

THE INDIAN MEDICAL JOURNAL



Journal of the All-India Medical Licentiates' Association

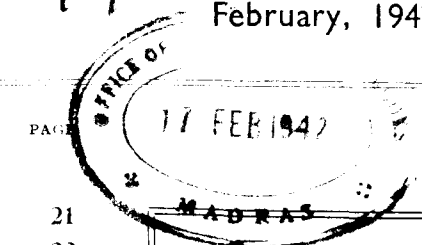
(With which The Agra Medical Club Journal is incorporated)

Vol. 36 No. 2

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February, 1942



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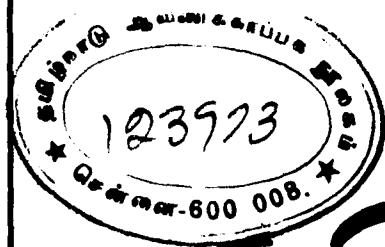
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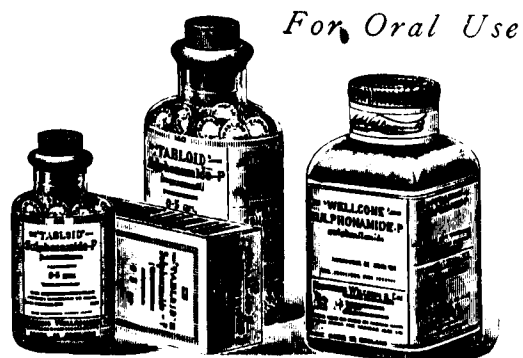
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THE Indian Medical Journal

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The Government of India have, in a press note, advised all the publishers to exercise rigid economy in the use of printing paper, since Indian paper mills are not in a position to meet the normal demand due to war conditions, and the paper import also is strictly limited.

We are therefore forced to further reduce the pages of the Journal for the year 1942, and the total number of pages would not exceed fifty per issue.

Special Numbers that are scheduled to be published in March and June of this year would, if found necessary, appear in two parts covering the issues of two months.

Owing to non-availability of art or cover paper, we have perforce to use ordinary printing paper for the cover page, and to change the design to suit the quality of the paper used.

Owing to the reduction in the printed pages, there would be more than normal delay in the publication of papers, for which we solicit the indulgence of the authors.

Requests for extra reprints, and too many illustrations and diagrams could not be entertained at present owing to paper famine and increased cost of block making materials.

Owing to late intimation of changes of address, some subscribers complain of non-receipt of their copies, and ask us to send fresh ones. We were in a position to oblige them before, but now owing to very acute shortage of paper we are forced to print copies only upto our exact requirements. Therefore, the subscribers are requested to instruct the post-office on their side to redirect the Journal, till they intimate their changes of address to this office. No mistake in addressing and posting could arise in this office, as this work is done by the addressing machine and the copies are checked before and at the time of posting.

Vol. 36 || MADRAS : February 1942 || No. 2

Public Health Commissioner's Report for 1940*

This is a document of great importance and equally of great interest, because it gleams in one volume the progress of India's Health and the attempts made by the people and the Government to conserve the health of the nation and utilise it for the benefit of the country. Medical and Public Health work, both in its academic and applied aspects, is necessarily a long-range programme, more so in a vast country like ours where geographical, economic, social and political barriers could only be removed by the removal of illiteracy and poverty. The report under review records truthfully the state and the progress of India's Public Health during the year 1940.

It is gratifying to note that the year was unmarked by any abnormal outbreaks of the common epidemic diseases, such as plague, cholera and small-pox. As effective methods of control of plague, the Commissioner recommends systematic destruction of rats by cyanogas in the affected areas, properly designed and cheap rat proof houses, and active immunisation of the inhabitants of the infected and threatened areas. With regard to cholera, he points out that protected water-supplies

and a sound system of night-soil disposal would almost completely change its epidemiological features, and the tempo of progress in the prevention of this disease would largely depend on the degree of fulfilment of these two basic aspects of cholera prevention. The Provincial Public Health departments are quite aware of the modern advances in Public Health Science and Practice, and the progress recorded in each province indicates the many-sided limitations under and against which they have often to execute their work. As a rule these limitations are broadly two: want of finance and of optimum co-operation from the people. It is no wonder therefore that results vary in different provinces according to the measure of co-operation and money available.

Of the other diseases on which the Public Health Commissioner reports are malaria, enteric and tuberculosis. He is quite correct in pointing out that the incidence of and mortality from malaria is under-estimated. We agree with him entirely that the problem of malaria control in a vast country like ours is of no small magnitude as could be easily solved by the mere knowledge of how we can control save by exploring the possibilities of successfully applying it in places where malaria is rampant. The excellent Malaria Map of India annexed to the report would show that no part of our country except those areas at the foot of the Himalayas is immune from endemic or epidemic malaria. The progress of malaria control is therefore bound to be slow and uneven, but it would be wrong to under-estimate the value of the work so far accomplished. The disease has been checked and much economic loss and human suffering has been prevented by systematic anti-malaria work in the tea-estates and the Railway colonies, and in Delhi and Hyderabad (Deccan). The campaign against this disease can succeed only if the people actively co-operate and themselves undertake minor sanitary works necessary for eradicating mosquito breeding. Writing on Enteric, the Commissioner mentions the difficulty of getting correct figures of its incidence, and he therefore warmly recommends the establishment of Provincial Health Laboratories for the diagnosis of clinical material sent by private practitioners and medical officers. The value of such a laboratory, he points out, in the preventive campaign against enteric fever has been amply demonstrated in the recent epidemic of typhoid in the city of Bombay. Under tuberculosis he records great progress, and as we have pointed out in the editorial of the last issue of the *Journal*, the growth of anti-tuberculosis campaign has been phenomenal. The formation and active working of Provincial Tuberculosis Associations; the demarcation of function of the Central Tuberculosis Association of India as an expert advisory Body in charge of research and direction of work; the scheme of control by "Organised Home Treatment", and the number of tuberculosis clinics and sanatoria that have been opened in the various parts of our country; and the systematisation of Tuberculosis Surveys, indicate the progress of campaign in the right direction.

Maternal Mortality, medical research and nutrition are given separate chapters, and since we have been dealing with these subjects, now and again, in the columns of the *Journal* there is no need to go into them now in detail, except to observe that progress has been steady

* Published on Nov. 4, 1941 by the Manager of Publications, Delhi, Price As. 12 or 1 sh.

and there will always be a lag in time between the discovery of methods and their actual application owing to factors which could not easily be overcome.

The two outstanding works of the Government are the active measures taken by them against the introduction of yellow fever into India and the formation of the Central Advisory Board of Health. Of the latter, it may be truly said that their recommendations have been highly valued by the profession as well as by the Provincial Governments.

We commend this excellent report to our readers as it will give them a true picture of the State of India's Health during 1940 and the true perspective from which India's health problems have to be seen and solved in the coming years.

Cholera Research in India—1934-40†

There has been a considerable amount of research work in our country on the different aspects of cholera during the last two decades, and the last one was by D'Herelle and his co-workers who discovered and applied the knowledge of specific bacteriophage in the interpretation of the epidemiological, endemic and clinical aspects of cholera. We have reviewed this work frequently in these columns, and in our Special Number on cholera‡ we again made a review of the further progress in cholera research. The present *Review of Cholera Research in India—1934-40* by Major-General Taylor gives, however, an authoritative exposition of the exact degree of progress we have so far made in connection with many of the problems connected with cholera. Although this booklet is but a summary-review of papers already published, yet its presentation in this brief and precise form has the supreme advantage of enabling us to grasp the significance of the important results of investigation, scattered by time and space, at one stretch of reading, and to have a coordinated idea of this disease in many of its aspects.

We wholly agree with Taylor that the large time spent on the serological diagnosis of *V. Cholera* is entirely necessary to pick up the forms to which alone cholerogenic properties can be assigned among many other forms almost universally present in natural water. The need for devoting time and work on the serology of cholera arose when by chance apparently agglutinable cholera vibrios were discovered in the stools of some pilgrims at Tor which had been free from cholera since 1913. Immediately the international organisations for research woke up to solve this mystery. Gardner, Venkatraman and others have finally shown that cholera, either in sporadic or endemic form, is caused only by vibrios which possess a characteristic heat-stable (O) antigen with its sub-type forms and that vibrios of any one serological type other than O Group 1 were not isolated from cases of clinical cholera geographically or chronologically related. This is now accepted as the basis for application of quarantine measures.

The next problem is one of transmission, and on its right solution depends the explanation for the endemicity and epidemiology of cholera. The three possible means of transmission are by (1) direct transfer from case to case, (2) convalescent or healthy carriers and (3) survival with or without multiplication in infected water. While investigating these possibilities it was

found that the true vibrios do not survive long either in a convalescent case of cholera or in infected waters, and that they could not be isolated from the stools of the general population or from water in the endemic area, except in direct relation to the cholera case. Therefore the conclusion is arrived at that the cholera case itself would appear to be a major factor in disseminating infection, and that contact carriers and water sources infected from the case may act as intermediaries only for short periods and at short range. This, of course, leaves the problem of endemicity unsolved. Therefore, Taylor rightly stresses that preventive measures should be constantly enforced in endemic areas of India from which infection is primarily derived. Sanitary improvement, careful personal hygiene and anti-cholera inoculation have warded off the disease in closed communities, such as army cantonments, jails, etc., and he is sure that these measures would in time result in a great reduction of risk and eventually eliminating infection altogether.

It is also obvious from the present results of cholera research that anti-cholera vaccine can be considered as potent only if it contains cholera strains of O group 1, with its sub-types if necessary. The results of tests show that if a vaccine does not agglutinate to satisfactory titre with the O sera, no protection against clinical cholera could be obtained.

The value of anti-cholera serum for curative purposes is still not established. The general conclusion from the work so far done is that *V. Cholera* does not produce a soluble exotoxin, and that the toxic action of extracts or filtrates is no more than of a non-specific nature due to bacterial protein.

Although there are still many complicated problems awaiting elucidation, there is yet no doubt that the work of cholera research in recent times in our country has progressed far enough to enable preventive measures to be undertaken on a sound basis without loss of effort or money.

Foreign Doctors in Emergency I.M.S.

We read in the newspapers that the Government of India have authorised the Director-General of the I. M. S. to recruit to the Emergency I. M. S., doctors belonging to non-enemy countries provided they are considered by him as holding the requisite medical qualification. Whether he is going to select them himself or in consultation with the Indian Medical Council, we do not know. But the idea of such recruitment is untenable from any point of view. Here, in our country, we have more than 80,000 practitioners. If many of them have not responded, the causes must be analysed and removed. We have often discussed these causes in these columns and we need not repeat them now. The fact that about 75 per cent. of the Emergency I. M. S. is already composed of European, and only 25 per cent. Indian nationals, as disclosed in the last Assembly Session, is serious enough, and if on the top of it doctors from non-Empire countries are added, it means that the recent consultations which the Government had with organised bodies of the profession are a mere show to placate public opinion. This is quite unfair.

† A review by Major-General J. Taylor, Director, Central Research Institute, Kasauli, November, 1941.
‡ October 1939.



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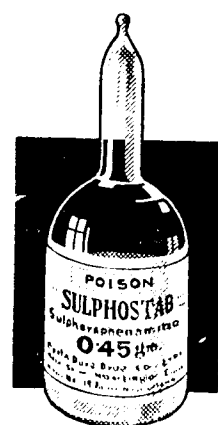
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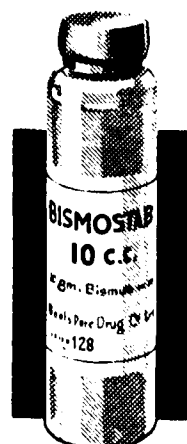
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ADDRESSES AND ARTICLES

Blood Examination for Malaria

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In this tropical country of ours, which is highly malarious, it is needless to mention that blood examination for malarial parasite is of the utmost importance in all cases with rise of temperature, and even in cases without any rise of temperature as it has been observed that malaria is a disease which can show very variable symptoms. If the blood examination is not done prior to quinine administration even learned and experienced physicians are so greatly puzzled that no exact diagnosis can be made, especially when complicated with some other ailment.

