ophthalmia neonatorum is preventable by routine penicillin eye drops. Breast abscesses may be avoided by the routine use of penicillin cream for cracked nipples.

Cross infection in closed spaces may be greatly reduced in the future by the use of penicillin aerosols.

4. *Duration of Treatment*.—Available information shows that different diseases vary fairly widely in the time taken by penicillin to control them, and also that the same disease may vary in this respect as between patient and patient. The following table (Hudson) gives some indication of these differences in response to a treatment of 60,000 units given in aqueous solution three-hourly:—

		day
Uncomplicated gonorrhoea	...	1
Vincent's angina	...	2
Erysipelas; impetigo	...	3
Carbuncles, cellulitis and adenocellulitis	...	5
Breast abscesses	...	7
Otitis media and mastoiditis	...	8-10
Sinusitis, pulmonary lesions and meningitis	...	10-12
Complicated septicaemias	...	12-21
Endocarditis	...	21-28

APPENDIX A (from Fleming)

Sensitive	*Insensitive*
Staphylococcus	Enterococcus
Haemolytic streptococcus	Typhoid, coli, dysentery group
Streptococcus Viridans	Proteus
Anaerobic streptococcus (*some*)	Pseudomonas (B. Pyocyaneus)
Pneumococcus	Haemophilus (Influenzae and pertussis)
Gonococcus	*V.* Cholerae
Meningococcus	Tubercle (and other acid-fast bacilli)
N. Catarrhalis	Pasteurella group (plague, etc.)
Micrococcus	Brucella
Sarcida	Friedlander's bacillus
Actinomyces	Non-pathogenic gram-negative cocci
Anthrax group	Most of the viruses
Diphtheria group	Yeasts
Spirochaetes	Monilia (thrush)
Clostridia (anaerobes, tetanus, gas-gangrene, Botulinus)	Moulds
Rickettsia and larger viruses (partly)	

APPENDIX B

Official Preparations (B.P.)

Injectio Penicillini	20,000 units per cc. in saline. Keeps seven days at 4° C.
Injectio Penicillin Oleosum	Calcium Penicillin 12·5 mega-units White beeswax .. 4·5 grams Arachis oil to 100 cc. Keep six months at cool room temperature. Warm to blood heat and with draw dose by warm syringe with intravenous needle. Does not suffer from up to a dozen warmings.
Cremor Penicillini Sterilisatus	Calcium Penicillin or Sodium Penicillin ... 50,000 units Lanette Wax SX ... 7 grams Hard paraffin ... 5 grams Liquid paraffin ... 41 grams Sterile water ... 45 cc. Keeps seven days at 4° C.
Cremor Penicillini	The same, with 0·1 per cent. chlorocresol. Suitable for use by the patient.
Unguentum Penicillini	Calcium Penicillin, 50,000 units. Ointment of Wood Alcohols, 100 grams. Keeps six months at cool room temperature. For use when grease is not contraindicated.
Oculentum Penicillini	The eye ointment contains 1,000 units per gram and no water, so keeps six months.
Trochiscus Penicillini	Each lozenge contains 500 units in about 1 gram of material. They last about four months at cool room temperature. They should be placed in the mouth outside the teeth.

Unofficial Preparations

Eye Drops	1,000 units per cc. in saline. May be instilled every five minutes.
Insufflation Powder	Calcium Penicillin in sulphathiazole, 5,000 units per gram for wounds, 500 units per gram for burns.
Snuff	Calcium Penicillin 10,000 units per gram in glucose. NOTE.—Glucose attracts moisture.
Inhalation	80,000 units per cc, aqueous.

The Use and Misuse of the Hollow Needle and the Syringe

:—JOHN L. SWITZER, M.D., Chicago, Illinois. (*From Medical Times, August 1947*)

The hollow needle in one form or another has been in use since antiquity. The actual origin of the needle is obscure. Hippocrates used a beveled cannula through an incision for the treatment of empyema. The syringe's origin dates to appoximately 1000 A. D., when Albucasis, an Arabian physician, described an instrument comprised of a copper plunger inserted within a cannula. Sir Christopher Wren used a goose-quill and a bladder in 1658 to inject materials into the vein of a dog. Dr. Alexander Wood of Edinburgh, in 1834, is credited with developing a modern type of hypodermic syringe (1). Charles pravaz, a Frenchman, also is credited with the development of the hollow needle syringe (2).

Physically, the syringe is a hydraulic instrument based on the principle of the pump, for the drawing up and injection of fluids. The ordinary form is that of a glass or metal tube fitted with an airtight piston-rod or plunger. Fluid is forced into the cylinder by atmospheric pressure when the piston is withdrawn, and injected by compression. There are many types and sizes of syringes and needles, but their purpose is singular, that of withdrawing a substance from or injecting a substance into the body tissues and spaces (3,4). Recently the cartridge type of syringe and the all plastic disposable syringe have been developed.

Since these early times physicians have come more and more to rely upon the needle and syringe as one of the strongest instruments in their armamentarium. In fact, the psychology of the laity has progressed to the stage where many persons are not satisfied with their medical or surgical treatment unless they are given "shots."

In the treatment of some patients it is difficult to evaluate the result of therapy as the mechanism of injection alone, employing sterile water or oil, may yield effective results. It therefore seems that the suggestive value of replacement or adjuvant therapy from the viewpoint of having something injected should be given more importance.

The human body and mind are complex and everything which is introduced or withdrawn has an effect on emotion and ideation as well as somatic function. "If an injection is given it affects the feelings and the ideas of the person so treated as well as his metabolism. One might say that there is an emotional and ideational metabolism as well as physical metabolism" (5).

Most laymen associate cure with the use of a strong drug or "potent force" when an injection is given, and further associate injection therapy with rapid and often miraculous results. Weiss and English believe that in some instances hypodermic injection of a "potent force" may stimulate a latent belief, or what the patient wishes to believe (5). This seems to be borne out in cases which showed improvement when placebos had been administered and seems to follow the line of omnipotence-thinking that has been and is still to a great extent prevalent in our culture.

There are definite indications and contraindications for the use of the hollow needle and syringe. Some indications are:

1. for the injection of fluid substances which may be administered by:

a. *intradermal route*, as in local anesthesia, the tuberculin test, and allergic testing. When material is forced into the skin a wheal is formed. In allergic tests this wheal must be differentiated from the wheal of an allergic response;

b. *subcutaneous route*, morphine sulfate administration, hypodermic injections. In patients who do not have accessible veins, large amounts of fluids may be slowly administered subcutaneously;

c. *intramuscular route*, oily preparations for delayed absorption. Intramuscular absorption is more rapid than intradermal and subcutaneous administration. Intramuscular absorption may be slowed by chilling the injection site;

d. *intravenous route*, all parenteral preparations suitable for rapid absorption. In obese individuals with no superficial veins, the skin may have to be incised to cannulate the vessel;

e. *intraperitoneal route*, diagnostic pneumoperitoneum, intraperitoneal medication. This procedure may rarely produce a sterile chemical peritonitis or result in puncture of the bowl or bladder;

f. *intrathecal or intraspinal route*, administration of chemicals and antibiotics, diagnostic fluid tests, diagnostic encephalography, and anesthesia.

2. for the withdrawal or aspiration of fluid from the vein, peritoneal cavity, spinal subarachuoid space, the cranial cisterns, the pleural and pericardial spaces, and the joints. The needle and syringe may also be used in a diagnostic manner as in sternal marrow biopsy, spinal fluid withdrawal, pleural tap, liver biopsy, and abdominal paracentesis.

The diagnostic needle should not be used to aspirate material from an area suspected of being tuberculous in nature, as the withdrawal tract may become infected and produce a persistent sinus of fistula. There is also the danger of producing a purulent pleurisy (empyema) following the aspiration of a suspected pulmonary abscess. The diagnostic needle in spinal puncture yields much information, but great caution should be exercised in cases with increased intracranial tension, as too rapid release of the cerebrospinal fluid may produce a herniation of the medulla into the foramen magnum with compression and death.

It is important that all air should be forced out of the syringe and needle by inversion and pressure on the plunger before it is inserted into the tissues. Air forced into the circulation, if of a sufficient quantity, may produce an embolism in a terminal vessel.

As in all surgical procedures, the use of the hollow needle and syringe should follow strict laws of cleanliness, and the skin area above the site involved should be cleansed with soap and water and a chemical bactericidal agent. The needle and syringe may be cleansed after a preliminary washing in tap water, by sterilizing in boiling water for ten minutes, or by the use of cold chemical bactericidal chemical agents for twenty minutes. Distilled water should be used for heat sterilization to prevent blockage by the formation of "boiler scale" within the bore of the needle and syringe. Syringes and needles which have been used for oily preparations should be washed with ether or acetone prior to their sterilization.

There is a correct procedure for using the needle and syringe, and the following hints may produce more satisfactory results tending towards greater proficiency in their use with less discomfort for the patient. When using a beveled needle, always be sure that the bevel is right-side up, except when performing intradermal injections. In the latter, inversion of the needle bevel will tend to prevent leakage from the injection site. In performing an intradermal or subcutaneous injection, leakage will be prevented if the skin is first made taut before the needle is inserted. This distorts the structures so that when the needle is withdrawn, and the natural elasticity of the skin returns it to its normal site, the tension will effectively close the needle track. If the tissues are pinched for a few seconds before the needle is inserted the patient will usually exclaim that this is the first time that he or she ever received an injection with no pain. The momentary compression of the terminal nerve endings and blood supply will produce a fairly satisfactory fleeting anesthesia. In intravenous work employing two fingers to anchor the vein will prevent rolling and allow easier entry into the vein. In some instances one can actually feel the needle enter the vein, but there is no backflow of blood. In most cases this is due to the needle bevel being against the vein wall and a quarter turn will usually solve this difficulty In all intravenous procedures it is necessary to ascertain that one is well within the vein before medication is injected. In intramuscular injections of potent drugs which should not enter the circulation *en masse*, and in the use of oily preparations which may form embolic in the circulation, a slight withdrawal of the plunger will give evidence of blood if a vessel has been entered. The use of a larger bore needle when oily preparations are to be administered will facilitate withdrawal of the substance into the syringe and injection into the patient. Preliminary warming of the oil will decrease its viscosity and make it more manageable.

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Injection therapy should be used only when oral therapy is incapable of affording proper medication, as in alimentary disturbances where absorption is impaired, or where the drugs are not assimilated by the oral route. It is best to retain injection therapy for those cases which need immediate assimilation and utilization. The oral and rectal routes of administration should be preferred, when possible, because of their convenience and because they are the natural channels. It is poor medicine to take a history, examine the patient, perform laboratory work, make the diagnosis, and then tell the patient that this or that "shot" will cure him. In some instances of course, several injections of indicated specific substances may make a difference in the clinical picture, and the patient may improve, but the main objection here is to the instilling of complete trust in the magic of the injection, thus diverting the patient's appreciation from the correct diagnostic and therapeutic measures, with the result that the patient believes that "shots" are the all important factor in the medical or surgical care.

It is not the purpose of this paper to enter into a discussion concerning the injectable drugs and preparations which are suitable and are indicated for the various specific diseases. But mention should be made of the fact that some physicians utilize parenteral therapy unnecessarily, particularly with liver preparations. Knowing the psychological importance which some patients ascribe to injection therapy, the physician may utilize placebo injections as a form of superficial psychotherapy. However, he should be careful not to fix the neurotic patient's attention upon the possibility of organic disease through this method. Acknowledgment of the patient's basic psychological needs must be given and it must be realized by the physician that the injection fills a temporary need until the patient's anxieties and difficulties are aired and he is given proper psychiatric therapy. It is suggested that physicians revise their therapeutic methods and use substances which are specifically indicated for definite diseases, and which have been clearly shown to give good clinical results.