Therefore it is evident that if blood examination can be undertaken in all fever cases the method of treatment would be much simpler and would save more lives than treating cases on mere supposition. It has been found in more than one instance that when blood was examined for checking purpose only, not infrequently the slides were found positive for Malaria, and the treatment was thereby altered.

Here it would not be out of place to mention about a case which I think might show the necessity of blood examination in every case with rise of temperature. At the very beginning of my professional life I had the occasion to attend on a Hindu girl of ten years. She was apparently suffering from bacillary dysentery and ascariasis, having more or less continuous rise of temperature and for most of the time she was comatose. She was treated by an eminent and experienced medical practitioner. She did not respond to the treatment given by him for several days and the party had to try other methods of treatment as Ayurvedic, Homeopathic and at last indigenous home remedies. But in spite of all these measures, the case went downhill and became hopeless. As a last resort I was called to see her, and considering the case from all points of view, I took blood slides and to my surprise the slides were positive for M. T. malaria. So I advocated anti-malarial treatment in full strength and gradually the patient improved day by day till she was fully cured.

Very few, however, among us have the facility of laboratory equipment. But it is to be regretted that most of those who can command it do not seem to follow the golden rule.

Thick Films

The point I would like to discuss in this article is the examination of blood for malaria by the thick film method. It is a fact that thick film examination is not often resorted to even now-a-days owing to the reason that it takes a bit longer time and patience. So one is satisfied by examination of thin films only.

Malariaologists have found that if only one thin blood film be examined from patients with malaria, parasites will be detected in only 40 per cent. of cases. Though this number may be high at a given time, it is quite

certain that if we depend on thin films only many cases will escape diagnosis for malaria and those only with typical symptoms might be held on supposition. As a matter of fact the thick film method can be called to some extent a concentrated method as the thin film requires one drop of blood whereas thick film is made with four drops of blood. If the parasite is not discovered in one drop it is more likely to be present in four drops.

This fact has been fully realised here in my laboratory, where hundreds of blood slides are being examined for malaria. We have found in most cases thin films give negative result whereas thick films give positive findings in same cases. That is why our Chief Medical Officer, Dr. D. Manson, has made it compulsory to take both thick and thin blood films of all fever cases that might occur in a group of thirteen tea gardens under him, and cases where thick film is not taken, the examination is held to be incomplete.

The advantages of the thick films are:—

- (1) Parasites can be detected even after a dose or two of quinine which is frequently given by many before microscopic diagnosis.
- (2) While searching for malarial parasites, L. D. Bodies may be encountered which is an additional diagnostic advantage.
- (3) Thick films are not spoiled while under stain for a considerably long time, and become clear after thorough washing. They can stand overnight.
- (4) In the long run the expenditure is much less.
- (5) Other work can be done during the period of staining.
- (6) With slight caution both thick and thin films can be stained on the same slide as thin films are sometimes needed to have a better look of the parasite for distinguishing various species.

Thick films should not be too thick and should not be too thin. Proper dehaemoglobinization cannot be attained in too thick films and this hinders light passing through and thereby making the parasites very hazy. The following method has been suggested by Knowels and Das Gupta (1924). A grease-free perfectly clean slide is taken. After proper aseptic measures the finger is pricked and the glass slide (held upside down) is brought into contact with issuing blood so that four drops are placed at the corners of a small square about half an inch in diameter. Drops should not be too large nor too small. With a round needle, next pool the four drops so as to spread the blood into an even thick film covering about half an inch square. Puddling should be avoided and the film must not be made too thick.

The film takes about two hours to dry in room temperature, and unless thoroughly dry it is likely to be washed away during dehaemoglobinization. It takes about half to one hour in an incubator at 37°C.

If immediate blood examination is not required, the films can be taken one day and stained on the next to make it certain that it has dried.

The film is flooded with following mixture :—

Glacial Acetic Acid—2.5 per cent. solution in distilled water—4 parts.

Crystalline Tartaric acid—2 per cent. solution in distilled water—1 part.

A mixture of both the solution can be kept for a considerable time. After a minute or two the supernatant fluid is drained off, leaving a greyish white coloured patch. This time is variable according to the thickness of the film.

Next, for fixation, flood the slide with methyl alcohol and allow it to remain on for five minutes. Drain off the methyl alcohol and wash the film very thoroughly under a slow running tap to get rid of every trace of acid. Stain the film with Giemsa's stain of one drop to 1 c.c. of water for 15 to 20 minutes.

Wash in tap water and let it dry at room temperature. Avoid blotting. Then examine with 1/12 oil immersion lens.

Properly stained film will show R. B. Cs dehaemoglobinized, W. B. Cs are dark and contracted and parasites if any will appear quite clearly.

Culture of Malarial Parasites

After proper aseptic measures 10 c.c. of blood is withdrawn from the patient's vein and carefully collected into a sterile test tube containing 1 c.c. of a 50 per cent. sterile dextrose solution in distilled water. Care must be taken that no air bubble forms.

The glucose solution is sterilised by steaming daily for 20 minutes for three days. The blood is next defibrinated by gently stirring it with a sterile glass rod which is then withdrawn with the adherent clot.

The defibrinated dextrose containing blood is next transferred to a series of small sterile test tubes not less than 1.25 cm. in width and not less than 12.5 cm. in depth. A quantity of blood giving depth of 2.5 to 5 cm. is run into each tube, so that when it settles there will be a column of clear plasma 1.25 to 2.5 cm. deep above the blood cells after the cells have settled down to the bottom of the tube. The tubes are incubated at a temperature between 35–38 C. as recommended by Sinton.

The parasites grow at the top of the column of the deposited cells (in the red blood cells) to a depth of from 0.05 to 0.1 cm. thick, just below the clear plasma. Parasites cannot live below this layer and die off from 2 to 20 hours.

To examine the culture a tiny drop of the uppermost layer is aspirated off carefully, spread into a film, fixed and stained.

Sub Culture

The defibrinated glucose blood must be centrifuged at such a speed that the leucocytes occupy the uppermost layer of the deposit and thereby render the red blood cells absolutely free from them. The supernatant plasma is transferred to culture tubes, preferably flat bottomed, to a depth of 1.25 to 2.5 cm. in each.

By means of a pipette, red cells containing parasites are drawn off from the middle layer of the deposit and transferred to the bottom of the culture tubes.

By this technique, the leucocytes, which devour the merozoites as soon as they escape from red blood cells are avoided and the parasites allowed to complete the Schizogony cycle. This is said to continue only for three generations after which the parasites cease to grow and die.

Spleen Puncture in Malaria

In chronic and doubtful cases the spleen puncture may be resorted to. This is a fairly safe procedure as the malarial spleen is fibrotic and much less likely to bleed. Films prepared from the splenic material when properly stained would show red blood cells containing parasites at all stages of development, together with macrophages and endothelial cells loaded with hemozoin pigment in between them.

It is worth remembering the special clinical forms of subtertian malaria as their symptoms often stimulate some other diseases.

The types which are frequently met with are :—

(a) *Cerebral forms* :—These are apt to be mistaken for sun stroke, heat stroke, mental derangement, hysteria, alcoholism, aphasia, convulsions, epilepsy, and cerebro-spinal meningitis.

(b) *Abdominal forms* :—These are often confused with cholera, dysentery, appendicitis, intestinal obstruction, colic, cholecystitis, pancreatitis or liver abscess.

(c) *Pulmonary forms* :—These occasionally simulate bronchitis, pneumonia, broncho-pneumonia especially in infants.

(d) *Febrile cases* :—May be mistaken for influenza, rheumatic fever, fevers of the enteric group, phlebotomus fever, trench fever and relapsing fever.

(e) *The icteric cases* for yellow fever, Weil's disease.

An Interesting Case Note

About two years ago while I was a resident A. M. O. in a tea garden, I was informed that a man aged 40 years suddenly became uncontrollable; went out of his house with a "dah" in hand and threatened to attack anybody he came across. This created panic among the coolies and so the man was caught hold of by four men and brought to the hospital. He was trying his utmost to escape, struggling all the time, screaming, laughing and speaking nonsense. He was put to bed and the hands and feet were tied, so that he cannot jump up. A dose of bromides and chloral hydrate was given orally, and after an hour full dose of morphine was injected. Four hours after, a dose of paraldehyde was also given but all were in vain. The condition remained the same. He was put under guard for the night. On the next day the matter was reported to my Chief Medical Officer, Dr. D. Manson, and he advised taking blood slides for malaria. Slides were taken, and to my utter surprise the blood was positive for malaria; B. T. Rings were found.

At once he was given an intramuscular injection of quinine bichloride, grains ten in 2 c.c. of normal saline. After a few hours his condition was half improved. On the next day the injection of quinine was repeated, and bromides were given orally. On the third day he became quiet and could reply properly to questions. Then quinine was continued for a week and finally general tonics were given along with a five grain dose of quinine daily for about a fortnight. Afterwards he became quite cheerful and resumed his duties as before.

This was an extraordinary case. He had no rise of temperature; no increased pulse except that due to physical strain; no enlargement of spleen and no history of recent fever. It resembled closely acute mania, the root cause of which was evidently shown by the presence of malarial parasites in the blood.

I am indebted to Dr. D. Manson, my Chief Medical Officer, for his help in the preparation of this paper.

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Insulin: Its Origin and Therapy

● Dr. T. A. Gopalakrishna Rao, L.M.P.

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Scattered between the ordinary alveoli of the pancreas are small clumps of epithelial cells which are free from ducts and are supplied by large convoluted capillaries. These islets of Langerhans contain two kinds of cells, distinguishable by the character of their staining properties of their granules "A" and "B". The latter granules are said to be altered in diabetes mellitus. The islets are believed to elaborate an internal secretion—insulin—which has three main actions:

- (1) It enables tissues to burn sugar,
- (2) It enables the liver and muscles to store it as glycogen,
- (3) It inhibits sugar formation from protein in the liver.¹

The relation of the pancreas to the metabolism of sugar has been recognised ever since Von Mering and Minkowske in 1899 showed that complete removal of the gland caused glycosuria and death of the animal. If, in a dog, the remnant be 1/8 to 1/9th of the whole gland, mild diabetes occurs; if less than 1/9th severe diabetes occurs.²

In diabetes in man gross macroscopic changes in the pancreas are not commonly found, but if the pancreas is examined histologically within a few hours of death, it is said, oedematous changes are found in the "B" cells of the islets.³

In diabetes mellitus in man the "B" cells lose their granules, develop vacuoles and are eventually broken up.⁴

Discovery of Insulin

One day in May 1921 a young Canadian—Dr. Banting—turned up at the University of Toronto with a bright idea in his head. He had formulated a hypothesis which he thought might lead to the discovery of the mysterious agent supposed to be concealed in the islets of Langerhans—the difficulty of isolation of the same being responsible for the cause of suffering in diabetes mellitus. These minute tissues embedded in the pancreas, secrete a hormone—this unseen unknown agent which causes the assimilation of sugar in the body. So long as the blood contains an infinitesimal amount of this unknown substance, the sugar and starch that form a large part of our food can be consumed by a sort of low combustion, with the aid of the oxygen of the air, giving energy to the muscles and being reduced to water and carbon-dioxide which are thrown off in the breath and otherwise. If this hormone is lacking the sugar cannot be consumed but clogs up the blood and is excreted unchanged. The unfortunate individual in whom this hormone is lacking is literally starving in the midst of plenty. His ravenous feeding makes him only worse—he draws upon the protein of his muscles and upon the stores of his fat, and so gets thinner and weaker. This condition is known as diabetes mellitus. Relief and continuance of life has come to thousands through Banting's bright idea.

¹ Samson Wright. ² Graham. ³ Allen. ⁴ Graham.

Quest and Success

Dr. Banting applied to Professor Macleod, physiologist and an authority in the field of "metabolism" at Toronto University for facilities to carry out his proposed investigation. Prof. Macleod reminded him that what he was undertaking to do had been attempted in vain by some of the foremost investigators in the realm of medicine for the last quarter of a century. The Professor, however, agreed that his hypothesis was novel and the plan was promising. He was offered an attic room, a collaborator and some dogs. He was fortunate in having assigned to him to carry out the chemical side of his experiment a young medico of equal energy and enthusiasm, C. H. Best. The two young men were so absorbed in their work that they often carried their experiments late through night, besides all day. By the end of summer they were on the right track and the goal was in sight.

The elusive agent had been extracted and its efficacy proved. Then all the resources of the university and its affiliated laboratory and hospitals were mobilized to work on its methods of manufacture, testing, and use. At this stage Prof. Macleod's ability and experience were of inestimable service and under his direction, new lines of physiological investigation were laid down almost daily and were pursued energetically by a loyal band of workers. Meanwhile Prof. J. B. Collip was on a year's leave of absence from the department of Biochemistry, University of Alberta, and worked on the preparation and purification of Banting and Best's new pancreatic extract.

Successive Steps in Investigation

The work of Banting and Best was no lucky accident leading to a scientific discovery of the first magnitude. It was a clearly conceived logical process based at every stage upon rigid quantitative experimentation. It is a well known fact that there are two ways of finding out what an organ is good for. One is to cut it out and see what happens to the animal. The other is to dissect an animal that has died of some disease and find out what organ is affected. By combining these methods, the experimental and observational, the functions of most of the obscure glands in the body have recently been worked out and the causes of obscure diseases have been determined. The pancreas was so named because it secreted and poured through its ducts into the intestine just below the stomach, a fluid that was useful in the digestion of "all flesh" especially fats. The puzzling thing about the pancreatic gland was that it had two functions, one obvious and long known, the other obscure and least suspected until recently. In 1898 Von Mering and Mingowski proved by experiments on dogs that the extirpation of the pancreas would cause diabetes. It was evident from this that the pancreas had also something to do with the assimilation of sugar, yet the pancreatic juice failed to cure diabetes. In 1890 Langerhan, a pupil of Virchow, found that intermingled with the ducts and vessels which formed and excreted the pancreatic juice were certain "islands or islets" of other tissues which seemed to have other functions. This was confirmed when it was observed that in cases of patients dying of diabetes the islands of Langerhans were usually found to have been destroyed. The experimental method confirmed this theory, for when the duct

leading out from the pancreas was tied and the gland degenerated, as all unused organs do, the islets of Langerhans remained unaffected and the metabolism of sugar was not interfered with.

The next step was to apply this knowledge into a working plan. The same method that had proved so useful in the case of the ductless glands, like the thyroid and the adrenals in the extraction of thyroid and adrenalin, was adopted. This was not easy enough, but it was left to Banting and Best to work at it and produce tangible results. Some significant results had been independently obtained by other investigators, but none had succeeded in carrying their work to a point where it might be applied to the actual alleviation of the symptoms of diabetes. The islets of Langerhans were so small and so tangled up with the main tissues of the pancreas that they could not be dissected out easily. If the whole pancreas was ground up and extracted the insulin fraction was too small to be of any use. It was found that shutting off the outlet of the pancreas would cause this gland to degenerate but leave the islets of Langerhans intact. Why not then try this on a dog and extract the insulin from the islands after the rest of the pancreas was out of the way? This worked. Young dogs were made unconscious with an anæsthetic, and the ducts of the pancreas ligated. Ten weeks later, when the pancreas had become atrophied through disuse, the dog was killed by chloroform and pancreas removed. When an extract from this was injected into the veins of another dog that had diabetes, it was found that sugar in its blood was decreased. Dogs whose entire pancreas had been removed could be kept alive indefinitely by injection of the insulin extract.

This confirmed the theory, but its practical application was still a long way off, as it was obviously impossible to get a sufficient supply of this precious fluid by such a method. At this point chemists were called in, and after a year of arduous research an extract was obtained sufficiently pure for human use. Collip worked upon the laboratory production of insulin and Best began to occupy himself with the problem of large scale production, and became director of the Insulin Division of the Connaught Laboratories. The latter post he held with distinction, and at the same time completed his studies in medicine.

Modest Beginnings

Edwin Eslosson describes the modest beginnings of this great discovery graphically. To use his own words "I was amazed to see how simple are the means employed in this exceedingly delicate process of purifying. I walked in unannounced and photographed the room. On the right was a bowl of fresh sweet breads from cattle. Next to it was an ordinary meat chopper in which they are soaked in acidified alcohol of 95 per cent. strength for a couple of hours and filtered. The main part of the room is taken up by rows of filter racks filled with big funnels holding folded filter papers of the ordinary sort. The alcohol is mostly distilled off at low temperature and pressure, and the extract passes through various processes of extraction, precipitation, filtration and purification, which free it from fat, protein, and other impurities that would cause irritation when injected. In its final form it is a clear, sterile watery solution. Next I went over to the physiology building where the

early experiments were carried on, and there I met one of the very first man whose life had been saved by insulin—Dr. Joe Gilchrist of the department of soldier's civil re-establishment. He contracted a severe form of diabetes in war service and even the most restricted diet could not keep him from wasting away. He told me that in a fit of despair he went to Dr. Banting's room at night to beg for a shot of the new preparation although it had not been sufficiently purified and tested so that the discoverer was ready to recommend it! Dr. Banting was fortunate to have at the beginning such a good subject as Dr. Gilchrist."

The Triumph of Insulin

Dr. E. P. Joslin of Boston, a foremost authority on diabetes, writes: "All that I could give to the 3,050 diabetic patients I have treated in the last twenty-five years has been hope that if they would deny themselves and live like Spartans, some day a genius would come along with a remedy that would give them life. All, and more than I imagined could ever be accomplished for diabetes Dr. Banting has done." While the methods of preparation and purification were being worked out in the Connaught laboratories valuable research work was being carried on in Washington University by Prof. Shafer and his colleagues. Such a new and powerful remedy had to be carefully and scientifically given its initiation into actual service. Prominent specialists in the treatment of diabetes like Allen, Cambel, Fletcher, Joslin, Walder and others were assaying the therapeutic value of insulin in their clinics.

Well Deserved Honours

If Dr. Banting and his associates had been only avaricious men, with a monopoly of a remedy needed daily by millions for which there was no substitute, they could have made unlimited wealth. True to the highest traditions of research they scorned any such monopoly, and placed their epoch-making discovery as a humble offering at the altar of suffering humanity, another incense at its service in the amelioration of their lot. The Canadian Government was not slow in appreciating the services of Dr. Banting and granted him an annuity of \$ 7,500 a year for life. The Ontario provincial government has provided \$ 10,000 a year for a Banting-Best Chair for medical research of which Dr. Banting is the first occupant. Honours followed the path of success of the pioneers. Banting received Knighthood, and has been subsequently awarded the Nobel Prize and his colleagues were awarded the Fellow of the Royal Society in London in 1938.

The Action of Insulin

The chemistry of insulin is still unsolved, although it was obtained in 1925 in a crystalline form which was probably nearly pure. It is known to have a large and complex protein like molecule (Mol. weight 20,000-40,000) and to contain a number of amino acids. It contains sulphur but no phosphorus. Insulin is destroyed by the digestive juices and indeed a molecule of this size is unlikely to be absorbed unchanged through the alimentary canal. *Insulin must therefore be given subcutaneously.*⁵

⁵ Clark.

Insulin merely puts back into the blood something which is normally there in a minute amount but which for some unknown reason is wanting or deficient in cases of diabetes. If there is too little of it in the blood the person cannot assimilate carbohydrates. If there is too much of it the carbohydrates are used up quickly. In either case the supply of life-sustaining energy is curtailed. In health this delicate matter of keeping the blood supplied with just the proper amount of insulin is automatically regulated presumably by the islets of Langerhans. In insulin therapy when we undertake to supply it from without we have to know how much sugar there is to be disposed of, how much is going to be added in the next meal, how rapidly it is going to be used up by exercise, and how great is the shortage of insulin. The physician should know all these and the exact strength of his insulin solution. Then he can inject just that amount of insulin needed at a time. "The main actions of insulin in the diabetic are to convert circulatory glucose into stored glycogen in the liver and muscles, to transform the metabolism to a predominantly carbohydrate type, and to check the new formation of carbohydrate from protein and fat in the liver. As more sugar is oxidised the blood sugar falls and the formation of ketone bodies are diminished owing to the more complete katabolism of fat."

The Dosage of Insulin

Modern treatment of diabetes is based on two factors—the dietetic, and the judicious use of insulin. Discussion about the dietetic regime does not fall within the scope of this paper. In the pre-insulin era this has been the main plank of treatment. In the absence of facilities for blood sugar estimation treatment with insulin can be carried out by testing urine for sugar every three hours. So long as the blood sugar is below the threshold of the kidney, i.e., 180 m. grams for 100 c.c. of urine, sugar will not appear in the urine. If this limit is exceeded sugar is found in the urine. The initial dose of insulin is 5 to 10 units and if sugar is found in all the specimens insulin is to be added by 4 units every second day up to 20 units. If this amount is not sufficient to render the urine sugar-free 5 units of insulin should be given at 7 p.m. The evening dose should be increased by 4 units every second day so long as the urine passed before the morning dose of insulin contains sugar. When the dose of insulin is adequate the urine will be sugar-free. In case sugar persists in the urine in spite of 20 units of insulin both morning and evening it is a difficult case. Then we have to search for any possible focal infection in addition to diabetes and estimate blood sugar for verification. The best period for this is three hours after the morning dose of insulin and if a series of examination of blood sugar is possible this is to be done before the next dose is due. Usually 10-20 units of insulin would be sufficient for a day but some need 100 or more units a day. When higher doses of insulin are used, and thereby fasting value of blood sugar has been reduced to normal and the urine is sugar-free all day, great care is needed in exceeding the optimum number of insulin units which are found necessary to achieve the above condition. Even if there is any sign of hypoglycæmia with the maximum

dosage, 2 ozs. of orange juice, two lumps of sugar or adrenalin or pituitrin 1 c.c. should be taken and the first two by mouth and the last two by subcutaneous injection.

The dose of insulin which caused the hypoglycæmia should be reduced by two or more units at the next injection. Since it is obviously not possible for the physician to be always at the bedside of his diabetic patient, the latter should be made familiar with hypoglycæmic symptoms so that at the earliest warning he would provide himself with enough sugar for the extra insulin to act upon, thereby preventing the insulin to seek the proportionate percentage of proteins of muscles and fat of the body for its carbohydrate combustion, as the usual carbohydrates of food had already been burnt. In the confirmed diabetic when the extra sugar beyond the renal threshold is controlled the carbohydrate may cautiously be increased up to 130 to 150 grammes which should be distributed among the usual meals. If in spite of control of blood sugar by insulin, and the increased carbohydrate diet the patient is not putting on weight we may increase the fat constituents of diet up to 100 grams per day though some authorities limit the fat intake up to 50 grams per day. Insulin produces its maximum effect about three hours after administration, hence it is best to give in mild cases half an hour before a meal containing carbohydrate, so that the maximum insulin action and the maximum absorption of glucose from the bowel will coincide and thus an undue fall of blood sugar will be prevented. Since confirmed diabetics have to continue insulin treatment for the remainder of their lives an important part of treatment is the education of the patient in methods of dieting, administration of insulin, testing the urine, and noting any signs indicative of hyper or hypoglycæmia. Hagedorn (1935) introduced the combination of insulin with a monoprotonamine obtained from fish. It is slowly absorbed from the subcutaneous tissues. The compound lime-protonamine-insulin is a colloidal suspension. The use of this compound reduces both the number of units and the number of doses needed daily. Moderately severe cases can be treated with a single daily injection with success. The special advantage of this insulin compound is the great reduction in the incidence of hypoglycæmia and the number of injections—a great relief for both patients and physicians.

Insulin in Diabetic Coma

Diabetic coma is generally believed to be due to accumulation of the poisonous products of disordered fat metabolism and does not occur if sufficient glucose is being consumed to ensure proper metabolism of fats.

Onset of diabetic coma may either be very rapid or prolonged. Semi or total unconsciousness, prolonged inspiration and short expiration with a short pause in between, sugar and ketone bodies in urine in abundance with the smell of acetone in breath, are the outstanding symptoms. As coma deepens respirations are increased and patient becomes restless. In diabetic coma the use of insulin is imperative. Because of insulin administration general treatment should not be neglected. General treatment consists of:

(1) Putting the patient to bed, warmth and stimulants as in collapse—cardiac stimulants as caffeine and digitalis are indicated.