Thus it may be seen that the everyday use of such common articles as the needle and syringe has a definite place in the practice of medicine, and that if they are correctly used they will afford easier means of diagnosis and therapy with a maximum of comfort for the patient. And when they are incorrectly or carelessly used they may be injurious and painful, causing a lack of confidence and trust in the physician, and the eventual loss of good will.

Summary:

The history, indications and contraindications for the use of the hollow needle and syringe are discussed. The psychological connotations of injection therapy are elucidated, and methods for more comprehensive and satisfactory use of injection therapy are delineated.

Cardiac Anomalies Associated with Funnel Chest:—By G. E. F. SUTTON, M.C., M.D., M.R.C.P. *Physician to the Bristol, Royal Hospital* (*From the Bristol Medico-Chirurgical Journal Summer*, 1947).

Every practitioner has met with patients who have manifested varying degrees of funnel chest, and in view of the frequency of subjective symptoms, together with systolic murmurs and other cardiac anomalies in this condition, the question of organic heart disease is sure to have arisen with regard to some particular case. The literature on this subject shows conflict of opinion between various authorities. Dr. A. Lincoln Brown[1] defines Pectus Excavatum as:

"That deformity of the thoracic cage which is characterized by a funnel-shaped depression of the sternum, the apex of which is located at approximately the level of the junction of the xiphoid with the body". He quotes the report on a patient which was written in Latin by J. Brauhin in 1600. I have translated this somewhat freely as follows:

"Congenital internal bending back of the sternum and ribs as the cause of difficulty in breathing."

"My father showed me a boy seven years old at the house of a noble-man of Andlau, whose ensiform cartilage and other parts of the chest bone, together with the ribs, was bent back towards the internal parts, so that a great hollow appeared there. The diaphragm, he pointed out, seemed to contract those parts to a great extent. Right from his birth this boy had laboured under this serious physical drawback, breathing with difficulty and having an obnoxious cough. When we saw him he was very seriously ill, so much so that suffocation seemed imminent, and a viscid sputum was being brought up. The lady of Andlau said that she had a nephew younger than the other boy who suffered from the same condition and whose life was in similar danger."

Brown states that the heart tends to be fixed near the midline by the diaphragmatic attachment of the pericardium, but it may be displaced either to the left or right; though he is of the opinion that the greatest cardiac embarrassment is caused when the heart is fixed near the midline and is thus directly compressed by the depressed sternum. He gives these theories of causation: (1) Intra-uterine pressure, as from a knee or elbow pressing on the foetal sternum; (2) Intra-uterine overdevelopment of the corpus sterni; (3) Arrested development of the sternum; (4) Rhachitic influence on the development of the sternum and the entire thoracic cage; (5) Obstruction of the air passages, especially by tonsils and adenoids; (6) Genetic or; (7) Neurological factors.

He dismisses the intra-uterine theories as fantastic, and considers that funnel chest has never been recorded in an authenticated case of rickets, and further that tonsils and adenoids are unlikely causes as funnel chest is so unusual in such cases. Genetic factors are the most important, and he quotes Nowak who found that out of 30,000 Viennese school children, twelve (0.04 per cent.) were afflicted with this condition and all had had indications of it since birth. Out of one hundred and six individuals of the families who were examined, forty-one had it (38 per cent.): twenty-four males and seventeen females. Brown then records two cases both of which were



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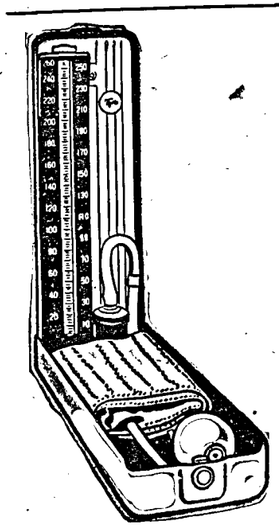
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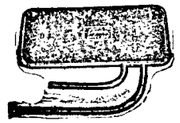
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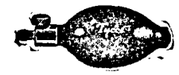
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greatly relieved by operative measures. One had a systolic murmur at the apex: the other had a loud pulmonary systolic murmur on expiration as well as a split pulmonary second sound, and complained of dyspnoea on exertion. The family history in this case revealed that the father, brother and sister also had a less degree of funnel chest. Brown states that the release of diaphragmatic attachments to the medial aspect of the sternum was the greatest single factor in the correction of the deformity. He gives the indications for the operation as follows: (*a*) prophylatctic; (*b*) cosmetic in women; (*c*) when embarrassment in one form or another results from the condition.

Richard H. Sweet[2] records successful operations on two sisters. The older, a girl of fourteen, had dorsal scoliosis as well as marked funnel chest, and she suffered from severe attacks of paroxysmal tachycardia. There was a harsh systolic murmur at the apex and the pulmonary second sound was split. The younger girl aged five also had some scoliosis in addition to the funnel chest: in her case there was a double mitral murmur of moderate intensity as well as a loud systolic murmur heard all over the praecordium, which was accompanied by a thrill, and became louder as it was traced to the left to reach a maximum intensity under the angle of the scapula.

In describing the case of a healthy twenty-six year old airman with marked funnel chest, Manning[3] again records an apical systolic murmur. He states that severe deformities of the spine tend to result in pulmonocardiac failure. In support of this statement he quotes Kerwin who concluded that "The significant pathological lesions are the result of pulmonary hypertension which eventually leads to right-sided heart failure, and appears to be due to mechanical interference with respiratory function."

On the other hand, William Evans[4] records sixteen cases, all of which had been referred to the cardiac department of the London Hospital because of the suspicion of heart disease. In every patient a systolic murmur was present, but in none was there any evidence of heart failure. He suggests that the murmur might be produced by the impact of the heart on the sternal bulge. He states further that X-ray reports have been misleading in that they have failed to distinguish between true and what was only an apparent enlargement brought about by the displacement. He insists that the symptoms were never the result of heart enlargement or embarrassment, but were the direct outcome of the physical inactivity or mental anxiety, resulting from the unwarranted invalidism. He quotes Lang as having found depression of the sternum 3.5 per cent. of children in the first year of schooling. It is interesting to compare the evolutionary theories which he records, and also to contrast the opinion which he deduces, with that of Brown as given above: (1) Abnormal length of the ribs (Flesch, 1873); (2) Occupational factors, *e.g.* cobblers (Laennec, 1819); (3) Arrested development of the sternum (Ebstein, 1882; (4) Abnormal postural development in a child of slender build arising from faulty posture (Kuhns, 1931).

Evans states that in his cases there was no evidence that they had resulted from congenital maldevelopment and in all it appeared in early childhood, when it might have been the outcome of a disturbance of the mechanism of respiration.

Although Carey Coombs did not mention funnel chest, he recorded four cases of fatal cardiac failure occurring in persons with angular deformity of the spine. Autopsy was performed on two of these patients and no other lesion was found. In his commentary he points out that in every case cardiac symptoms ensued shortly before death. Three influencss, he says, are blamed for the heart failure: (1) Aortic kinking; (2) Inadequate air space in the lungs, and (3) Restriction of the diaphragmatic excursion. "Whatever the explanation," he concludes, "it is clear that there is a real danger of untimely death from cardiac failure in the victims of angular deformity of the spine".

As I had not then read Carey Coombs's[5] report, I was frankly puzzled when I was asked to see a patient in consultation with a doctor about fourteen years ago. This patient, a female aged thirty, had severe funnel chest and scoliosis as long as she could remember, yet she had remained well until the last few months when she had complained of increasing dyspnoea and palpitation. There was obvious severe heart failure with marked dyspnoea. The heartbeat was regular at the rate of 140 and a soft systolic murmur was present at the apex. At that time I could only suggest to the experienced practitioner, who was equally puzzled, that in some way the deformity of chest and spine had caused the heart failure which was clearly present. The patient died within a few days and autopsy revealed only a dilated heart with no evidence of valvular or myocardial changes.

In November, 1946, a young man was referred to me as a case of heart disease. He had been rejected by a National Service Board in 1940, because of heart disease though he himself felt quite well. On examination in addition to an apical systolic murmur I found that there was some apparent diffusion of the impulse caused by a moderate degree of funnel chest. The man was nervous but there was no evidence of thyrotoxicosis. My report to his doctor stated that "This type of murmur has been described in association with funnel chest when no organic heart disease is present. I have known it to be diagnosed as mitral disease and also to be queried as bacterial endocarditis because a murmur is discovered whenever the patient has a temperature from influenza or some other cause. In my opinion the man should be regarded as a normal life, for none of the signs and symptoms of organic heart disease is present." X-ray and cardiographic examinations were subsequently negative.

It seems clear from the literature that in the majority of cases funnel chest is not associated with heart failure and that heart disease is frequently erroneously diagnosed because of a systolic murmur, or the presence of other signs and symptoms. Nevertheless, when a severe degree of funnel chest is present, and especially if this be combined with deformity of the spine, symptoms of severe heart failure may ensue rather suddenly. In such cases there seems to be a tendency to marked tachycardia which does not readily respond to treatment.

The Early Diagnosis of Cancer of the Oesophagus and Stomach*:—By SIR HENEAGE OGILVIE, K.B.E., M.Ch., F.R.C.S. *Surgeon to Guy's Hospital* (*From the British Medical Journal, September 13-1947.*)

We know the main facts about cancer. We know it is the chief cause of death in men and women in the years after 40—the time when they have established a place in life, a home, a reputation, when they are most useful to their profession and their country and most necessary to their families. We know that at first it is not a tumor but an insensible transformation of the cells in some part of the body to a structure that is a caricature of the normal rather than something new or different; that this new tissue has no nerve supply, and that it produces no inflammatory reaction in the normal parts surrounding it—in other words, that it is entirely painless, and in most cases entirely symptomless. We know that, for purposes of recording, cancers can be sorted into three stages, based on their gross naked-eye pathology: Stage I, in which there is a local growth only; Stage II, in which as well as the local growth there are early metastases in the nearest lymphatic glands or in tissues immediately adjacent; and Stage III, in which the primary growth or the metastases are fixed, or more distant organs are involved. We know also that in those parts of the body which can be effectively irradiated, or where a radical operation that satisfies pathological criteria can be performed—the breast, the colon, the rectum, and most parts of the skin—the five-year cures in Stage I are 80 to 90 per cent in Stage II about 50 per cent, and in Stage III not more than 10 per cent.

Radiation will improve, but it is doubtful whether that improvement will be dramatic. Radical surgery can hardly get more radical, for the limitations now set are not the result of timidity or lack of enterprise but are rather due to Charles Mayo's stipulation that among the results of successful surgery should be a live patient. If, therefore, we are to get more cures it can only be by finding more patients in Stage I, the stage of silence.

Two of the most malignant of all growths are those of the oesophagus and the stomach. Cure of oesophageal cancer is almost unknown. Cure of gastric cancer is sometimes seen, but in not more than 5 per cent of those cases that come to a surgical clinic; yet it is the commonest of all malignant growths, and the chief cause of cancer deaths in all civilized countries in which records are kept, There are no signs or symptoms by which we can diagnose these diseases in their early stages, but are there any which should raise our suspicions and allow us to start those investigations that will give the answer in time? It is those early signs that are the hardest to discover, and many of you may have observed some warning sign that the rest of us have not noticed. If you have I hope that you will share it.

Warning Signs

Those who were in the first World War will remember the "stand to" in the front trenches an hour before dawn, the hour when mists and half-shadows conceal familiar objects, the hour when the enemy may creep unseen, when a suspicious alertness is the only way to safety. We should all "stand to" over our patients who have passed the forty mark, suspicious of the enemy who may even then have established a footing unknown. We should beware of the man who starts to look ill, to get a little paler, to lose weight, to turn down the second round of golf or the last rubber at bridge, to miss his second helpings, and to become "choosy" about his diet. The mind or body of a healthy man does not tire suddenly and perceptibly be he forty or four-score, and the change from the "Wimbledon Tiger" to the steady back-line six-set tournament player of forty years later is imperceptible. Habits of meals and bowels do not change without reason; but it is the neurotics who look at their faces and tongues daily in the mirror and weigh themselves weekly, and with normal men we have to rely on our own observations or the reports of their wives or friends. We may first suspect loss of weight in our friends by the loose collar, the baggy waistcoat, loss of strength by the tendency to take a taxi instead of a walk, the lift instead of the stairs. These things we can check by a few questions. Have they noticed any difference in the fit of their clothes? Can they do all the things they did six months ago? Is there any alteration in their appetite, the amount they can eat at a time, their bowel habit? Have they started to suffer from wind lately? Some men are windbags all their lives, but a previously unexceptionable member of society who starts suddenly to belch or rumble probably has cancer. Have they for the first time taken to powders or medicine?

To start with we keep our suspicions to ourselves, for we do not wish to earn a name for being alarmists or to involve our patients in needless expensive investigations, but we must keep a constant watch on the deviation we have noticed, and we should start a weight chart. There are many groups of disease, and each has its general characteristics. The colics from stone come like stabs across the sky of otherwise excellent health. The infections are incidents of varying duration with a rise and fall. Cancer is progressive; the paleness increases, the tiredness gets worse, the weight continues to fall. And there are certain tests we can carry out without revealing our suspicions. If we suspect carcinoma of the oesophagus we can order a bulky cachet of "medinal" and aspirin and stand by while they swallow it; if carcinoma of the stomach we can ask them to share a bulky meal. And we can put them on a meat-free diet and have a stool examined for blood; a negative result makes a cancer anywhere in the alimentary tract very unlikely. But if symptoms continue and progress, if we see that slight but steady deterioration that whispers "cancer" to the trained eye, we must insist upon a complete investigation. We may be wrong, but if we always wait till we are right we shall always be just too late. A live mistake is better than a dead certainty.

Cancer of the Oesophagus

Cancer of the oesophagus is predominantly a disease of men, and of old men—that is 60 and over. It is hardly ever diagnosed till it is well advanced, for it is entirely silent. The mouth and the stomach form their opinions about food and reject what they

*Substance of lecture delivered at Mount Vernon in 1946.

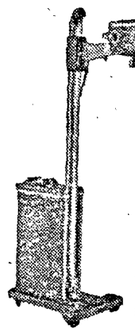
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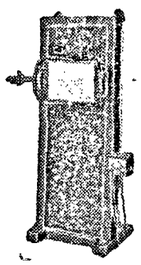
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do not like. The oesophagus is insensible and uncomplaining. A carcinoma usually produces no recognizable obstruction till it has completely encircled the lumen ; while even one centimetre of normal wall remains swallowing usually appears to be normal. Once the growth completely encircles the gullet dysphagia appears and progresses rapidly, first for solids, then for soft foods, then for liquids. Late signs, palsy of the left recurrent laryngeal nerve, involvement of the trachea or bronchus, glands in the neck, Horner's syndrome, follow in turn.

There are no early symptoms, apart from the vague ones I have outlined, and questions to all my friends have produced only three observations with any bearing on the subject. First, that there is occasionally some oesophagitis above a non-obstructive growth, giving a burning feeling deep in the throat "as if they have swallowed some very hot tea." Secondly, that a partial obstruction may suddenly be complete to some usually large bolus, so that patients come with a story of a "bone stuck in the throat." Both stories call for X-ray examination and oesophagoscopy. Thirdly, that the early dysphagia of a slightly stenosed growth is often reported as "indigestion," which leads to investigation by a barium meal and a report of a normal stomach that allays suspicion until too late. It should be the rule at every barium meal that the first swallows are watched in their passage down the oesophagus. One swallow may not make a summer, but it may diagnose carcinoma of oesophagus or cardia while there is hope.

Cancer of the Stomach

Cancer of the stomach is also a disease of men, but it occurs much earlier, many coming soon after 40, and not a few in the thirties. The classical symptoms are epigastric pain unrelieved by alkalis, vomiting, anorexia, anaemia, loss of weight. About half the cases we see give this picture, but they are already far advanced. Very many are entirely silent till their terminal stages.

A celebrated American gastric radiologist swallowed a cup of barium to try out a newly installed apparatus ; the film to the horror of the radiographer who developed it, showed a large gastric carcinoma. Within the last five years two very famous surgeons have suddenly discovered that they had a carcinoma of the stomach by feeling the mass bump against the operating table. So silent is the lesion in the stomach that growths often reveal themselves by syndromes that do not seem to be gastric. Lesions near the cardiac orifice cause symptoms closely resembling those of oesophageal obstruction. A barium swallow may appear to pass normally down the oesophagus, and if it is not followed by a barium meal a growth in the stomach may be missed. Growths near the fundus are very difficult to demonstrate radiologically, and unless the fundus is examined with the patient in the Trendelenburg position, so that the barium fills the whole cardiac region, small irregularities cannot be seen, and even large ones may pass unnoticed. In many cases the barium is held up at the lower end of the oesophagus, but as the constriction is smooth and funnel-shaped a diagnosis of cardiospasm is made. This is one of the commonest mistakes in gastrointestinal radiology, and one of the most tragic, for while the patient is being treated with bougies, or, as happens not infrequently, running the whole bewildering gamut of psychological investigation, the growth below the diaphragm is passing insidiously from the operable to the inoperable stage. Cardiospasm is usually a disease of younger people, and by the time it has progressed enough to bring the patient up for examination has a long history of periodic bouts of dysphagia and of remissions. In cardiospasm the oesophagus is seen in the radiograph to be considerably dilated at least to the size of a normal caecum ; above a growth the oesophagus may be filled to capacity, but it is rarely dilated in the true sense, and it does not exceed a candle in diameter. A diagnosis of cardiospasm should never be made in an adult with a short history till the possibility of a high gastric cancer has been excluded.

In other cases profound anaemia is the only recognizable symptom, and the diagnosis of pernicious anaemia is made. In yet others a small and silent growth sends out showers of malignant cells into the peritoneal cavity that seed themselves in the pelvis, giving rise to a pelvic shelf and rectal obstruction or, in the female, to bilateral implantation carcinoma of the ovary.

Early diagnosis, once more, is the reward of a suspicious mind. Does a man who has eaten like a horse till the age of 40 suddenly get indigestion, though his job, his habits, and his wife remain the same ? No ? Does gastric ulcer start after 40 ? Never well, hardly ever ! Does the tired business man come back tired after a week at Westward Ho ? Not if his tiredness is no more than business worry. These people want investigation before, not after, they start a course of diet and medication on the advice of the chemist, the man in the train, or the writer of the health column in the evening paper. The seller of alkalis is the undertaker's best friend. Investigation means observing these doubtful cases closely and anxiously, inquiring about appetite and comfort at meals ; whether they have a sense of fullness when the meal is half done or belch foulsmelling gas—two symptoms highly suggestive of carcinoma ; it means weighing them weekly, examining their blood and their stools, testing their vomit for free hydrochloric acid and blood ; if suspicion continues it means a barium meal, and if the barium meal is inconclusive it means gastroscopy. The gastroscopist has to look at a great many stomachs before he knows his job, but when he does he misses very few carcinomas of the stomach.

Relation of Gastric Ulcer to Gastric Cancer

One of the most important services that gastroscopy can perform is to decide whether a particular ulcer is innocent or malignant. There has been much controversy about the relationship between gastric ulcer and gastric cancer, but it is undoubtedly one of the most important aspects of the question that concerns us to-day, the early diagnosis of malignant disease of the stomach. We must consider two things the gastric ulcer that undergoes malignant degeneration, and the gastric cancer that resembles gastric ulcer.

Authorities vary greatly in their estimate of the number of ulcers that become malignant. On the pathological side, from the investigation of necropsy and operation specimens, estimates vary between the 4 or 5 per cent of most British pathologists and the 50 per cent of McCartney of the Mayo Clinic. Surgeons for the most part accept the lower figure, but Maingot in a recent article has stated that in about 10 per cent of the cases of the stomach that come to him the change has been implanted on a previous gastric ulcer.

I personally believe that the number is very low indeed—so low that I should never use the argument of impending malignancy to bully a patient with an ulcer that had all the clinical indications of innocence into an operation she did not want to have. No surgeon in a lifetime has enough personal cases to allow him to lay down the law, but I must place on record that in twenty years of gastric surgery I have never seen a gastric ulcer become malignant. I feel that Maingot's experience is a piece of unparalleled bad luck in the practice of an otherwise very lucky man.

Cancer mimicking ulcer, on the other hand, is seen by every surgeon several times a year. It is necessary to remind ourselves that cancer of the stomach, while it is usually a very rapid disease, may be as slow as a scirrhous tumour of the breast, going on for ten years with little change ; that patients with slowly progressing cancers may have a good appetite and free hydrochloric acid, and that they may lose their symptoms for a time and put on weight on a gastric diet. These slow cancers are digested in their central necrotic parts by the gastric juices, and, whether at operation or necropsy, may have very much the appearance of an indurated peptic ulcer. But in these cases, if we go into the history carefully, we find that the gastric symptoms have started suspiciously late in life, that though they may have gone for some years they have been steadily and slowly progressive, and that the remissions have not been periods of complete health but of lessened discomfort. The true ulcer usually starts in the twenties, and in its long history before its final cure by medicine or surgery, has many remissions of months' or years' duration. I know that prolonged irritations and the presence of scar tissue may give rise to a cancer but in a lifetime I have seen little evidence that they do so except in squamous epithelium.

On the other hand we need not be too philosophic. A large chronic gastric ulcer causes constant misery even if it does not cause cancer, and gastrectomy is one of the most satisfactory and, in practised hands, one of safest operations in surgery. An ulcer in the bucket has never been known to become malignant.

We must suspect malignancy or a premalignant character in all gastric ulcers first appearing after the age of 40 ; in all those in the prepyloric inch, and in other parts of the stomach that are not on or adjacent to the lesser curvature ; in those exceeding an inch in diameter ; in those that do not heal after a month's strict medical treatment in bed and in which occult blood is still found in the stools after such treatment. All these should be submitted to surgery without further delay.

Conclusion

I would conclude by repeating that the early diagnosis of cancer in any internal organ depends, in the main, on clinical judgment, on the early confirmation of what can, in most cases, be no more than a suspicion. We can all remember instances of a diagnosis of malignancy made on clinical grounds, of repeated examinations by experts giving repeated denials, of confirmation coming too late for curative treatment. When cancer is in question we should accept the negative warning of a penny weighing-machine in preference to the positive reassurance of the ten-guinea Harley Street expert. And if our suspicions continue, if the weight continues to fall, we must insist on an exploration. There is more rejoicing in heaven over the one laparotomy that fails to find cancer thanover the ninety-and nine (positive ones) that find it too late.

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A REQUEST TO THE BRANCH SECRETARIES

I earnestly request the Branch Secretaries of our Association to collect all the Scientific papers and case notes read before their Branch meetings and forward them for publication in the INDIAN MEDICAL JOURNAL.

A. VISWANATHAN,
Editor, Indian Medical Journal.

MEDICO-POLITICAL SUPPLEMENT

TO

THE INDIAN MEDICAL JOURNAL

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Thought for the Month.

Hindi in Devanagari Script should become the common language of our country and while replacing English, it should come to occupy the same position and status as the latter. In other words, it should be the medium of instruction in all the provinces. This alone would ensure and enhance the unity of our people and effect a progressive uniformity of educational standards in the Arts and Science.—**A. Viswanathan.**

LEADING ARTICLE

The New President

We are glad to announce that Dr. M. D. Pustake of Gwalior has been elected by a majority* of votes as the President of the All-India Medical Licentiates' Association, and of its 35th Conference to be held at Bombay this Christmas week. We congratulate him on this well-merited honour conferred by the Medical Licentiates of India and we are quite confident that he would serve their cause faithfully and sincerely.