⁶ Gold Blatt.

(2) Bowels to be well washed out with an enema and in severe cases stomach wash in addition and finally putting in a pint of coffee with an ounce of castor oil and 2 drams of soda bicarbonas.

(3) Replacing fluid to combat severe dehydration by means of rectal saline or hypertonic saline intravenously if the patient cannot swallow; but if the patient can swallow plenty of fluids by mouth.

(4) To counteract acidosis, soda bicarbonas in two dram doses should be given every two hours until the urine becomes alkaline.

(5) Any source of sepsis which may be the immediate cause of coma may have to be suitably dealt with, since sepsis interferes with the action of insulin greatly.

The aim is to abolish ketosis by giving enough glucose to allow for proper combustion of the fats and sufficient insulin to metabolise the glucose. When facilities for blood sugar estimation and control is not available it is safer to give insulin and glucose combined than to stick to insulin alone in hesitating dosage. Urine should, of course, be tested frequently and a trace of glycosuria maintained. Forty units of insulin may be given subcutaneously or intravenously with 40 grammes of glucose or cane sugar by mouth, stomach or rectum, and if the intravenous route is preferred the glucose is to be 20 per cent. solution. This procedure is to be continued every two hours with half of the initial dose until consciousness returns, checking the urine for sugar frequently and even by recourse to catheter specimen of urine if it could not be collected by ordinary means. If the patient does not improve with this regime for ten hours the insulin and glucose could be given in larger doses with great caution. When the patient recovers consciousness 10 to 15 units with 20 grammes of glucose every four hours would be sufficient. Normal insulin dosage could be resumed when urine is free from ketone bodies for 24 hours. The patient should drink plenty of water. Invariably the immediate cause of coma is infection, more so in a patient who is under insulin treatment.

Insulin in Surgical Cases

In the pre-insulin era, any operation on the diabetic was almost considered as precipitating a crisis. With insulin a diabetic does not run much additional risk if proper and timely precaution is taken. For anaesthesia, chloroform is to be avoided—preference being given to local or spinal variety which least interfere with sugar metabolism. In non-emergent cases part of the preparation of the patient is in treating his diabetic condition in the routine way with regulated diet and insulin with enforced rest to give him a chance of entering the operation theatre in as "normal" a condition as possible. He should not be drastically purged. On the day of operation milk and gruel are given instead of carbohydrates. There should be neither starvation nor omission of insulin. Urine should be examined for sugar and ketone bodies. Twenty units of insulin and 20 grammes of carbohydrates should be given every four hours. Carbohydrates could be given in the shape of sugar or orange juice (6 ozs. of orange juice is approximately 20 grammes of carbohydrates) or intravenously in the form of glucose. Abundance of fluids by mouth, rectum or subcutaneously should be pushed and 2 drams of soda bicarb administered every four hours. The after treatment consists in the gradual return to normal

Role of Barbiturates in Therapeutics

● Dr. K. L. Mazumdar, L.M.F.

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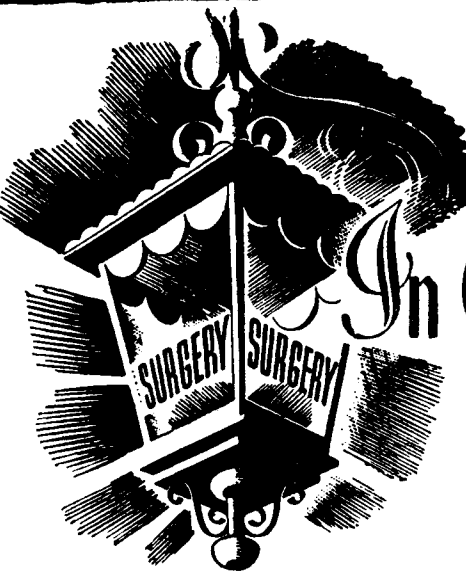
At the very outset it must be mentioned that it is no easy matter to discuss the subject in detail in view of the enormous mass of literature which has accumulated since the introduction of the barbiturates. Attempts will, however, be made to lay particular stress on the more important questions which may arise in the course of the use of these compounds.

It is needless to mention that barbiturates have now been generally accepted by the profession as standard therapeutic agents with a variety of indications and effects. Barbituric acid series of hypnotics was discovered by Nebelthau in 1898 and Impens in 1912 discovered Luminal and was first to introduce it as a drug for producing sleep. In the same year Hauptmann noticed its anti-epileptic effect and from that date psychiatrists and general practitioners have employed this compound in epilepsy. Gradually, however, clinical application of barbiturate compounds not only covered these two main indications but also in a great variety of other conditions with excellent results. With the ever-widening field of indication of the barbiturates, a large number of compounds of this series have been

diet which the patient is accustomed to and as much insulin as the urine test indicates. In severe cases as much as even 60 units of insulin per day may be found necessary or in milder cases 10 units may be ample.

Insulin and Pregnancy

Before the discovery and administration of insulin it was unusual for diabetic patients to get pregnant. In the pre-insulin era in severe cases of diabetes men were usually impotent and in women irregular or cessation of menstruation was the rule and often sterility occurred with atrophic and sclerotic changes in the ovaries and uterus. Insulin has changed the picture and full term pregnancy is possible. By the treatment of diabetes with insulin, conditions predisposing to nullity by either partner or both are modified. Conception running to full term, and even safe delivery is possible. Merckler (1929) reports a case of a diabetic woman who has been pregnant four times. The first two aborted spontaneously, the third was interrupted, while the fourth was allowed to go to term and the patient was able to nurse her child. Unlike in ordinary diabetes where sugar output in the urine is a fair index of the disease, in pregnant women blood sugar examination is necessary as sugar may be present even in non-diabetic women during pregnancy and lactation. When diabetes mellitus is recognised in a pregnant woman by blood sugar examination, insulin treatment should be instituted early. Dietetic requirements of pregnancy are higher than normal, and a relatively larger intake of glucose is needed to avoid fatty acidosis with proportionate increase of protein for the growth of the child. In the management of pregnant diabetic woman, even in spite of insulin, constant watch and great care is to be exercised since sudden unaccountable changes of tolerance may supervene.



In General Practice

—cases are encountered daily which call for the prescription of one or other of the following British-made drugs:

★ DAGENAN—M & B 693 ★ for pneumococcal, gonococcal and meningococcal infections. ★ SOLUSEPTASINE for parenteral administration in streptococcal infections. ★ SONERYL for insomnia. ★ GARDENAL for epilepsy. ★ MYOCRISIN for pulmonary tuberculosis ★ THEOGARDENAL for high blood pressure.	★ PROSEPTASINE for oral administration in streptococcal infections. ★ SOLUSEPTASINE Ointment for topical application in bacterial skin infections. ★ SONALGIN for insomnia associated with pain. ★ RUTONAL for epilepsy. ★ S.V.C. for Trichomonal vaginitis. ★ STOVAR SOL for amoebic dysentery
---	---

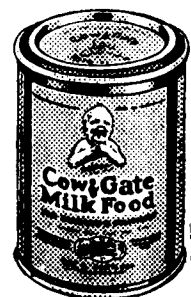
★ TRADE MARK



MAY & BAKER (INDIA) LTD.
BOMBAY **CALCUTTA**



A TRUE MOTHER



	Food	Reconstituted Milk (1 in 8)
Caloric value per oz.	136	17
Vitamin D content per pint		250 International units

HOW peaceful they are—this happy Mother and her sleeping babe!—and what is the secret? Simply this—*correct* feeding. It may be breast feeding or—the same—*contentment* and *progress*. Cow & Gate not only reproduces mothers' milk in its natural body and bone building effects, but it also has the purity and freedom from contamination that one associates with breast milk. The highest medical authorities recommend Cow & Gate—they *prescribed* it for eight Royal babies.

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introduced with greater or simpler chemical complexity and varying intensity and duration of their actions. Thus, for example, Di-ethyl barbituric acid, Di-allyl barbituric acid, sodium iso-amyl ethyl barbiturate, sodium ethyl methyl butyl barbiturate, etc., are members of this group. The special feature of phenobarbiturates lies in having one ethyl group replaced by a phenyl group. McGuigan is of opinion that the introduction of the phenyl group has greatly strengthened the action of the compound.

Apart from their hypnotic and anti-convulsant effects, according to Gaddum, barbiturates have weak analgesic action and therefore they have been used with success in suitable cases of insomnia due to pain. Barbiturate series of drugs have also been employed for short intravenous anaesthesia and induction narcosis.

The mode of action of barbiturates is supposed to be the result not of a chemical but of a physical process; that is, the absorption of the substance by the outer wall of the cell and the consequent interference with the normal cell functions. The quantitative effect of the drug depends on the rate of its destruction or elimination. It is not also exactly known as to the site of action of barbiturates but it is thought to be sub-cortical—in other words, it acts somewhere between the cortex and basal ganglia.

In regard to the excretion of these compounds, according to Clark, barbitone is not broken down in the body and is excreted unchanged in the urine. The other compounds are all broken down in the body, possibly by the liver and only a very small proportion is excreted unchanged in the urine. According to a statement by Fretwurst, Halberkann and Reiche, about 11.2 per cent. of pheno-barbitone is not decomposed in the body but is excreted unchanged in the urine, and can be demonstrated in the urine for several days after a normal dose.

Coming to toxicity, it must be first of all mentioned that it is not my intention to bring into disrepute a time-honoured and useful remedy. Like all other chemotherapeutic compounds, barbiturates are not also free from side effects. It is, therefore, of utmost importance to know these effects, however rare they may be, before employing them in practice. A knowledge of the various side effects will only enable the clinician to be on the guard in case they happen to appear.

Generally, these appear as a result of cumulative effect of therapeutic doses. Cumulative action is likely to appear in case the excretory powers of the kidneys are deficient. In women, delicate men and in children, a minimum effective dose should be maintained. Women are very sensitive to these compounds. Among the number of undesirable effects special mention may be made of skin rash with or without a rise of febrile temperature. The rashes may resemble measles or scarlatina or of other exanthemata. Dermatitis with total loss of hair and nails, hallucination, giddiness, headache, visual disturbance, weakness, etc., may also occur.

Before the outbreak of the current international situation, I used luminal in a large number of cases but this product is now rarely available; instead of this I have used a recently introduced preparation marketed

under the trade name, Nunal, a chemically equivalent compound to luminal. I have up till now employed Nunal in thirteen of my cases, all adults. Two out of these failed to give satisfactory results but none in this series showed any undesirable manifestation.

In nine cases of this small series, Nunal was given for insomnia of varying etiology—worry, overwork or nervous strain. On an average one tablet of gr. 1½ proved sufficient to induce sleep. When employed for insomnia, I have advised my patients to take the drug about two hours before the scheduled time of sleeping. The above referred two cases of failures were of this group.

In a case of sciatica, Nunal gave good results by inducing sleep on two consecutive nights in 3 grain (2 tablets) doses. This case had to be ultimately treated with massive doses of vitamin B₁ to effect a cure. In two other cases of adult females obstinate vomiting (of central origin) was controlled by two doses of gr. ¾ Nunal each separated by an interval of two hours.

A male suffering from spasmodic torticollis was greatly relieved with gr. ¾ doses B. D. in three days.

Although the number of cases studied is not sufficient to be definitely conclusive, yet the encouraging results obtained in a few cases undoubtedly warrant further extensive trials to elucidate the efficacy of this new compound, Nunal.

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3. Martindale, *The Extra Pharmacopoeia*, Vol. I, 1936, p. 254.
4. Gaddum, J. H., *Pharmacology*, 1940, p. 111.
5. Clark, A. J., *Appl. Pharm.*, 7th Edn., 1940, p. 236.

EFFECT OF BELLADONNA ON APPETITE WITH OBESITY AND OTHER DISEASES. J. A. Greene, Jr. of Lab. and Clinical Medicine 26: 477, Dec. 1940.