The Association is fortunate in having secured his service as its President. He has been working for its cause during the last twenty years in a manner that has evoked universal appreciation. It was due to his efforts that the Branches of the Association in the States of Central India and Rajputana were consolidated and expanded so effectively and extensively that the State Authorities have begun to do some justice to the Medical Licentiates in their service.

Not only as worker of the Association but also as the Editor of a leading Health Journal in Gwalior and as Councillor of the Gwalior Municipality, he has a record of work highly creditable to him.

Rich with experience, devoted in whatever work he undertakes, affable and courteous, he is bound to be a great success as the President of the Association. The right leader has been elected. Let us help him and follow him.

The result of the ballot was as follows:
Dr. M. D. Pustake. 56. Dr. D. V. Venkappa. 16.
Dr. A. N. Roy, 11. Dr. M. L. Kapur, 9.

Common Language

English language has till now been not only the official language but also the one in which both Arts and Science education was imparted in our country. With the dawn of India's freedom, and the consequent liquidation of British rule, the question which language will replace the English has come to the forefront, and has to be settled at the earliest possible time.

The difficulties of replacing English by a common language are many! Each province is likely to adopt its own provincial language. Already there is a move in that direction, and there is thus the danger of provincial patriotism over-running discretion. If the common language does not occupy the position and status which the English language does now, scientific and professional subjects, like physics, chemistry, biology, medicine, law and engineering etc., cannot be taught with uniformity and efficiency in the standard of education in these subjects. Besides, inter-provincial exchange employment and association will be seriously jeopardised unless scientific subjects are taught through the medium of common language.

Hindusthani and Hindi are the two languages spoken by a large majority of the people of our country. Mahatma Gandhi advocates the adoption of Hindusthani in both Devanagari and Urdu scripts. But we are afraid neither popular nor learned opinion supports his advocacy. Hindusthani is after-all but a popular dialect, a mixture of Hindi and Urdu, with no great literature behind it. Whereas, Hindi is rich in literature, good grammer and vocabulary. We are reliably informed that the Indian Constituent Assembly would adopt Hindi as the common language of the country. It would be a right decision and in accord with the wishes of a great majority of our people.

The question of script: Devanagari, Urdu, and Roman each has its own advocates. The last is out of question and will have little popular support. Urdu is only to placate the Muslim minority, and if they want to have it let them. But the vast majority, more than 80 per cent of the people, would unhesitatingly plump for Devanagari script.

We do not think provincial languages would suffer in any way if Hindi is made the common language and to occupy the present place of English. It should begin to be taught from the High School and all subjects should be taught in Hindi only, just as they are taught in English now. In our view this aspect of the question is very important in the interest of unity and uniformity in education, particularly in the scientific and professional subjects.

The transition from English to Hindi will naturally take some time. This does not matter. In fact sufficient time should be allowed for the preparation of text-books in Hindi. In so far as technical, chemical and, scientific terms are concerned, it would be advantageous to incorporate the current English equivalents in the Hindi language without doing violence to the spirit and genius of that language.

OTHER ARTICLES

"First Things First" in Public Health including Medicine

BY

RAO BAHADUR Dr. T. S. TIRUMURTHI, B. A., M. B. & C. M., D. T. M. & H.,

Retired Principal, Stanley Medical College, Madras.

Pandit Jawaharlal Nehru said in one of his recent speeches that planning meant having some conception of the goal we were striving for, of the kind of society we were aiming at, trying to work up towards that end harmoniously and peacefully with as few upsets as possible, laying down targets so that on all sectors we would advance simultaneously.

The above comprehensive definition of planning is applicable to all departments of Government:—administrative, industrial, agricultural, medical and public health etc.

So far as Medicine and Pubilc health are concerned the Health Survey and Development Committee, known otherwise as the Bhore Commitee, has already published a monumental report in 3 volumes. and the second volume is the important one. It contains recommendations for a comprehensive National Health Service and for the training of the required Professional and Ancillary Technical Personnel. The Bhore Committee Report is a fairly comprehensive, honest, straight-forward and telling report. The committee was an expert body of very able, highly qualified and experienced persons, who are held in great esteem by the general public and professional and scientific societies. The committee has truthfully pictured to us the deplorable and disgraceful state of the health of the nation and has recommended an ideal and comprehensive scheme of national health service, suggesting a short term and a long term programme. The National Government, Central and Provincial, cannot shelve the report without being subjected to severe criticism and condemnation that it was afraid to face facts and implement the recommendations contained in the report. We refuse to believe that the popular governments which have now come into existence would reject a report which has been remarkably well drawn.

We are sure the popular governments will not forget another statement made by Pandit Jawaharlal Nehru about planning:—"Each person moving about in a little circle is not planning. Planning is a conception of the whole and developing each aspect of that whole in relation to the other parts. True planning means an all round development of national economy and national life."

Tinkering with piecemeal improvements individually with medical relief (rural and urban), medical education (allopathic, indigenous, homeopathic, dental etc.), public health (rural and urban) etc. will create the impression in the public that the government accepts its incapacity to control health at its source. This warning is necessary because we find even the people's governments continue to view with each other in extending hospital services at enormous cost. The popular governments should take note of the statement made by Lord Wavell recently "Make no mistake, though hospitals, even the best and the largest are to some extent a confession of weakness. They mean that we have failed to control Public Health at its source." There is a great deal of truth in the rather pungent and sarcastic fling at Physicians by Addison in "The Spectator" as—"When a nation abounds in Physicians, it grows thin of people." I wonder what he would have said of a nation which abounds in quack physicians parading under a variety of titles and denominations.

As far as I can understand, the popular Government of Madras will be glad to implement all the recommendations of the Bhore Committee but their desire, earnestness and enthusiasm appear to vanish when faced with the hard facts of finding the money to push through even the programmes, which they have already drawn up to suit local requirements. Finance is the chief obstacle. Major problems and urgent ones to provide sufficient food, clothing and shelter are engaging their attention. Meanwhile the political horizon of the country is overcast with dark threatening clouds which forebode evil.

Even in the present unfavourable circumstances it is possible for the popular government to undertake to tackle a few problems which are more urgent in nature and which will not give the Minister for Health severe headache owing to the obstacle of finance. There is no use in making destructive criticisms. It is not an alien Government that is now in power. Our chosen representatives are in office and it behoves us therefore to offer helpful and constructive suggestions and to co-operate with the Government in all sincerity and earnestness in the collossal task of national reconstruction.

I propose to make only a very few suggestions at present which I consider easier of solution and I have placed them roughly in the order of their relative importance.

(1) To constitute a standing advisory committee to the Public Health Minister and to give the Director of Public Health cum Medical Relief the status of a Secretary to Government in the Ministry of Health.

(2) Barring those officers who by virtue of their office are not permitted private practice, all Government Medical Officers who are really whole—time Government servants, in the city and the mofussil, should be debarred from general practice and permitted only consultation practice. (Refer to G. O. on the subject by the previous Congress Government). The members of the Medical Profession in service should remember the motto—"Live and let live". The present unfair advantage which the members of the service obtain from the general revenues of the tax-payer against the brother—members in independent practice should be stopped. The unhealthy and unethical competition between the service, honorary and independent members in the profession should cease, if the standards of practice and respect by the public should rise, and we may rightly and proudly claim that ours is a noble profession.

(3) Though a large number of demobilised I. A. M. C. officers and ancillary technical personnel, such as nurses and compounders, have been waiting indefinitely in the hope of their being employed by Government, and though many of the demobilised medical officers have been interviewed by the selection committee, there is a general complaint that no orders have yet been passed and the policy of the Government is indefinite. These demobilised medical practitioners are kept in suspense and are unable to decide their future course of action, whether to settle down in private practice in some place of their choice, or to volunteer for honorary service or pursue post-graduate studies or undertake service under local bodies, in industrial concerns, in plantations etc.,

(4) Provincialisation of the Rural Medical Practitioners and those who are employed in the service of Taluq Boards, District Boards and Municipal Councils. The Railway medical services also should be provincialised. All invidious distinctions and discriminations should be removed. Steps should be taken to bring all the medical services under one state control.

(5) Compulsory military training should be a condition for future entry into the Government Civil Medical and Public Health services and such officers should sign a bond, that in times of war they would serve in the Army Medical and Health services. As regards those already in the Civil Medical and Public Health services, encouragement and facilities should be afforded to as many of them as possible to undergo periodical military training which was given to the officers of the A. I. R. O., or to those medical graduates and licentiates of the I. A. M. C. who were mobilised for service during the last war. If this is done the necessity for keeping an army medical reserve in the Civil Medical Services will not exist.

(6) The possibilities of extending the Honorary Medical Service under improved conditions in all municipal and district head-quarters hospitals. It is possible to secure the services of a large number of honorary specialists in all the important branches of medicine and surgery, who will be willing to be associated with the staff of the district head-quarters hospitals, if they are assured of a fair deal at the hands of the paid service officers.

(7) Instead of starting more new centres for medical relief it is better to concentrate attention on the existing ones which cry for more attention at the hands of local bodies and Government. Extensions to buildings may have to be made where-ever necessary. Of greater importance is better and up-to-date equipment in the general and special departments of the hospitals in the mofussil—Municipal, Taluk and District Hospitals.

(8) Every District Hospital should be provided with a diagnostic laboratory for pathological, bacteriological and bio-chemical investigations and with X-Ray outfit, if the people should be disabused of the impression that the practice of medicine is still empirical and not scientific, as it is stated to be.

(9) Increasing the centres for the training of nurses, midwives and compounders. Many more district hospitals can be utilised for the purpose,

Impossible standards and obstacles should not be laid as they will put off the provision of the required medical, ancillary and technical personnel.

(10) The training of dhais:—For many more generations, it would not be possible to supply rural areas with qualified nurses and midwives. Like the qualified medical practitioners they too will crowd only in the urban areas.

If permission be granted to all medical practitioners who have facilities to train dhais in their own practice in their respective places and if such trained dhais are permitted to appear at the end of a year's training for a qualifying certificate examination to be held at the nearest District Hospital, the problem of untrained dhais and barber-midwives will be solved in the near future.

(11) Suppression of quackery in all the systems of medical practice and suppression of the assumption of bogus medical titles. In my opinion legislation for this purpose will serve public health better than the provision of more medical colleges and treatment centres. (Refer to Travancore Medical Registration Act).

(12) Registration of all persons who are styling themselves as compounders, chemists, druggists, pharmacists to whatever system of medical practice they are ancillary and prevention of future unqualified persons by penal legislation from getting entry into such employments.

(13) Abolition of all castes in the profession of medicine—in service and in independent practice (Refer to my article in the recent Sunday Chronicle).

In conclusion I wish to state that the root causes of illnesses should be correctly assessed, and measures taken to remove them, as otherwise all the provisions made at great expense to build institutions for mere medical relief and treatment-general and special hospitals and for medical education, will not be productive of any beneficial results towards the object of National Health Reconstruction.

For example, when illventilated and overcrowded tenements, houses, school buildings, offices, factories etc. are allowed to continue in their present conditions, it is foolish to waste public funds on building hospitals for the treatment of tuberculosis patients.

So long as preventive medicine and curative medicine are not brought together to the greatest extent possible as has been recommended by the Bhore Committee Report, no improvement in public health is possible in the rural and semi-urban areas.

When protected water supply is not provided for every village and the drinking water sources, wells, pools, tanks, channels, rivers etc., are not protected from pollution, there is no sense in wasting money in building more hospitals and dispensaries for the treatment of diseases, many of which are water-borne and largely responsible for the mortality from preventable diseases.

So long as the demon of drink is not completely exorcised from the country, from undermining the health of the labouring classes who contribute mainly to the wealth of the nation by lowering their already poor standards of living and their comparatively poor stamina and resistance to disease, no great expenditure on medical relief is justifiable.

Is it moral to create the illnesses, direct or indirect, consequent on the drink-evil, for the sake of obtaining revenue and make a pretence of helping antidrink propaganda and temperance movement by granting monetary doles for the purpose, and to build treatment centres for the alleviation and cure, if possible, of the diseases attributable to drink?

A famous American physician has said that if drink and syphilis can be suppressed, more than half of the hospitals can be closed for want of patients. Are medical men interested in preventing diseases or are they profiteers out of their vested interests in the continuance of the existing state of public-health for further and wider spread of preventable diseases? That is the question put up by the public to the medical profession.

Therefore I consider the programmes of housing, slum clearance of providing protected drinking water, and of total prohibition of drink should be considered as measures essentially on behalf of preventive medicine. Though the portfolios of these three programmes and of Health may be dealt with separately by four different ministers, yet they are engaged in the great work of Preventive Medicine.

The whole medical profession should wholeheartedly support the policies and programmes of our popular government for building more houses, for the provision of protected drinking water, for extending preventive and curative medicine to rural parts and for the total prohibition of drink.

The medical profession should take the lead to help the government in guiding public opinion and securing public support for the ministers engaged in uprooting the causes of disease at their very sources.

Let us wish the government all success in the stupendous task which they have undertaken in this most unfortunate country which is in the bottom rung of the Public Health Ladder.

On the Indigenous Systems of Medicine—By K. K. SENGUPTA, M.A., B.Sc., M.B., D.T.M.

Introduction.—We approach the subject, not in a spirit of aloofness or apathy but in a spirit of scientific study, in a frame of mind chastened by humility and actuated by the best interest of the people of the country from the point of medical relief. The indigenous system of medicine had its origin in this country in her days of ancient glory. It became by progressive stages of evolution the parent or progenitor of the modern scientific medicine by the aggregate contribution of scientific workers in different parts of the world. But that does not mean that the indigenous system of medicine, by its name and denomination alone, should be entitled to or carry with it the endorsement of science. This system like any other system of science should be examined and investigated, with an open mind, with a view to ascertaining its merit and utility, in the field of preventive and curative medicine in the light of the latest available knowledge and information of medical and allied sciences.

The Yunani System—The word Yunani or Unani comes evidently from Ionia or Greece. It derives its origin from Greco-Syrian sources. The Bagdad and Basora schools of medicine made their contribution to the teaching of mediaeval Europe. The teaching went from there to the flourishing Tibia of the 14th and 15th centuries in Persia and Turkey. Both Greece and Rome owed a great deal of their knowledge of medicine to Buddhist preachers sent out by Chandragupta, Asoka and other Buddhist princes.

Are there so many different systems?—We hold the view that science, in medicine, as in every other sphere is one and undivided. As there is no indigenous system of Physics, Chemistry, or Astronomy nor an English, German or American system of them, so it stands to reason that there are not so many different systems of medicine.

History.—The word Veda is derived from the Sanskrit root 'Vid', which means 'to know', 'to judge', 'to learn', 'to gain'. It is analogous to the some Latin root 'Videre' 'to see'. Ayurveda or the study of 'Ayuh' or vital energy, longevity, the diseases, their prevention and cure, is said to have been derived from the Yajurveda and the Atharva veda. According to legends, this vidya is said to have been transmitted in the following order—

From Brahma to Daksha, the Prajapati, to the two Ashwinikumaras—the two sons of the Sun God Surya, to Indra—the king of gods, to Bharadwaja—a learned human sage, a priest-physician, who is said to have been the author of the 12th hymn of the 10th book of the Atharva veda. Bharadwaja taught Atreya. Six pupils of Atreya, namely, Agnivesa, Vela, Jatukarna, Parasara Harita and Ksharpani wrote notes and compendia of his teachings. Of all these, only a single manuscript by Bhela and a work by Agnivesa exists. One of them 'thrice revised and recast' survives in skeleton and is known as the famous Charaka Samhita. It was edited by Charaka of Kashmir who left it unfinished, when he died, perhaps in the 2nd century A.D. This unfinished work was revised and completed by another Kashmir physician Drirhabala. The book so compounded is the celebrated Charaka-Samhita.

Lost literature.—Not only the works Jatukarna, Parashara, Harita and Ksharapani but other great works called Vishwamitra-Samhita, Ksharananda-Samhita, Kapila-tantra, Gautama-tantra are apparently lost to us.

Alexander the Great's invasion in 327 B. C., was followed by the depredations caused by the Scythians and the Hunas in the 5th century A. D. The Saracens under Mahmud of Gazni over-ran the country in the 11th century A. D. (the sack of Somnath in 1025 A. D.). Valuable literary treasures were lost during these and subsequent invasions, particularly during the burning of the great manuscript library of Prithwiraj, the last Emperor of India, by Muhammad Ghori (1192 A. D. Circ).

The existing literature of Ayurveda.—Charak-Samhita has been mentioned already. The greatest name in Surgery is that of Dhanwantari of Benares. His pupils were Sushruta, Paushkalavata, Gopurarakshita, Bhoja, Bhaluki, Karavirya, Vaitarana. They have all passed into oblivion except for the fact that their names are referred to in old existing commentaries. The Sushruta Samhita is the only one of them, that survives today, as a revised and recompiled summary of the great original called Vriddha-Sushruta. The recompiler of Sushruta drew largely from a great work by Videha on the diseases of Eye, Ear, Nose and Throat but this as well as the large Samhitas on the same subject by Nimi, Kankayana, Garga, and Galav Chakkshushya, Satyaki, Saunaka, Karala, Krishnatreya etc., live only in quotations.

In Diseases of Children.—The works of Jivaka, Parvataka, Hiranyaksha etc., have not yet been found out.

In Toxicology.—The great samhitas of Alambayana, Usanas, Sanaka, Katyana, etc., have not yet been traced.

Rasayana and Vajikarana.—In these two branches of Ayurvedic literature concerned with Hygiene, warding off disease and senility and the preservation of sexual vigour in tact, the great works of Patanjali, Vyadhi, Vashistha, Mandabya, and Nagarjuna survive only in some quotations. They have been referred to by M. M. Kaviraj Gananath Sen, M.L., I.M.S., in his introduction to Pratyaksha Shariram or an Anatomy in Sanskrit.

Other Works.—Next to Charaka and Sushruta, a third system of medicine was evolved by Vagbhata, the elder, a Buddist of Sindh, who lived in the 5th or 6th century A.D. He has left us the Ashtanga-Sangraha or the summary of the eight branches of Ayurveda, namely—Internal Medicine (Kaya-chikitsa), Major Surgery (Salya-tantra), Minor Surgery (Salakyatantra), Demonology (Bhutavidya), Toxicology (Agada-tantra). Tonics (Rasayana), Aphrodisiacs (Vaji-karana), Paedotrophy (Kaumar-bhritya, or nursing including nutrition and development of children).

Madhaba wrote a pathology (Nidana) about the 7th century A. D.

Vagbhata, the younger, wrote a compendium in the 7th or 8th century known as the Ashtanga Hridaya Samhita, based upon the Ashtanga Samgraha of the elder Vagbhata.

The 4 great works of Ayurveda are therefore those of Gharaka, Sushruta, Vagbhata and Madhaba.

Thereafter came the period of commentators, a period of nearly one thousand years—

Bhaskara Bhatta on Sushruta early 11th century.
Chakrapani Datta on Charaka late 11th century.
Dallana on Sushruta in the 12th century.
Aruna Datta on Vagbhata (younger) 13th century.
Vijay Rakshita, Shrikantha Datta and Vachaspati on Madhaba Nidana 13th century.

In the 16th century Bhaba Misra published a compilation from the older writers, which is called Bhaba-prakasha.

The history of Ayurvedic literature may therefore be divided into 3 epochs—

1. The first period of study and investigation as embodied in the 4 or 5 books available at present.
2. The second period in which, the knowledge so acquired was greatly lost, due to depredation and devastation by wreckless invaders.
3. The static period in which there were compilation, revision and commentation.

After Bhaba Misra there has been hardly any progress at all, during the last 4 or more centuries.

Catholicity and High Ideology of Ayurveda are worthy of note.

Sushruta says—A physician experienced in his art but deficient in the knowledge of medicine is condemned by all good men as a quack and deserves punishment. So a physician was expected to keep abreast of all discoveries of medical science in order to render efficient succour to suffering humanity. He is enjoined to treat his patient as his own begotten child. He defines medicine as that whichever brings about a cure. He defines a physician as one who can deliver a patient from disease. Love of personal reputation and greed for lucre were countermanded.' His only aim was to bring relief to suffering humanity. Drugs from all sources, native or foreign, having valuable therapeutic properties could be utilised and used, without any prejudice, such drugs as Rhubarb, Opium, Jamaica Sarsa, etc., are instances in point.

Vagbhata says—Those who follow the recipes of books blindly and are not capable of reasoning their application should be condemned and looked upon as snares of death (M. M. Gananath Sen's translation).

Interpolation.—A great deal of effete material has also crept into mutilated Ayurvedic literature. They have to be weeded out and the texts carefully expurgated of them.

The Spirit of Ayurveda.—Although Ayurveda has remained where it was or has perhaps retrogressed during the last few centuries, the Spirit of Ayurveda is the spirit of acquiring knowledge, the spirit of progress.

It demands of you a spirit of investigation in quest of truth in order to add to the store of knowledge left by workers and authors of old. They borrowed liberally from foreigners. Even shepherds and cowherds knowing the identification of drugs and their properties were respected and utilised and not despised.

Ayurveda of old.—In her days of ancient glory, Ayurveda had many things in a more perfect condition than the same branch of science in any other part of the world. We may be pardonably proud of her past.

Ayurveda of to-day.—But, that should not make us close our eyes to the fact that Ayurveda at present has got no scientific Surgery, Midwifery, Gynaecology, Pediatrics, Juris, Hygiene or Pathology. It has neither scientific Anatomy, Physiology and Pharmacology nor Physics, Chemistry and Biology. It has no preventive medicine at all so necessary for the country. Unfortunately, therefore, but as a necessary corollary thereto the result has been devastating upon Medicine as well. This Medicine, for no fault of hers, has been left without properly fitting glasses to correct her visual errors. She is deprived of the Third Eye of Knowledge, namely—the microscope, the x-rays, the endoscopes, and other 'scopes' and meters', 'grams', and 'graphs' of later invention. And, as a result thereof, there is not a chapter of medicine nor the description of a single disease therein that can stand scientific scrutiny or can be studied or learnt for any utilisable purpose other than for an archaeological or historical one.

Loss of literature, interpolation of effete material, and the imparting of its teaching so far 'under the Tol system and the apprentice system combined' have left it very little which can establish its claim as a system that can be taught as a course in institutions and practised as a profession. What remains today, is a mass of mutilation, adulterated and interpolated, containing some time-honoured drugs and medicines and certain clinical aphorisms.

A few instances.—I shall cite a few instances to illustrate my point from Madhaba-Nidana, the only important work in Ayurveda devoted exclusively to Pathology.