Greene observed that hunger could be controlled by belladonna and bromide or phenobarbital. He gave such medication to 39 obese patients, 5 with diabetes and overweight and 1 with chronic pyelonephritis with overweight. The medication was given the patients without their knowledge of its purpose. The appetite of 40 of the 45 patients was diminished after medication. The medication was an important factor in reducing the appetite, as 10 patients who omitted the medication of their own accord resumed it because hunger returned. The effect of the drug appears to continue indefinitely as long as the medication is continued. One of the patients with diabetes and moderate obesity is of particular interest. She was never able to control the diabetes because hunger caused her to eat between meals. Tincture of belladonna, 10 drops three times a day, before meals, eliminated this hunger and permitted the control of the diabetes. The patient with the pyelonephritis was forced to limit her activity because of the nephritis and hypertension, she began to gain weight and the administration of tincture of belladonna decreased her food intake sufficiently to stop the gain in body weight. Omission of the drug at a later date was followed by gain in body weight, and reduction again followed the administration of the drug. The cause of the increase in appetite of patients with obesity is not known. Harrington and Newburgh have stated that many patients ingested food at frequent intervals because of nervousness or of habit. The author's observations support this contention and for this reason a mild sedative is of distinct aid in controlling the appetite of such patients. The fact that belladonna decreases appetite suggested that an alteration of the motility of the stomach or small intestine may be a contributing cause.

SPECIAL ARTICLE

Modern Drugs

[Under this caption serial articles would be published every month describing the therapeutics of some of the outstanding modern drugs commonly used in general practice. The aim of these articles is to give precise rather than comprehensive information regarding these modern drugs, and we hope that they would be useful to our readers for ready reference and study.—Ed.]

(1) THE SULPHONAMIDES

History

It was a textile chemist, by name Gelmo, who first prepared in 1908 the compound *para*-aminobenzene-sulphonamide for the purpose of dyeing. Domgak foresaw the probable bactericidal effects of a number of these azo dyes, and in 1932 took a patent under the name of 'Prontosil' which he found effective in fatal streptococcal infection in mice. Soon it was found that all the active dyes prepared from *para*-aminobenzenesulphonamide finally reduced themselves, *in vivo*, into sulphanilamide. The next natural step was the preparation of the sulphanilamide itself in as pure, non-toxic and soluble form as far as possible.

Chemical Groups

Between 1932 and 1942, various chemical groups were discovered and manufactured. The more therapeutically useful among them may be classified under four groups:

Group A :—Sulphanilamide itself, Domgak's original azo compound—Prontosil Rubrum (amino-group of the benzene ring). Prontosil soluble, the di-sodium salt, was intended for parenteral use.

Group B :—Since Prontosil Rubrum was found to be relatively toxic, with the additional disadvantage of staining the tissues, the chemically simpler compound, *P*—aminobenzenesulphonamide, without the azo part, was then evolved. The outstanding examples of such a preparation are:

Prontosil Album (Bayer).

Sulphanilamide—*P* (B. W. & Co.).

Proseptasine (May & Baker).

Soluseptasine (for parenteral use) (May & Baker).

Streptocide (Evans)

(oral, parenteral and external uses).

Septanilam (Glaxo).

Ureasulphazide T. (Union Drug Co.).

Group C :—Aminopyridine derivatives. The best known proprietary preparation belonging to this group is M. & B. 693, which in America is called "Sulphapyridine".

Group D :—Thiazole derivatives. M. & B. 760. This is still under investigation, particularly with regard to its supposed efficacy in staphylococcal infections.

It must be noted that the above classification is for convenience only, and by no means indicates chemically

distinct, different and separate groups. Generally stated, these various derivatives contain the sulphanilamide radical, and the amino-group of the benzene is substituted by other groups to facilitate solubility, absorption, lessened toxicity and increased dosage.

Mode of Action

It has been found out that, whatever preparation of this drug is given, it is ultimately converted into sulphanilamide in the human body. Mostly it is in 'a free' form but a small proportion of the drug is converted into acetyl-sulphanilamide. This acetylated form is inactive, and since the total concentration of the drug is the sum of these two forms, the therapeutic result varies according to the proportion of the "acetylated" to the "free" sulphanilamide in the blood. If the acetylated form is greater than the optimum moiety, there is produced a state of resistance to sulphanilamide therapy. This is probably the explanation for the poor therapeutic results in some cases.

The action of sulphanilamide is now proved to be bacteriostatic, that is, slowing down of the growth of the organism and the mobilisation of the defence mechanism of the human body during the period of bacterial inhibition. The relative part played by these two factors is uncertain. They vary with different concentration of the drug in the blood.

Dosage

An adequate dosage is necessary for prompt therapeutic response, and, also, it must be administered at the earliest stages of infection. The drug must be in a concentration of 10 mgm. per 100 c.c. of blood, and to produce this result in an average adult and in a severe infection a total of 6 gms. within 24 hours—12 to 14 tablets of 7½ grs. each has to be given. The formula for determining the dose is: 1 gm. per 20 lb. of body weight upto 120 lbs.; above this weight the calculated dose should be reduced by one quarter. For a case of moderate severity, the standard is ½ a gram for 20 lb. of body weight. If combined oral and intramuscular administration becomes necessary, as indeed it is so in fulminating streptococcal infection, 4 to 5 ampoules of the 5 per cent. solution and 6 tablets (7½ gr. each) are given within 24 hours. This is only a very general formula, and it must be borne in mind that it varies according to the preparation used. It would be a wise procedure to note the directions given in each package of proprietary preparation of this drug, and to vary it only when circumstances warrant.

Toxic Action

Although there was a scare, at first, of severe toxic symptoms, yet after some time it was found they were remarkably limited in incidence compared to the total number of cases under sulphanilamide therapy. Of course, progressive improvements in the preparation, and the caution exercised in its administration contributed much to safety. Thus these toxic symptoms are now more or less construed as due to intolerance. The more common symptoms are cyanosis, nausea, headache, giddiness, fever, and cutaneous eruptions. The most fatal complication is agranulocytosis, and it is dangerous because it is unpredictable and little amenable to treat-

SUPPLEMENT TO THE INDIAN MEDICAL JOURNAL

MADRAS

FEBRUARY 15, 1942

Vol. 4, No. 2

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Consulting Provincial Governments Again

It is reported by the President of the Indian Medical Council, at its last October session, that the Government of India is consulting the Provincial Governments with regard to its resolution for establishing an All-India Medical Register, inclusive of medical licentiates, and for abolishing such of the provincial medical schools which could not be converted into University affiliated medical colleges.

The question therefore naturally arises: Is there any need to consult the Provincial Governments on this matter again? Is there any reasonable chance for all the Provincial Governments to hold an unanimous opinion, either for or against the need for establishing a uniform, minimum standard of medical education?

Our emphatic answer is that there is no need to consult the Provincial Governments, nor is there a ghost of chance of unanimous opinion on this subject emanating from them. The reasons for this statement of ours may be categorically stated:

(1) Before 1933, when the Indian Medical Council Bill was in the Legislative anvil with its two important preambles *viz.*, establishment of a minimum uniform standard of medical education and of an All-India Medical Register, the Government of India consulted the Provincial Governments a majority of which were not in favour of bringing the medical school education within the purview of that Bill. Naturally, therefore, the Select Committee changed the preambles to (i) The establishment of a uniform minimum standard of *higher medical qualification* within British India, and of securing reciprocity with foreign countries. *The Committee abandoned the proposal of an All-India Medical Register on the specific plea that it would involve non-inclusion in that Register of the "large and important class of medical licentiates" and troublesome and expensive duplication of Provincial Registers.* This was the result of the divided opinion of the Provincial Governments at that time.

(2) During the early part of 1938, when the reformed constitution began to function, the Conference of Health Ministers unanimously passed a resolution favouring the establishment of an uniform standard of education in all the provinces. Thus we have already the opinion of elected Governments in this matter. But

today in the majority of provinces there is no elected Government.

(3) To add to this, the Government of India Conference on Medical School Education held in November 1938, unanimously recommended "that one uniform minimum standard of training and qualification should be established throughout India at an early date and that this standard be such as shall satisfy the requirements laid down by the Medical Council of India."

Unless it be the intention of the Central Government to nullify the intention of the Indian Medical Council, there is absolutely no reason why it should again consult the Provincial Governments on this matter which has been discussed and decided once for all. If there are still some Provincial Governments who hesitate to abolish medical schools, there is no reason why the Central Government should not effect the needed amendment of the Indian Medical Council Act, as the Medical Council of India has allowed time till 1947 to the Provincial Governments to abolish the medical school education. Already two provinces, Madras and the U. P., have abolished their medical schools. There is no meaning, therefore, to consult the Provincial Governments at this stage, who, during the next five years, could and would be persuaded, by force of public opinion to give up medical school education for good.

It is not right or proper on the part of the Central Government to proceed on lines which give one the impression that it is again evading the whole issue without facing it with reason and reality.

It may be said that during the present war time it would be impossible to undertake or hazard the abolition of all medical schools, because successful prosecution of the war should be or would be the only primary consideration for all concerned. We agree, but the Central Government may declare this openly instead of engaging in futile consultations with the Provincial Governments, and thus lulling the profession to the belief that if the Provincial Governments agree, the Central Government would not hesitate to take the necessary action. Plain speaking is what the profession wants.

Medical Education in India should be under the Control of the Universities

Dr. C. R. Reddi

Vice-Chancellor, Andhra University

[We publish below extracts from the speech of Dr. C. R. Reddi delivered at the Silver Jubilee celebrations of the Carmichael Medical College, Calcutta on Dec. 15, 1941. None can dispute the right of Dr. Reddi to speak on educational matters with that authority and experience which always command respect and attention. He rightly condemns the Government control of medical education in our country, which instead of producing leaders has created merely efficient subordinates. That is also the considered view of the organised profession. Such a control has produced castes and compartments so detrimental to the consolidation of the profession and to its upward progress. We wonder whether the Government would consent to have its hands off the medical education. But we are convinced that unless it retreats from its present position, medical education in our country would continue to stagnate without progress and stamina.—Ed.]

Speaking at the Jubilee of the College, it is but natural that I should deal with the subject of medical education. It has been said that the motive for general education in India has been the supply of subordinate officials required in the Government services and lawyers. The system was not intended to give the country intellectual leadership but merely cater to efficiency in subordination. Just as on the general side until a while ago Government colleges constituted the substance of University education both directly and by setting up standards that other colleges conformed to, so to-day collegiate grade medical education is constituted by Government colleges mostly.

Is not the history of medical education similar to that of general education? And are not the remedies to be applied to improve our medical colleges to the level of our Honours and Post-graduate Colleges similar also? The medical colleges were organised to produce subordinates in the Medical Department. Departmentalism has been the root and atmosphere of medical education. The I.M.S. were to be given the leading places. No Indian trained by them could aspire to fill those places, which probably is true enough indication of the type of training that they were capable of giving! For anything higher than the M.B., B.S., our young men had to migrate to foreign countries. The idea of developing India educationally to self-reliant, inter-national status was never entertained and if put forward was turned down as impossible. It was efficiency in subordination, that was the objective. The idea of India acquiring leadership by her merit, competing on equal terms and under equal opportunities with the rest of the world was never applied in medical education and in fact, it has not been applied in any department of our life and activity.

Defects of Present System

Teachers are not recruited on the basis of high merit and capacity for original work. They are recruited primarily for departmental service; and subsequently translated to teaching posts according to service exigencies. Civil Surgeons are posted as Professors and none could be a Professor unless he was of a

Civil Surgeon's grade. [The Lecturer or Professor of to-day might be the District Medical Officer to-morrow and something else the day after. The staffs in the colleges are a fluctuating quantity. Specialisation is below par. Why should a Professor be equated to a Civil Surgeon or rather a Civil Surgeon equated to a Professor? A person should be of Civil Surgeon grade in order to be made a Professor. Ever heard of such a thing in any foreign College or University? The fact is departmentalisation is the reigning principle of education.

In the medical colleges the staffs are so over-worked both in the colleges and in the hospitals that they have no time even to collect interesting data and to classify. Judged from the University standpoint, colleges, and collegiate hospitals should have a far more numerous staff than is the case to-day. Hospitals attached to the colleges should be differently organised from the District Headquarters and other hospitals where the curative side is all important. In the collegiate hospitals equipment, treatment, etc., should be in the best possible style.