Subject	*How treated*	*Total space allotted*
All kinds of fever ...	As disease due to humoral upset, (not as a symptom complex)	173 lines only
Anaemia and Jaundice ...	,,	49 ,, ,,
Convulsion, Loss of consciousness, Coma.	As (plus trauma dietic error, mental causes)	49 ,, ,,
Ascites ...	As (plus disorder of digestive fire, intestinal perforation).	58 ,, ,,
Heart Diseases (Hridroga) ...	,,	15 ,, ,,
Dropsy, Oedema Anasarca (Shotha)	,,	41 ,, ,,
All Eye, Ear, Nose, Throat, Mouth, Tongue, Teeth, and Lips, Diseases of.	As (plus dietetic error, trauma, worms, etc.)	459 ,, ,,
Soft Chancre, ulcers, including Epithelioma of penis (Upadansha).	As (plus trauma, sexual excess, foul contact, worms, etc.)	15 ,, ,,
Hernia (scrotal), Scrotal tumour, inflammation, Elephantiasis, abscess, etc. in which the scrotum is enlarged, swollen and painful—are called together as Briddhi.	,,	21 ,, ,,
All Fractures ...	treated together.	25 ,, ,,
Syphilis (Firanga) ...	due to sexual contact with infected Firingis.	18 ,, ,,
Diseases of Infants, (Bala-roga)	due to humoral upset and to drinking vitiated milk.	55 ,, ,,

Insanity.—Is considered in two different categories. One is insanity proper, a mental disease. The other is insanity due to possession by Supernatural bodies such as ghosts or Bhuta, Gods or Devas, Asura, Gandharva, Jaksha, Ancestral Spirits (Pitrigraha), Reptile spirits (Naga-graha), Rakshasas, Pishachas, etc. As for the time of possession, the Devas prefer full moon, the Asuras, the morning and evening twilights, the Gandharvas, the ashtami or the eighth lunar day, the Jakshah, the pratipada or the first lunar day, the Ancestral spirits, the amabashya or the new moon, the Reptile spirits, the fifth day of the moon, the Rakshasas prefer the night, and the Pishachas the fourteenth day of the moon.

Mantras, charms, amulets, jajnas for appeasement of planets, gods and spirits were widely used for treatment of diseases, as well as of Dystocia or difficult labour.

The teaching of Ayurveda.—There has cropped up insurmountable difficulty in the teaching of Ayurveda. Having been taught so long without any practical reference to anatomy, physiology, and pathology of the human body, the connotations of the technical terms used in the texts thousands of years ago, have lost their original meaning and have received various interpretations. So much so, that one authority fights with another today to establish his own point of view. This happens not occasionally, here and there, once or twice, but prevails and pervades all through, in respect of essential terms and terminology used throughout the 4 or 5 ancient text books that exist today and constitute the whole syllabus of Ayurveda, referred to above. I would refer here to the great controversy, that raged for 10 years from 1922 to 1931 and yet was never settled between Pt. Gangadhar Shastri Joshi and M.M. Kj. Gananath Sen, M. A., L. M. S., of Calcutta, about the interpretation of the five fundamental terms as used by the ancients, namely, Kala, Peshi, Snayu, Shira, and Dhamani, which was embodied in an interesting pamphlet brought out by the latter entitled "Sanjna-panchaka-bimarsha"

Kj. Gananath characterised the existing text of Sushruta as "bristling with inaccuracies of ages" and in place of the old saying "Shareeray Sushrutah shresthah" or Sushruta is the best authority in Anatomy, went so far as to say "Shareeray Sushrutah nashtah" or Sushruta is good-for-nothing in Anatomy.

The scheme, recently submitted by Dr. M. N. Agashe, M. B. B. S., Sanchalak, Ayurved Sansodhan Mandir, Satara, to the committee appointed by the Central Government for the upliftment of the indigenous system, contain informations which will help us to understand the position even better. Let me quote—"A large number of workers have devoted their time, money and energies to the cause of the indigenous system of medicine .....nothing tangible had been achieved by the protagonists of these systems up to now."

It refers to the same ambiguity and difficulty in interpreting the ancient texts and suggests a sort of archaeological research work. Let me quote again.—"The intense study that one must give to them if one were to understand the implications and true meanings of what principally are,—(as was the necessity of the times when the texts were compiled)—aphorismal saying."

His own confession of the impossibility of interpreting the old terminology will be evident from his own doubtful interrogations. Let me quote,—He asks, with several queries under each term, the meanings of—

"RASA = plasma? tissue-fluid? C. S. Fluid?
MEDA = Fat? Red bone marrow?
MAJJA = Contents of bones? Brain?

The Pancha Karma Chikitsa, viz. — Snehan, Swedan, Vaman, Virechan, and Vasti have little to contribute to modern therapeutics, either in principle or in technique. Some are dangerous in the light of modern knowledge.

That it will be more a matter for research only than a subject suitable for teaching will be proved by further quotation from the same source.—

"It is extremely important to recognise, that because of the inevitable time-gaps, the science of Ayurveda has had periods of lost continuity.....commentators having interpreted the texts, as suited their own ideas.....a great amount of confusion has therefore crept in, in the interpretation....."

He is of the opinion therefore that "unless this *i.e.*, interpretation) is done by authoritative groups of scholars. the present confusion must continue and the training of Ayurveda cannot be brought to a desirable uniform interpretation and standard".

All this leads to but one and only conclusion possible, namely, that the 4 or 5 books of Ayurveda. as they exist today, can supply to us some drugs, and theories for investigation and research but cannot be utilised as a system for standardised teaching.

In the same statement the Sanchalak, Ayurveda Sansodhan Mandir, says that in his institution he "treated a few cases in the strictly Ayurvedic way" and got 'encouraging' results, but he confessed, "We had no facilities to diagnose the diseases by laboratory or biological methods and it is quite important to do so before declaring that our results have been absolutely reliable."

He has suggested in the same,—"The work of proper interpretation of the texts must be entrusted to scholars who are themselves trained in the respective western sciences. The orthodox vaidyas may be having a legitimate pride about the saying in the text, but they must be verified in the western way as early as possible". And 'to that extent' he has requisitioned the services of 'a chemical technologist, a botanist, a pathologist and bacteriologist and a doctor with a preliminary training in Ayurveda'.

Question of reform.—If any branch of Ayurvedic medicine is sought to be reformed in the light of modern knowledge, apparently enough, it will become the corresponding branch of modern medicine. Therefore the process should be reversed, that is whatever in Ayurveda stands the test of scientific scrutiny, should be absorbed and synthesised into modern scientific medicine. The process, which is rational will be easy, economical, and efficient and will prevent the reduplication of teaching same or similar subjects in parallel institutions without any uniformity of standard.

Efficiency of medical relief.—cannot be sacrificed at the altar of cheap and half-hearted measures with a promiscuous interminglings of a little-of-everything kind of medical education on grounds of emotional nationalism. We should be accused of the worst form of tinkering in view of the fact that millions of people die in this country from preventible diseases alone.

The need of the hour.—These specific infectious diseases cannot be treated without an adequate knowledge of the etio-pathology, the mode of transmission, the differential diagnosis, and the latest specific remedial measures. Science is not a provincial or even a national commodity. It belongs to humanity as a whole. So the tendency to separatism in science should be discouraged and resisted. Separate institutions for the modern, the scientific and the Ayurvedic and Unani systems would mean an enormous waste of men, materials, and money, at a time when the country must produce at least 1,85,000

efficient medical men during the next 25 years to attain half the efficiency of public health administration in other civilised countries, according to the Bhore Report.

Ayurvedic and Unani systems have both lost all other departments of medicine except Materia Medica and Medicine. They have no preventive medicine at all, so necessary for the country. As a practical and constructive suggestion, therefore, there should be only one uniform type of medical institutions, the modern ones, teaching modern scientific subjects according to the modern syllabus, In these institutions, there should be separate Ayurvedic and Unani wards, for treating patients who are willing to be treated under these systems. The facts and figures of these wards should be followed according to modern methods of study and statistics. The case-notes particularly those of all cured cases, should be handed over to the departments of pharmacology and therapeutics for their study. This will enrich the Indian pharmacopoeia and include all that is best in these systems and will have the effect of unifying these systems into one.

Chairs and stipends should be created for encouraging research in these systems in this manner, so that whatever material of worth may be salvaged therefrom may be absorbed into the corpus of scientific medicine, and utilized by the world.

The present promiscuous method of training in Ayurvedic and Unani schools, makes confusion worse confounded, and costs enormous expenses in men and money by reduplicating the very costly teaching of modern sciences in a sub-standard manner, with the result that the products of these institutions cannot be utilised for scientific medical relief in the service of the country. Accurate diagnosis is *sine qua non* for scientific treatment. This is a highly complicated training for which there is no short-cut process. It requires extensive scientific method.

Considering the poor health and high death-rate, as well as the ignorance and poverty of the Indian people, considering also the fact therefore that, Medical Planning for India must be as efficient and at the same time as economical as possible, India needs must concentrate all her efforts and pool all her resources to produce the medical personnel recommended by the Bhore Commitee in the minimum possible time.

The cultivation and manufacture of drugs must be encouraged in this country to reduce their cost of manufacture and cheapen their price.

It is essential also that the government must ensure the assaying and standardisation of drugs, so that they are of uniform standard and quality.

India should, therefore, emulate the examples of China, Japan, Persia, Iran and Turkey, etc., and evolve one unified system of scientific medicine, enriched by a fusion and synthesis of all that is best in the Ayurvedic, Unani and modern systems of medicine. India must not for emotional or national consideration revert or retrovert to mediaevalism, by discarding scientific outlook and scientific discipline.

"India being a poor country, can ill afford to have three systems of medicine running side by side, each having its own practitioners, hospitals and sanatoria its laboratories and trained staff."

It is hoped that the reasons and suggestions outlined above will prove it conclusively that there is no reason why,—"the three systems cannot be combined into one all-comprehensive system", and will give the Government the answer for the question they put to the Chopra Committee in their inaugural address.

The All-India Medical Licentiates' Association

CIRCULAR No. 23

To

All the Branch Secretaries,

Dear Doctor,

I am sending herewith a relevant extract of the letter received from the Reception Committee of the 35th Annual Conference to be held in Bombay in December 1947:

".....Under a binding with the Co-ordination Committee of the Conferences to be held in Bombay during Xmas week and with the Rationing Authorities here, the Reception Committee has to submit to them the exact number of delegates and visitors, that would be attending the conferences, the number of days they would require accommodation (including whether they require vegetarian or non-vegetarian food) by Saturday, the 6th December 1947 at the latest. The binding includes that payment shall be made in full to the Co-ordination Committee for the number of delegates so informed. No guarantee of Boarding and Lodging arrangements can possibly be made to any member, who does not supply us the above details so as to reach us by the 6th December 1947. The charges for Boarding and Lodging per head has been fixed at flat rates of Rs. 20/- and Rs. 35/- respectively. Of course, the usual fees of Rs. 5/- will be charged to our delegates who stay for three days. For their guests, families or visitors, the flat rates as above will be charged.

Bombay is pleasant during December necessitating just a little warm clothing. Guests should provide themselves with their own bedding.

Dada Jamiatram B. Desai, the only living founder member of our Association has very kindly consented to inaugurate the Conference. It is urged that the programme of our Conference should be followed according to scheduled timing and delegates are requested to be in Bombay in time."

From the above it will be clear that *a duly elected delegate* will have to pay Rs. 5/- as the delegation fees and it will include the charges for his 3 days' stay for our Conference. So, Branch Secretaries should inform the names of the elected delegates to me and send a copy directly to the Reception Secretary, the 35th Annual Conference. A.I.M.L.A., 1, Nagindas Mansion, Opera House, Bombay 4.

With best wishes,

Yours sincerely,
V. D. SATHAYE,
General Secretary

17-11-47 502. Narayanpeth, POONA CITY.

ASSOCIATION NOTES

Branch Report. (No, 27)
Sylhet Branch.

Annual General Meeting of the branch was held on 10th August 1947 at Sylhet. Dr. N. C. Roy was in the chair. The meeting passed the proceedings of the Annual General Meeting. After electing delegates to the forthcoming Conference of the A.I.M.L.A. the meeting decided that due to the separation of Sylhet from Assam province, the Assam Provincial Conference cannot be held at Sylhet.

Branch Report. (No. 28)
U. P. Provincial Branch.

A meeting of the Standing Committee of the U.P. Provincial Branch was held at Lucknow on 5th August 1947 under the president-ship of Dr. Damodar Das. The proceeding of the last meeting were confirmed. Then the following office bearers were elected.

President.—Rai Sahib Dr. Ram Narain Lal.
Provincial Secretary.—Dr. B. B. Lal Dikshit.

Branch Report. (No. 29)
Chaibasa Branch.

A meeting of the Executive Committee of the Chaibasa branch of the A.I.M.L.A was held at Chaibasa on 10th August 1947. Dr. N. R. Buxi, the President of the branch took chair. The minutes of the last meeting were read and confirmed. The General Secretary's circular No. 11 was considered. It was also resolved that it is not desirable to hold the Provincial Conference this year.

Branch Report (No. 30)
Gauhati Branch.

A general meeting of the Gauhati Branch was held at Gauhati on 29th July 1947. Dr. D. K. Dutta was in chair. Dr. D. K. Barooah was elected vice-president of the branch. Dr. U. N. Barua was elected member of the Standing Committee. The meeting also considered circular No. 11 of the General Secretary.

Branch Report (No. 31)
Mussoorie Branch.

A meeting of the Mussoorie Branch was held on 8th July 1947 at Mussoorie. Proceedings of the last meeting were read and confirmed. The following office-bearers were elected unanimously.

President: Rai Sahib Dr. R. N. Lal.
Vice-President: Dr. A. N. Vyas.
Secretary: Dr. J. R. Goyal.
Joint Secretary: Dr. Gopal Singh.

The branch resolved to lodge its protest against G. O. No. 3764/V dated Lucknow May 7, 1947 to I. G., C. H. U. P. making invidious distinction between P. M. S. I and P. M. S. II in the matter of allowances and treating the Gazetted Officers P. M. S. II on the same footing as the non-gazetted officers of P. S. M. S. which is inequitable and unjustified.

Branch Report (No. 32)
Chapra Branch.

An emergent meeting of the Chapra Branch was held at Chapra under the presidentship of Dr. B. Gupta. The meeting considered the circular No. 11 of the General Secretary as also circular No. 3 of the Provincial Secretary. It has also decided that the Provincial Conference should not be held this year.

Branch Report. (No, 33)
C. P. & Berar Mining Area Medical Association.

A special meeting of the Association was held at Barkui under the presidentship of Dr. T. E. R. Chetty on Sunday the 7th Sept. 1947 to regard the deep sense of sorrow at the sad demise of Dr. G. R. Bendre, one of our enthusiastic members of the Association.

"It is resolved that our heartfelt condolence be conveyed to the members of the family at the very sad and untimely death of Dr. G. R. Bendre of Ghorawari on Sunday the 1st Sept. 1947."

The resolution was passed all members standing.

Branch Report. (No. 34.)
Chittagong Branch.

The Provincial Secretary of the Bengal Provincial Branch of the All India Medical Licentiates' Association along with the Secretary Chittagong Branch of the A. I. M. L. Association visited some flood devastated areas, and releif centre was opened at Barakal with the co-operation of the Indian Medical Association.

Branch Report. (No. 35)
Sylhet Branch.

An emergent meeting of the Sylhet Branch of the A. I. M. L. A. was held on 31st August, 1947 in which the following important resolution was passed.

"Resolved that the licentiates in government service both medical and Public Health Departments, Assam serving in the district of Sylhet which now forms a part of East Bengal, who opted to serve rest of India, have been relieved on the afternoon of 31st August, 1947 under orders of the Government of East Bengal, communicated by the Civil Surgeon, and Asst. Director of Public Health, Sylhet.

The relative postings of the employees have not been communicated to them by the Government of Assam, and no advance pay or T. A. have been sanctioned. In view of the facts that their terms and conditions of the service were guaranteed by the representatives of both the dominions at the time they were asked to make their choice, and also in view of the fact that such sudden release has put them to immense hardship, suspense and anxieties.

The meeting resolves that the Government of Assam, as also the dominion of India be requested to make immediate arrangements for posting them in equivalent posts in congenial areas."

Branch Report (No. 36)
(Bilaspur Branch)

The emergent meeting of this branch was held on 20-9-47. Nine members attended the meeting. The following resolutions were unanimously passed by the meeting:

"The members of this branch unanimously resolved to protest against non-inclusion of Medical Licentiates within the perview of the Medical Council Act of 1933 and request the Government of India to amend the Act so as to include the medical licentiates within its perview."

Branch Report (No. 37)
C. P. & Berar C. I Coal Mining Medical Association

The annual meeting of this branch was held on 28-9-47. Dr. T. E. R. Chetty, the President was in the chair. Following were the proceedings:

1. Resolved that the Coal Committee be requested to arrange with mine owners to give effect to their recommendations regarding the scale of pay and other facilities etc. to doctors in their employment.

2. Resolved that the Coal Committee be requested to inform the Mine owners that this Association will be pleased to help them in securing the appointments of the doctors for their concern.

3. Dr. Tembhekar, Secretary, read out the report for the year 1946-1947 and put before the house the various types of work done during the year, important being the representation of the pay scale to the Coal Committee and their acceptance of the same, Membership enlistment drive etc. etc. The accounts were read and adopted. He was glad to inform the house that a good sum of Rs. 196/15/- was carried over for the next year.

4. Elections for the year 1947-48 were held with the following results.

President:—Dr. R. S. Khot.
Secretary & Treasurer:—Dr. N. S. Tembhekar.
Joint Secretary:—Dr. A. N. Pande.

Members of the Provincial Standing Committee:—Dr. T. E. R. Chetty and Dr. N. B. Tembhekar.

Members of the Managing Committee:—Drs. Shukla, Banerji and B. N. Bhattacharya.

Delegate to the Annual Conference of the A.I.M.L A. to be held at Bombay in December 47:—Dr. B. C. Chaudhari.

5. A talk on the Control of Malaria was given by Dr. Chaudhari, Malariologist and a discussion on the treatment and control of Cholera by Dr. Chetty took place.

After a vote of thanks to the Chair and the Host Dr. Buit for the excellent entertainment the meeting came to an end.

Branch Report (No. 38)
(C. I. M. A. C. P. & Berar)

At a meeting of the members of the C. P., Berar and C. I. Mining Area Medical Association, branch of the A.I M.L.A., 20th September 1947 was observed as a protest day as has been done every year in the past, to protest against the non-inclusion of the medical licentiates within the purview of the Indian Medical Council Act of 1933.

Now that the National Government has been formed it is requested that the Government of India so amend the Act as to include the Medical Licentiates, who form the majority of medicos in this country, within its purview and thus remove the gross injustice which has been perpetrated so long.

Branch Report (No. 39)
(Budge-Budge Branch, Bengal)

The Annual General Meeting of the Branch was held on 7-9-47. Dr. A. N. Roy was in the chair. Following persons were elected as office-bearers for the year 1947-1948. Dr. A, N. Roy, President and Dr. B. C. Mittra, Secretary.

Branch Report (No. 40*a*)
(Dhubri Branch)

The General Meeting of the Dhubri Branch was held on 22-9-47. Dr. S. K. Das was in chair. The meeting unanimously suggested the following points for incorporating in the memorandum to be submitted by the Provincial Secretary to the Assam Pay Committee:

1. Resolved that the Provincial Secretary be suggested the following points for incorporating in the memorandum to be submitted to the Assam Pay Committee:—

(1) Scale of pay of licentiate medical officer in Government employment be Rs, 200/- to 500/-

(2) The subordinate medical service (Assam Medical Service Junior) be abolished and the whole cadre be incorporated into the Provincial Medical Service (Assam Medical Service senior). The creation of another cadre-Assistant Surgeon Grade II—is a mis-nomer will again perpetuate the water-tight compartment in the service ranks.

(3) Promotion to the next higher rank be by dint of merit.

2. Resolved that the authorities of the local bodies, private estates, Industrial firms be requested to adopt the same terms and conditions of service as will be in the Government service as far as the licentiate medical officers are concerned.

3. Resolved that the Urban Health Officers, recruited from licentiates be granted a compensatory allowance and promotion to the next higher rank as in the case of other licentiates in service.

The meeting also elected following members as delegates to the Annual Conference:

1. Dr. S. K, Das of Bongaigaon and
2. Dr. N. Huda of Dhubri Civil Hospital.

Branch Report (No. 40*b*)
(Wardha Branch)

In the meeting held on 10-10-47 the following were declared as elected for the following posts:

1. *Branch President*—Dr. Marotrao Vakil.
2. *Branch Secretary*—Dr. N C. Bhalme.
3. *Provincial Standing Committee* Dr. N. C. Bhalme,
4. *Delegate* Dr. Gadi
   Dr. N. C. Bhakne

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TO
THE INDIAN MEDICAL JOURNAL

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Branch Report (No. 41*a*)
(Jorhat Branch)

The meeting of the Branch was held on 28-9-47, The following members were elected as office-bearers for the year 1947-48:

President—Dr. B. B. Sengupta.
Secretary— Dr. S. B. Sen.

The election of the delegates for the annual Conference was also held and Dr. S. K. Sen was elected as the delegate from this branch.

Branch Report (No. 41*b*)
(Rajshahi Branch)

The Annual General Meeting of the branch was held on 9-10-47 with Dr. M. C. Lahiri in chair. The secretary read the annual report which was subsequently passed unanimously. In the connection the following were declared as elected:

President—Dr. M. C. Lahiri
Secretary—Dr. G. K. Maitra
Members on the Provincial Standing Committee:
Dr. G. K. Maitra
Dr. S. C. Nandy
Delegates to the Annual Conference:
Dr A. C. Choudhury
Substitutes:
Dr. S. C. Nandy
Dr. M. C. Lahiri

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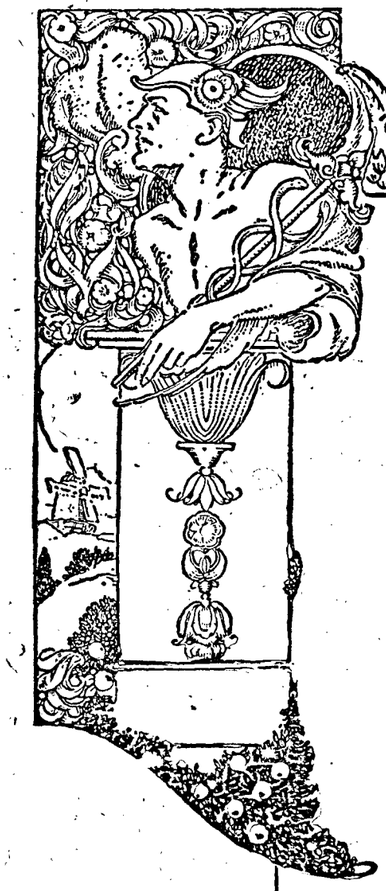
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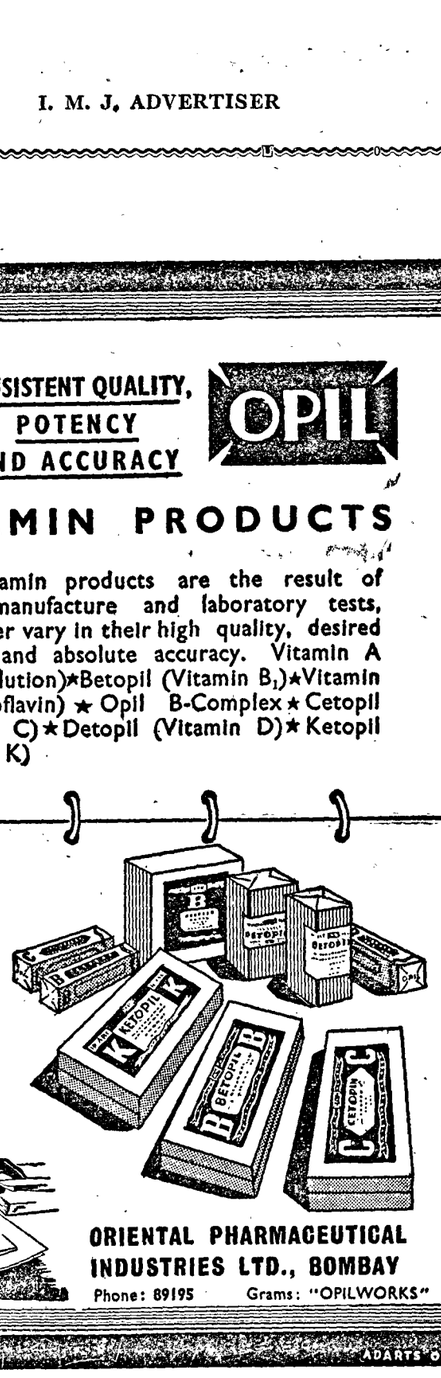
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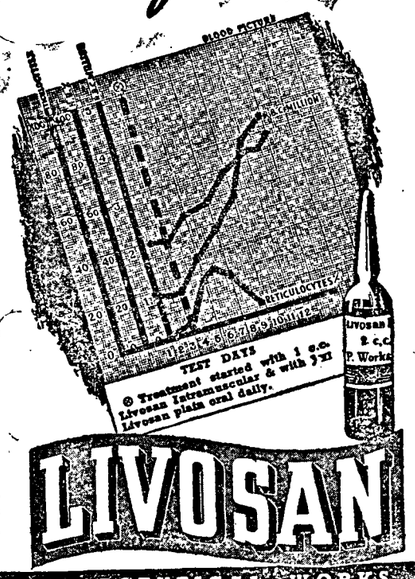
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References: O. Loffler, (Swiss Medical Weekly 1940 No. 26).—W. Miescher, (Swiss Medical Weekly 1940 No. 37).—P. Itzkowitsch, (Praxis 1942, No. 26).—R. Wilbrandt, (Praxis 1943, No. 3).—C. Susman, (Praxis 1943, No. 18).—O. Businger, (Praxis 1943, No. 43).