Some Essentials of Re-organisation

The following are some of the principles of re-organisation that I would recommend:

Appointments to the colleges and their hospitals should be made on different principles from those adopted for departmental services. Nor should departmental seniority be the ground for promotion to professorships. There seems to be no necessary connection between seniority and originality. Individual grants should be given to the professors who should be required to submit their plans for research. Without individual research grants it would be difficult to achieve adequate results.

Selection Committees have proved very useful in securing proper staff. The Selection Committee should be on an All-India basis with at least two savants of international standing as members for each main branch of the curricula of studies, and with Vice-Chancellor, Surgeon-General and Director of Medical Education, the Director of Public Instruction and the Principal as ex-officio members. Recruitment for the colleges and collegiate hospitals should be separated from departmental recruitment. In large towns like Calcutta and Bombay, there is scope for Honorary Professors and Honorary Surgeons and Physicians. While I want the colleges to be taken out of the Department and organised on the lines suggested I would not want the administration of the Government medical colleges and collegiate hospitals to be transferred out of the hands of the Surgeon-General. (Why not?—Ed.)

Whatever may be the special problems with respect to medical education in Calcutta and other places where private colleges have already been organised or are likely to be organised, in most other places the problem is emphatically one of Government reorganising the Medical Colleges on University principles. I am glad to be able to say that every one of the Europeans—all men of real University education—with whom I discussed this subject favoured my views. If the two functions of the Surgeon-General, viz., Educational

Direction and Departmental Administration, are kept distinct by a composite designation such as Surgeon-General with the Government and Director of Medical Education, and the Medical Colleges and Collegiate Hospitals are staffed by a special cadre taken out of the Department, while being retained under the administrative control of the Surgeon-General and re-organised properly we shall have secured all the academic reforms that have become urgent without at the same time making too many changes in the system and dislocating financial support. (Courtesy: *The Hindu*, 17-12-41).

Emergency I. M. D.

The undermentioned Medical Licentiates were admitted to the Emergency Branch of the Indian Medical Department as Assistant Surgeons and on the initial rank of Jamadars during the first half of the year 1941.

30TH JAN. 1941

Hans Raj Sharma, Shyam Narain Chaturvedi, Abdul Rahman Khan.

31ST JANUARY 1941

Ramakant, Baldev Raj, Jatindra Chandra De, Alexander Simon, Ambrosius Kharkongor, Nakul Chandra Chakraborty, Aditya Ram Ojha, Gnaniah Doraisamy Ebenezer, K. S. G. Sastry, M. Sankunny Menon, Waman Vishwanath Varadpande, Prafulla Chandra Das, Mohammad Hussain Siddiqi, Amrit Lal Wahi, R. K. Narasimhachari, D. Sankaran, Dwijendra Nath Chakravorty, Om Parkash Singh.

2ND FEBRUARY 1941

Piyara Singh Ranjit.

4TH FEBRUARY 1941

C. J. Abraham.

1ST MARCH 1941

Nalin Behari Choudhuri, Susil Kumar Mittra, Debabrata Sen, Jaswant Singh Dhaliwal, K. C. Varughese, Ananda Mohan Basu, Dhiranshu Kumar Guha, Bhagwat Prasad Sinha, Sailendu Bicas Bhattacharjee, Said Ahmad, Shripad Baburao Gore, Deb Prosad Bhattacharyya, Paul Crosby, Ramchandra Trimbak Khaladkar, Moreshtar Mahadeo Patwardhan.

2ND MARCH 1941

K. Venkataraman.

4TH MARCH 1941

Mohd. Korban Ali.

1ST APRIL 1941

Moreshtar Krishna Ghaisas, Jamini Kanta Maity, Harendra Nath Mondal, Rayavarapu Chiranjivi Rao, Hari Das Bagchi, P. Krishnan Nair, M. Nanoo, M. S. Visweswaraiya, Ganendra Nath Dutt, Achut Nuggihalli, Sailendra Nath Bagchi, Kishan Lal Kaul, T. S. Sankaranarayanan, Sakti Pada Mukherjee.

1ST MAY 1941

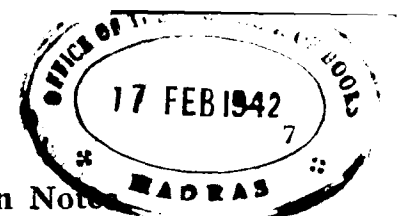
Shubh Dev Aggarwal, Salfuker Ali, Kali Pada Sen, Raghu-nath Dass Vadara, Bimal Kumar Ghosh, Hospet Lazarus, Amiya Bhusan Das, Md. Serazul Islam, Bibhuti Bhusan Bandyopadhyay, S. Raghavendra Rao.

1ST JUNE 1941

Sisir Ranjan Das Gupta, Abdul Motaleb, Servar Jang Mirza, W. V. Sundara Kameswara Rao, Swami Das, S. Joseph, Maiadeo Ramchandra Bam, Dattatraya Laxman Nene, T. S. Sambasivan, M. Nagarathnam.

1ST JULY 1941

C. Narayana Menon, Dinesh Chandra Biswas, Tarni Kanta Karmakar, Jasoda Kumar Routh, Abdul Jabbar Khan, Sudhangshuranjan Dutt, Bhajan Lal Mathur, M. R. Venkataratnam, C. T. Samuel, P. Thomas John, S. Govindasesha Naidu, Bhagavatalu Annapurna Rao.



Association Notes

(The following proceedings refer only to the Branches and Committees of the A. I. M. L. A., unless otherwise stated.)

Gauhati (Assam): An Emergent meeting held on 19-10-1941.

It is not known why the S. A. Ss., in Public Health Department who were confirmed in 1936 were required to execute bonds for ten years while those confirmed in and after 1937 were to execute a bond for five years only. The Director of Public Health is requested to (as the pay and prospect in service of all such S. A. Ss. are the same) revise all such bonds in such a way that all the S. A. Ss. may be in bond for five years only, because it would be paradoxical that the junior S. A. Ss. would finish their terms of bond when the seniors would remain still bound up under it.

A deputation was arranged to wait upon the Director of Public Health and the Hon'ble Minister for amelioration of the grievances of the S. A. Ss. in Public Health department, particularly with reference to the question of bond.

Dibrugarh (Assam): General Body Meeting held on 24-10-1941. Fifteen doctors present. Dr. I. M. Ganguly was voted to the chair.

Minutes of the last meeting were read and confirmed.

Accounts for September '41 were checked and passed.

Drs. I. M. Ganguly and S. L. Das were elected as delegates to the Ahmedabad Conference. Should they fail to attend they will be replaced either by Drs. S. P. Nath, B. K. Das Gupta, K. L. Gosh or R. Bardhan.

The members met Drs. M. R. Chakraborty and K. N. Biswas at tea.

Howrah (Bengal): General meeting held on 31-10-1941. Seven members present. Dr. T. Bhattacharjee was voted to the chair.

Prov. Secretary's letter was considered and resolved that every member would try to enlist at least one member each to strengthen the Association.

Following office-bearers were elected for the next term: Drs. M. C. Chatterjee—President, Jibananda Mukerjee—Secretary, Srigopal Mittra—Asst. Secretary.

Resolved that a Committee of Management be formed and that two from the newly enrolled members be co-opted.

Resolved that the monthly account as approved be passed.

Mymensingh (Bengal): Meeting held on 31-10-1941. Twenty members present. Dr. H. Bagchi was in the chair.

Following resolutions were passed unanimously:

(1) It is resolved that the month of November 1941 be observed as "Membership Campaign Month" during which period each member of this branch pledges to recruit at least one member to our Association and thus strengthen the organisation to which the medical licentiates have the privilege to belong.

(2) In order to make the above resolution fruitful this Branch authorises the Branch Secretary to print and issue appeals to every non-member licentiates of this district and urges upon the members of the Branch to make personal contacts with the non-members as much as possible.

(3) In order to facilitate the propaganda work this Branch further resolved that the General Secretary be requested to grant the printing and posting charges of the appeals.

2ND JULY 1941

Chongjathang K. Thalhurm, Panna Lal Nandi, Yesudian Devadasan Swamidasan.

3RD JULY 1941

C. R. Hari Hara Iyer, C. I. Thomas.

5TH JULY 1941

M. Namasivayam Doraswamy Pillai.

**Consolidated Accounts of the All-India Medical Licentiate's Association,
August and September 1941**

Receipts	August 1941						September 1941					
	Rs. A. P.						Rs. A. P.					
To Subscription (old and new)	..	..	..	..	..	..	593	12	0	975	8	0
„ Advertisement ..	..	..	..	..	..	..	815	13	0	920	12	8
„ Interest ..	..	..	..	..	..	..	939	12	2	263	2	0
„ Miscellaneous ..	..	..	..	..	..	..	4	4	0	..	..	..
	2,353 9 2						2,159 6 8					
Balance from last month	..	Rs.	67,786	0	2		..	Rs.	68,616	6	1	
	..	& £	157	17	10		£	157	17	10		
GRAND TOTAL	..	Rs.	70,139	9	4		..	Rs.	70,775	12	9	
	..	& £	157	17	10		£	157	17	10		

DETAIL OF BALANCES

War Loan	..	..	..	..	..	..	£	157	17	10	£	157	17	10
13 Shares of the Bactro-Clinical Laboratory	..	..	..	..	..	..		85	0	0		85	0	0
New Loans	..	..	..	..	..	..		8,200	0	0		8,200	0	0
Savings Bank Account with Imperial Bank of India, Delhi (Omera Gold Medal)	..	..	..	..	..	..		424	9	11		463	11	11
G. P. Notes	..	..	..	..	..	..		16,291	9	0		16,291	9	0
Government Bond for S. S.	..	..	..	..	..	..		9,409	2	1		9,409	2	1
" " " 1943	..	..	..	..	..	..		5,600	0	0		5,600	0	0
Imperial Bank of India, Delhi	..	..	..	..	..	..		6,589	4	6		6,812	8	6
P. O. S. Bank with President	..	..	..	..	..	..		326	2	7		326	2	7
Five-Year Postal Cash Certificates	..	..	..	..	..	..		7,050	0	0		7,050	0	0
Dr. S. P. Sen Gupta, Ex-Manager, I. M. J., Calcutta	..	..	..	..	..	..		793	12	1		793	12	1
With Branches	..	..	..	..	..	..		470	6	9		649	6	9
With Managing Editor :	..	..	..	..	..	..								
In Bank	..	..	..	..	..	..		1,871	11	11		1,943	15	7
In Cash	..	..	..	..	..	..		121	9	8		103	0	5
In Stamps	..	..	..	..	..	..		56	15	3		67	9	6
With General Secretary :	..	..	..	..	..	..		49	13	3		58	4	6
With Honorary Treasurer :	..	..	..	..	..	..								
In P. N. Bank	..	..	..	..	..	..		1,571	5	11		1,284	15	5
In P. O. S. Bank	..	..	..	..	..	..		9,575	13	5		9,759	13	5
In Hand	..	..	..	..	..	..		116	1	9		135	8	9
In Stamps	..	..	..	..	..	..		13	0	0		13	1	3
GRAND TOTAL	..	Rs.	68,616	6	1							69,047	9	9
		& £	157	17	10						£	157	17	10

Payments

Printing, <i>I. M. J.</i>	527	15	0	177	5	0
Establishment	421	0	0	445	0	0
Rent	50	0	0	70	0	0
Stationery	11	6	9	13	11	0
Postage	252	5	0	134	8	6
Miscellaneous	31	4	0	126	6	6
Propaganda	17	8	0	138	3	0
Branches	207	7	6	242	5	0
Bank Commission	..	..	..	0	12	0
Payments to Contributors	..	..	..	55	0	0
Furniture	1	4	0	..	..	..
Scientific Section	3	1	0	..	..	..
Representative Committee meeting held at Simla	..	..	..	150	0	0
Litigation Charges (on case against Dr. S. P. Sen Gupta, Ex-Manager, <i>I. M. J.</i>)	..	..	..	175	0	0
			1,523 3 3			1,728 3 0
Balance in hand	Rs.	68,616	6 1			69,047 9 9
	& £	157	17 10	£	157	17 10
GRAND TOTAL	Rs.	70,139	9 4			70,775 12 9
	& £	157	17 10	£	157	17 10

ment. Most of these reactions generally occur at the end of the first week of treatment. They disappear when the dosage is reduced, or when the drug is stopped, or when it is substituted. The best way to combat them are by :

- (1) ingestion of fluids and glucose to promote rapid excretion of the drug
- (2) oral administration of nicotinic acid
- (3) giving equal amounts of sodium bicarbonate with each dose
- (4) pentnucleotide (sodium salt of pentose nucleotide, 7 gm. in 10 c.c. solution) injections (intramuscular) which are said to be effective in agranulocytosis, besides the above three measures.