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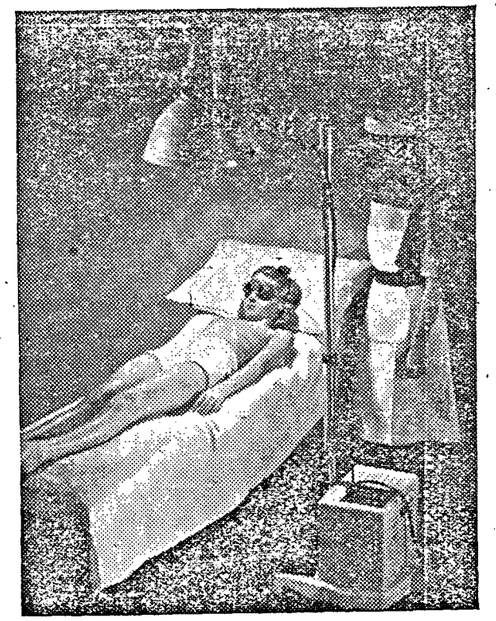
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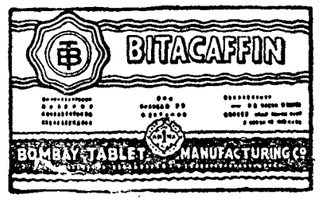
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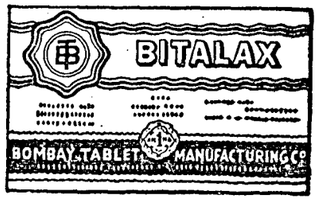
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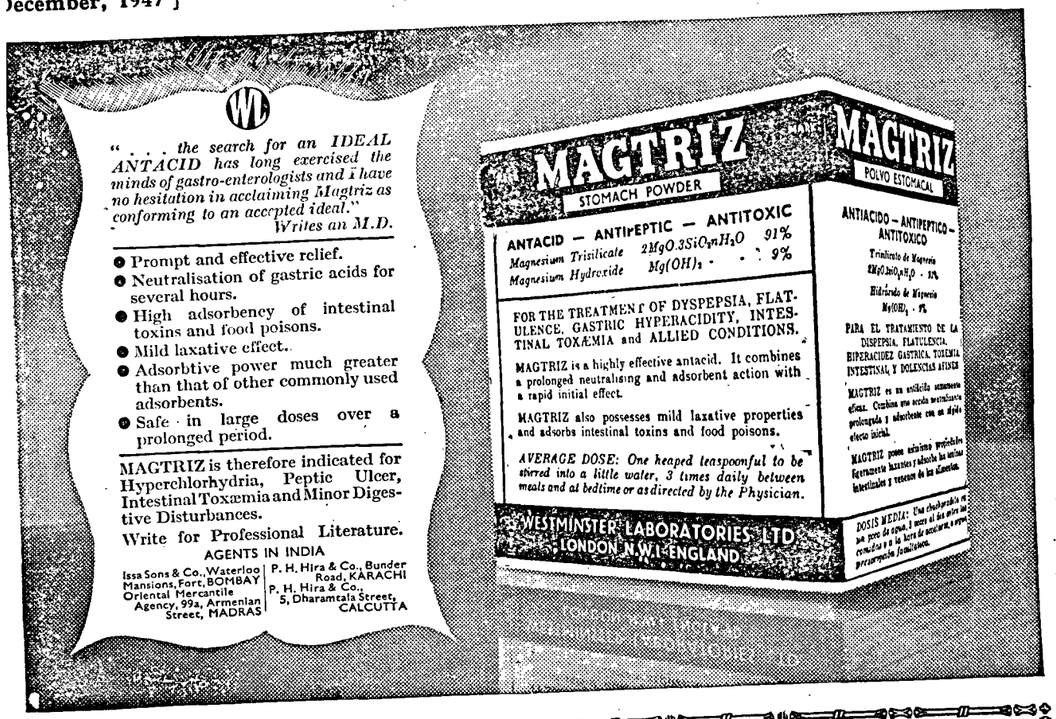
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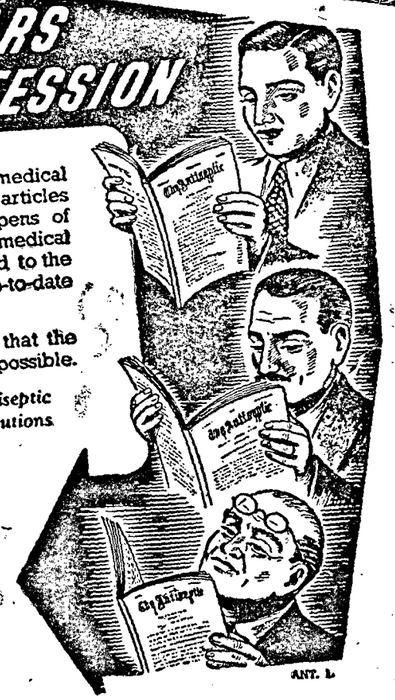
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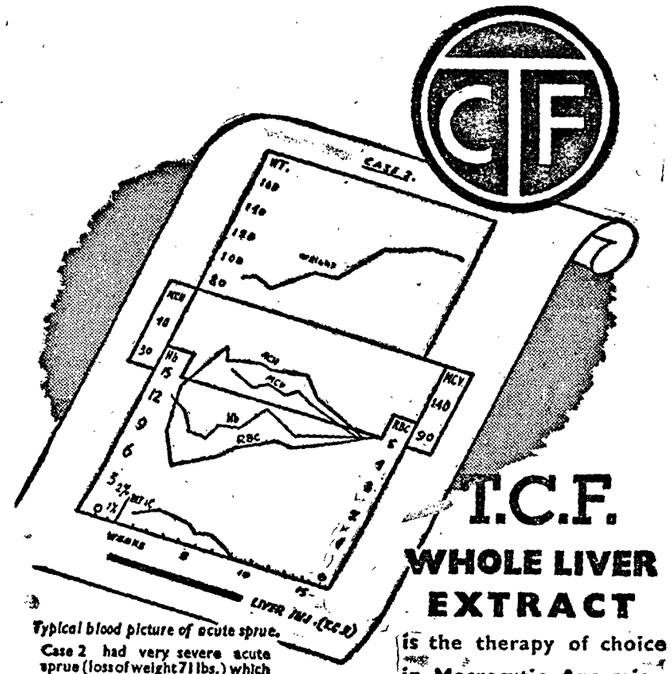
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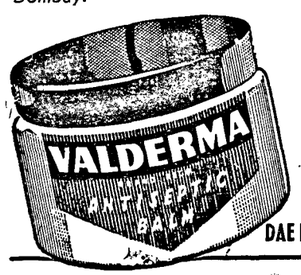
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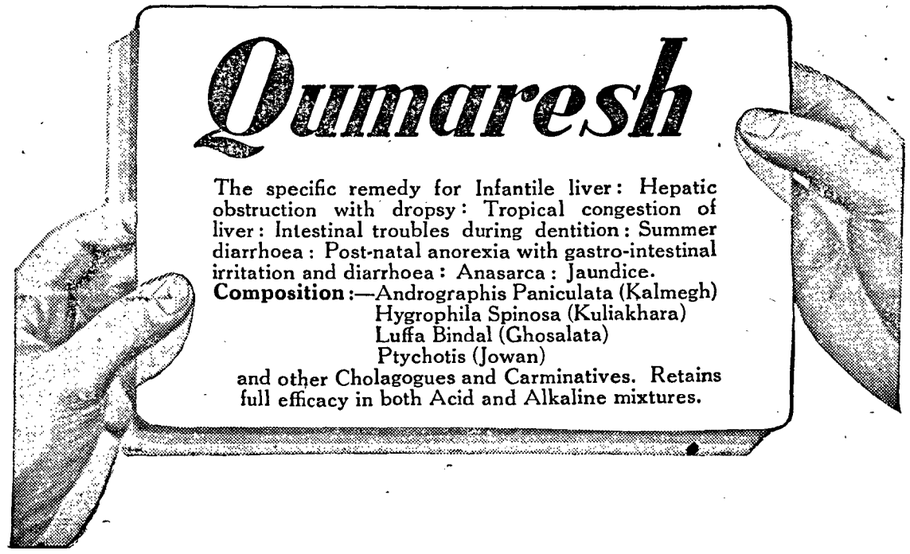


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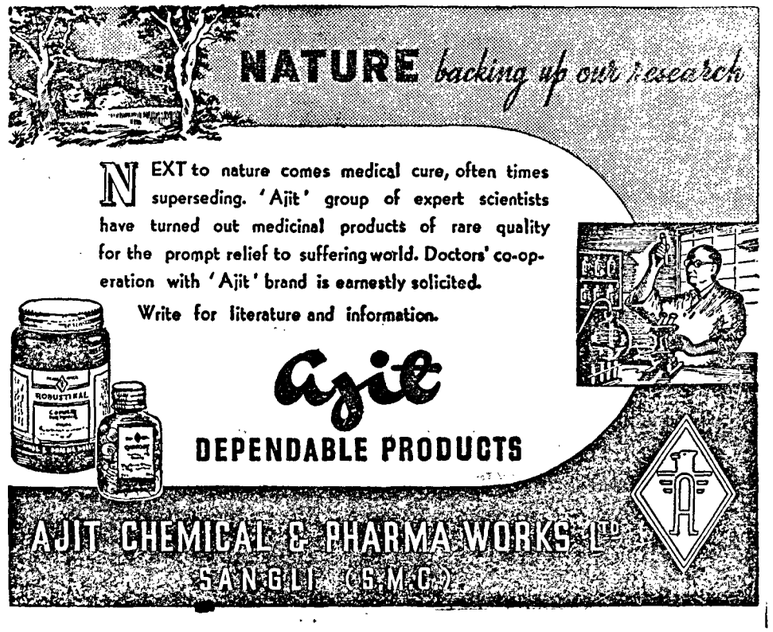
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