Indications for Sulphanilamide

Although the drug is being tried in a variety of bacterial infections, yet there is no proof of its effectiveness except in streptococcal infections, pneumonia, and gonorrhœa. The results in these three infections have been remarkable. The outstanding clinical forms of streptococcal infections in which the drug has produced beneficial results are :

- (1) Puerperal sepsis due to hæmolytic streptococci or clostridium welchi.
- (2) Acute streptococcal tonsillitis.
- (3) Streptococcal septicemia and meningitis.
- (4) Erysipelas.
- (5) Cerebro-spinal meningitis.

Its great value in pneumonia has been stressed by many authors. It is strikingly effective in type III pneumonia which is highly fatal and which is not amenable to serum treatment. It is also useful in broncho-pneumonia. One point, however, should be remembered. And that is, unless the disease shows a good response within the first few days little benefit can be expected.

Its magical effect in acute and chronic gonorrhœa has been acknowledged by all. It allays irritation and stops the discharge within three or four days. But it is practically useless in gonorrhœal complications. The criterion of cure in gonorrhœa is absence of gonococci in urethral smears, supplemented by culture or complement fixation tests.

General Remarks

Its use in other diseases need not be mentioned as its efficacy is still to be proved.

Whether serum or vaccine, in combination with sulphanilamide therapy is more beneficial than with latter alone, is a question on which there is no unanimity of opinion. But the present experience is that serum or vaccine is not absolutely necessary.

Another notable use to which sulphanilamide is put in its local application in the form of ointment to trachomatous lids and septic wounds and ulcers.

As a prophylactic, the recent experience in the present war has shown that it is capable of reducing greatly the incidence of severe streptococcal infections.

It may be said generally that sulphapyridine (M. & B. 693) is the drug of choice in pneumonia, and sulphanilamide in streptococcal and gonococcal infections.

It is said that magnesium sulphate and other sulphur containing drugs or foods such as eggs, onions, etc., should not be given when the patient is under sulphanilamide therapy. But lately Niblock (*Ind. Med. Gaz.*, Aug. 1931, p. 457) has shown that such patients need not be subjected to special dietary restrictions, as the cyanosis is more due to the toxic effect of the drug than to the administration of the prohibited sulphates or sulphur-containing diets.

M. S. ARUNACHAL

CLINICAL NOTES

Infective or Febrile Jaundice in Children

● Dr. Manghanmal Sadhumal

(Hon. Physician, Civil Hospital, Hyderabad, Sind)

Within last three months I have had the occasion of seeing a number of jaundice cases in children. At one time I began to think that there was an epidemic of the disease. But the last two cases which I saw terminated fatally within a range of a week's illness. This deserves investigation. I shall cite these two cases for the benefit of the readers of the *Journal*.

Case No. 1 :—Child 6 years old. Called to see him as the mother thought the child was looking pale and had stopped taking his feeds since the last two days only. On examination there was no temperature. The liver and spleen were enlarged. There was jaundice with bilious urine and clay-coloured stools. The circulatory and respiratory systems were normal. The child had no desire for food—but would take fresh grapes about two pounds per day and relish it. The usual symptomatic treatment was prescribed with calomel and saline. This purged the patient well. Next day the jaundice was deeper, hence large doses of soda-bicarb was prescribed. On the third day patient appeared very restless with a temperature of 102°F. By this time the jaundice was at its worst. Next 48 hours led the child into a state of coma with both retention of urine and fæces. In spite of all efforts, the child succumbed to the disease within a week's time of its onset.

Case No. 2 :—Child 2 years old. High fever with convulsions. The mother having lost a child before due to convulsions felt very nervous and thought that this child also will not survive. However, she was consoled and convinced when the fits subsided. On about the fourth day, the child suddenly developed jaundice with enlargement of liver, and was very restless. This child too died the same evening.

I am reminded of Weil's disease but both are so uncommon in childhood in these parts.

INDIAN MEDICAL NEWS

Our General Letter

The establishment of the Indian Research Fund Association in 1911, with the object of prosecuting research into medical problems and experimental work generally in connection with the causation, mode and prevention of disease, was an important event in the history of medical research in this country, states the Public Health Commissioner's report for 1940. The Association has, in the succeeding period of thirty years, fostered research into diverse medical problems, has provided, through its advisory committees on different subjects such as nutrition, malaria, cholera, maternal mortality, tuberculosis, plague and leprosy, expert guidance to health administrations in their day-to-day problems and has, above all, helped to raise a body of workers in the different branches of medical research whose services will continue to be available to the country in the future.

Nutrition

As was pointed out by Sir John Russell, who toured India a few years ago and made a comprehensive report regarding the agricultural policy to be pursued in this country, the first need was for each province to conduct nutrition surveys to discover the chief deficiencies in diet and, then with the help of the Agricultural Department and the rural development authorities, to encourage by all means the growth of those particular articles of food which are necessary to make up these deficiencies. Within the last few years, over fifty diet surveys have been carried out in various parts of India and the results of these surveys have been brought together in a booklet entitled, "A note on the results of diet surveys in India," issued last year by the Indian Research Fund Association.

It has been shown by experiment that a partial substitution of rice by wheat or by one of the millets grown in the country improves the diet considerably. The expansion of the cultivation of millets and the encouragement of their use by the people of rice-producing areas require the earnest consideration of the authorities. Pulses can also supply some of the important factors in which rice is deficient. The Imperial Council of Agricultural Research has initiated a co-ordinated scheme of research in the provinces in order to investigate the possibility of developing strains of higher yield as well as of encouraging the extension of areas of pulses under cultivation.

Use of Leafy Vegetables

The development of kitchen gardens and wider use of leafy vegetables are also desirable because these vegetables are particularly rich in vitamins A and C and in calcium and form a valuable supplement to rice diets. In India, if efficient methods such as those employed in Japan and Europe, are applied to the fish industry, a valuable supplement to the diet of the people can be provided at a low cost.

Researches carried out in the Coonoor Nutrition Research Laboratories and in some other institutions in

the country have shown that certain varieties of fish available in Indian waters are particularly rich in vitamin A. A cod-liver oil substitute prepared from shark and saw-fish liver oils combined with groundnut oil* is being prepared in Travancore, Malabar and Bombay, and, as far as the vitamin A fraction is concerned, the replacement of cod-liver oil by these locally produced fish liver oils has now become a practical proposition.

New Treatment for Plague

The prevalence of plague in India has shown a considerable decrease during the past few years, but the disease continues to produce as high a case mortality as 60 per cent. The Haffkine Institute, Bombay, has carried out certain field trials with anti-plague serum and with two drugs, sulphathiazole and sulphapyridine, which belong to the sulphonamide group, and these remedies, have produced significant results in the reduction of mortality from plague.

In the Cumbum valley (Madras Presidency), which is an endemic area for plague, it has been shown that, by the repeated cyanogassing of the rat holes in a plague infected or threatened area, the incidence of the disease can be definitely controlled.

Malaria

Malaria is easily the largest public health problem in India. The deaths from this disease number about a million and a quarter every year while the number of attacks may be as high as 100 millions.

The Malaria Institute of India, which is maintained by the Government of India, is an institution which co-ordinates to a large extent the anti-malarial operations conducted by the Central and Provincial Governments. In Delhi, within the last five years a very successful anti-malaria campaign has been in operation, including the provision of certain permanent engineering works costing Rs. 17,00,000. The incidence of the disease has been reduced to negligible proportions and the mosquito nuisance has been almost eliminated.

A research unit of the Institute has completed two years' observation in the Terai area in the United Provinces and the data collected are being analysed. In Wynaad taluk of Madras Presidency and in the vicinity of the Chilka Lake in Orissa, studies regarding the factors responsible for the prevalence of malaria have been in progress and valuable information has already been collected for instituting preventive campaigns.

Malaria Courses

An important function of the Institute is the holding of malaria courses for medical officers. The first course was given at Amritsar in 1910. Between that year and 1925 six more courses were conducted in Delhi and Amritsar. From 1925 onwards malaria courses have been held every year. In 1940, in addition to the usual annual course, five special courses were held for army personnel and an innovation was made by instituting a course for engineers.

* Jambu & Co., Madras, have now put into the market pure Shark Liver oil, certified to contain 1,700 international units of Vitamin A. We are informed by them that they are now in a position to supply in bulk for hospital requirements—*Vide* our advertisement columns.—*Ed.*

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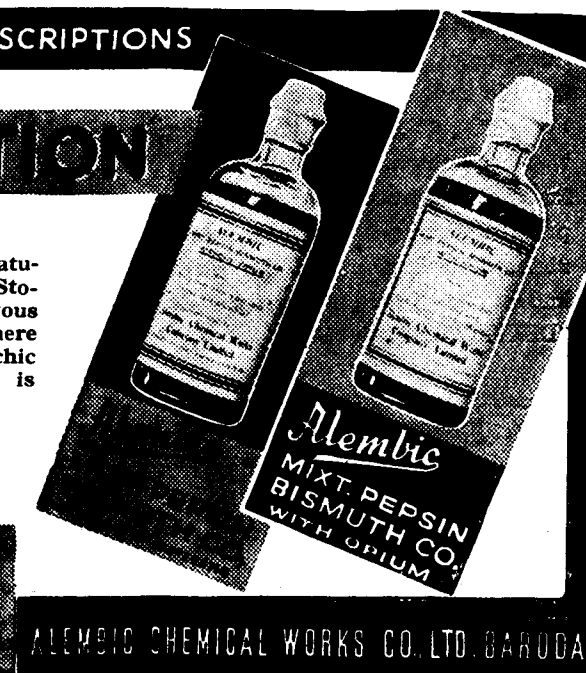
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Economy in the use of Ipecacuanha and Emetine

Amoebic dysentery is common in India and accounts for a fair amount of mortality and morbidity, especially amongst the members of the European communities resident in the tropics. In the treatment of this condition, emetine, one of the principal alkaloids of Ipecacuanha, is considered a specific and is very largely used.

Ipecacuanha is not indigenous to India. Attempts have been made to grow this plant in suitable localities in India but the indigenous supply has never been adequate to meet the local demands. India, therefore, remains largely dependent on foreign sources of supply.

Owing to conditions produced by the War supplies of this essential drug have been scarce and irregular. In the interests of the sick, it is desirable that a general effort on the part of medical men should be made to conserve stocks of this important remedy, so that those who really need it will not be deprived of its valuable curative properties.

The extent to which Ipecacuanha enters into popular therapeutics is surprisingly large. Much of this is in the form of Pulvis Ipecacuanhae et Opii (Dover's Powder), which is almost an everyday prescription in influenza, chill, coryza and slight cough. It is often used to 'abort' an attack of cold and also to check mild diarrhoea. Its diaphoretic and astringent actions are mainly responsible for its popularity. Therapeutically there appears to be no particular advantage in using Pulvis Ipecacuanhae et Opii to bring about these effects. It is the Opium in the preparation, and not the Ipecacuanha, which brings about the diaphoretic and astringent actions. The astringent action can be very easily obtained, probably more conveniently, by the use of Pulvis Cretæ Aromaticus cum Opio. For diaphoresis, practitioners have at their disposal a large selection of coal-tar remedies including salicylates and their derivatives. The use of Dover's Powder can, therefore, be conveniently reduced by encouraging the use of various substitutes which may bring about similar clinical results.

A significant contribution towards economy in the use of Ipecacuanha may also be made by exercising a little more judiciousness and care in prescribing the galenicals of Ipecacuanha, of which Vinum Ipecacuanhae (now Tinctura Ipecacuanhae) is the most widely employed. Tinctura Ipecacuanhae is a common ingredient of 'Sedative Expectorant' mixtures frequently seen in the Pharmacopœias of various Hospitals and Out-Patients' clinics. Tinctura Ipecacuanhae is neither a very rapidly acting nor always a trustworthy expectorant. In many types of cases of bronchitis, the use of such mixtures is not of any particular advantage and Tinctura Ipecacuanhae may be replaced by Vinum Antimoniale or Tinctura Scillæ. Only in pediatric practice is there some justification for its continued use in wartime.

Pulvis Ipecacuanhae is gradually going out of fashion but prescriptions are still seen where this has been used either for its emetic or for its cholagogue action. Such uses are a relic of the old days and cannot be supported by rational therapeutics. Ipecacuanha has now been shown to be a poor emetic and its supposed cholagogue action is also doubted by modern pharmacological investigators. Its use in such conditions therefore need no longer be advocated.

Whatever may have been the justification of such haphazard use of Ipecacuanha in pre-war days, it is the clear duty of all medical men to stop such practice in these abnormal times when there is a shortage of this essential remedy. If every medical man employs the same rigid criterion in the use of Ipecacuanha as they do in the diagnosis of their cases, much waste in the use of the preparations and galenicals of Ipecacuanha could be avoided and stocks of Ipecacuanha could be reserved for the extraction of emetine, whose value in the treatment of Amoebiasis has been fully established.

Foreign Medical Degrees

The Medical Council of India, states a Press Note, have recommended to the Government of India that the recognition of medical degrees granted by certain Universities in Australia, South Africa, Ceylon, Canada, Hongkong, and Malaya should be discontinued as these countries recognise Indian medical qualifications only when the qualifications are recognised by the General Medical Council in the United Kingdom.

The Government of India have accepted the recommendation. The withdrawal of recognition will affect only degrees to be granted after March 31, 1942. The Medical Council is prepared to enter into negotiations for the mutual recognition of medical qualifications with countries which are willing to recognise Indian qualifications on the basis of direct reciprocity.

The following are the Universities concerned: The University of Sydney, the University of Adelaide, the University of Cape Town, the University of Witwatersrand, Johannesburg, the Ceylon Medical College, Nova Scotia Provincial Medical Board, Dalhousie University, the University of Hongkong, and the King Edward VII College of Medicine, Singapore.

Antedate for I. M. D. Officers

Some weeks ago the Government announced the concession relating to increase in the emoluments of Assistant Surgeons of the Emergency Branch of the Indian Medical Department. It has now been decided to give also an antedate, based on professional experience, to those Assistant Surgeons (Indian Cadre) who, prior to appointment to the Emergency Branch, have been in the practice of their profession for over three years.

The antedate, which is limited to five years, will be reckoned on the basis of half the number of completed years of their medical practice. Thus ten years spent in active practice will qualify for the maximum of five years' antedate; six years in practice for three years' antedate and so on. Antedate will not be reckoned in periods of less than six months.

In addition, an Assistant Surgeon (Indian Cadre) who at the time of his selection is in possession of a higher qualification, such as M.C.P. & S., M.M.F., M.S.M.F., and D.M. & S. or an equivalent post-licentiate qualification, may be granted an antedate not exceeding twelve months.

An antedate not exceeding six months may also be granted to an Assistant Surgeon who possesses a Diploma in Tropical Medicine, or a qualification which is recognised as equivalent in all respects to the abovementioned qualifications.

The whole period of antedate which an officer may obtain will in future count for increments of pay and seniority in the Service.

Reviews and Reports

Mind and Vision : A handbook for the cure of imperfect eye-sight without glasses. Edition 2nd, 1941, enlarged. Price Rs. 4. By Dr. R. S. Agarwal, Eye Specialist, 15, Daryaganj, Delhi. Published by Dr. Agarwal's Eye Institute, Delhi.

The author of this book, the first edition of which we reviewed some years ago, is an ardent follower of Dr. Bates of America and while explaining the physiology of vision states that the act of seeing is passive and things are seen just as they are felt, or heard or tasted, without effort or volition on the part of the subject. Whenever there is an effort to see or the subject strains to see at a distance, myopia is produced. Further he writes that all sorts of errors of refraction are functional and can be treated successfully by relaxation eye exercise, and sun treatment. These exercises seem to be based on ancient, if forgotten, Indian Practice. The author supports his system of treatment by vast clinical experience, and eminent persons like Sir A. G. Glow, Sir G. S. Bajpai, Sir G. Bewoor, Dr. S. Sinha have written in high words about this natural treatment. Numerous photographs are used to illustrate the methods of eye training and the whole work is extremely lucid. The scheme to prevent and cure myopia will prove useful specially for the educational institutions.

Scientific Curiosities of Sex Life : By Dr. Rustam J. Mehta. Edition 1941. Publishers: D. B. Taraporevala Sons & Co., 210, Hornby Road, Fort, Bombay.

This book is a real romance embodying true facts about extraordinary abnormalities of sex and sexual life of men and women of all ages and countries. Reversal of sex, female men and male women, women who impersonated men, curious sex beliefs and customs are some of the interesting chapters that go to make up this book. The author's narration is accurate, authentic, and highly informative. It may be said without slightest exaggeration that never before has such a remarkable book been published which delves into the mysteries of aberrant sex phenomena and sexual life and beliefs of variety of races that inhabit this world in a brief and rapid, yet clear and lucid survey. The simple and attractive style of the author is an additional recommendation. We congratulate both the author and the publisher for this great contribution to the existing literature on sex and allied subjects. To our readers we heartily commend this book which would give them surprising information regarding anatomical and physiological curiosities of sex life. It would indeed give them a glimpse of a strange world of men and women.

A Short Practice of Ophthalmology (Ancient and Modern). By Dr. K. Krishnamurthy and Dr. N. K. Bidyadhar. Edition 1942. Publishers: The Ophthalmological Books Publishing Company, Chodavaram, Dt. Vizag. Price Rs. 6.

The special feature of this book is the bringing of modern and ancient ophthalmology into one compass, and thus helping the practitioners to have a comparative idea of both. It is intensely practical, and copiously illustrated. It covers almost all the important aspects of ophthalmology, and gives such valuable information as would be highly useful to "meet the average need of the ophthalmic side of the general practitioner as well as the ophthalmic practitioner himself." The book, in fact, represents the crystallised views and experience of a number of prominent ophthalmic surgeons of our country, whose collaboration the authors have been fortunate enough to secure. Its get-up and printing is good. We heartily recommend it to the profession.

Civil Hospitals and Dispensaries, Bombay, Annual Report for 1940 :

This report gives a brief account of hospital facilities in the province of Bombay, and the improvements made in some of the hospitals. Additional beds were provided in the J. J. group of hospitals. There were, during the year under report, 102 (allopathic) and 149 (ayurvedic) rural dispensaries. According to the Report, the scheme of Rural Medical Relief for which medical practitioners are subsidized, is very promising and as it settles down and becomes stable, it will be a real contribution to rural relief both medically and sociologically.

The following information culled from the report may be useful to our readers :

Number of medical officers	1,356	as against	1,211	in 1939.
" " nurses	1,050	" " "	858	" "
" " midwives	241	" " "	257	" "
" " in-patients	1.45	lakhs.		
" " out-patients	5.93	" "		
" " hospitals (urban)	287			
" " " (rural)	420			
" " I. M. S. Officers	18			
" " salaried graduates	457			
" " licentiates	772			
" " hon. graduates	651			
" " " licentiates	284			

(inclusive of all hospitals, Govt., railway, municipal etc.)

The Ideal Marriage-Adviser (Fit or Unfit for Marriage). By T. H. Van De Velde, M.D. Publishers: Chapman & Hall. Price 10/6 net. Copies, in India, can be had of D. B. Taraporevala Sons & Co., Hornby Road, Bombay.

This is one of the excellent books we have so far read regarding the tangled problem of marriage. It owes its origin to the suggestions of doctors and inquiries from patients addressed to the author. As he himself points out, it is primarily designed to benefit the ordinary man and woman, and to make them realise the advantages of suitable marriage, or how to convert unsuitable marriages into suitable ones, as far as medical help could do it.

The question of marriage is considered broadly under three heads :

- (1) From a biological standpoint.
- (2) The Physiologic side.
- (3) The Social point of View.

There is no doubt that from time immemorial the institution of marriage has been considered necessary for the sublimation of sex instinct to the human ideal of companionship, assurance of continued existence and discipline and duty under all circumstances. But the forces of what we call the advances in civilisation have, to some measure, brought it to a lower level. We wonder whether it is possible now to stem these forces and bring back the real motive of marriage. Yet one must try and from this point of view the book under review would be of immense help to those who are already married or to those who intend, sooner and later, to enter the threshold of matrimony. Each chapter of the book is full of sound experience and advice. The Chapters on 'Love', 'Constitution and Marriage Fitness', 'Age and Fitness of Marriage' and 'Profession and Marriage' are really well written and deserve to be singled out as the best portion of the book.

The get-up of the book is excellent. We warmly recommend it to our readers.

EPITOME

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(1) Innes Cox gives a very interesting account of the naked eye manifestations of chronic infective processes in the abdomen, and concludes as follows :—

(a) That, in the abdomen, any low-grade infection over a period of time will give rise to permanent mechanical interference with the intra-abdominal organs, resulting in anything from pyloro-duodenal ulcer to volvulus, and should therefore be eradicated early.

(b) That the same basic picture is reproduced, whatever the exciting cause, whether the origin be in the appendix, or inguinal or femoral canals.

(c) That in addition to this basic reaction, common to all chronic infective processes, certain specific organisms such as the tubercle bacillus or the virus of lymphogranuloma entering the lymphatic system of the lower abdomen will give rise to specific pathological pictures, such as tuberculous peritonitis or woody cæcum and regional ileitis.

I suggest that the prevalence of chronic appendicitis, gastric complaints, volvulus, the disease identical with the description of regional ileitis, tuberculous cæcum and similar chronic abdominal disease in the south and west of India is due to the following :—

(1) Faulty modes of dieting, often of religious origin, predisposing to chronic infection of the appendix and the sequence of misfortunes that follow.

(2) The prevalence of venereal disease which gives rise to the same sequence of disease as the appendix, also lymphogranuloma which gives rise to intestinal obstruction of the type described as regional ileitis.

(3) That working bare-footed in paddy-fields and walking on infected ground will also set up the same intra-abdominal naked eye pathology as that consequent in chronic appendicitis, the only difference being that entry is from the inguinal or femoral canals.

(4) That the vague disease, sarcoidosis, may possibly also be a late manifestation of lymphogranuloma.

It is therefore necessary that each patient be viewed in association with his habits and environment, the result of chronic low-grade infection plus time be given due consideration, and the possible value of *Fouadin* or its substitutes be kept in mind.

(2) Stonham writes that there appears to be much defective plaster of Paris on the market at present and those grades which set very slowly or become powdery and crumbling after the mould has set, are of no use for surgical purposes. Good surgical plaster of Paris should set quickly and be hard under all conditions of temperature and humidity and should remain hard permanently. It should be of fine texture and free from grit. Any samples which are not pure white in colour should be regarded with suspicion. The conversion of gypsum into plaster of Paris is an endothermic reaction, and heat is given off when the plaster is again wetted. Heat is also given off if the sample is adulterated with lime. Surgical plaster of Paris is sold in a variety of packings, but that preferred is the moderate-sized square tin which is easily stored and packed for transport.

We have recently received certain brands of plaster which have proved unsatisfactory in that they have failed to set properly and had a tendency to crumble afterwards. Some samples did not set at all and casts prepared from them remained in a wet partially-set condition for several days during wet weather. In hot dry weather only pseudo-setting took place—the plaster merely dried as mud dries.

Samples of various grades were subjected to the following test. Bandages were carefully prepared to eliminate any possibility of uneven incorporation of the powder and were carefully and thoroughly soaked without agitation. When quite sloppy they were rolled into a slab about 20 inches long, and each layer was carefully smoothed down as the bandage was unrolled. When complete, one-third of the slab was folded over and pressed down, and the whole allowed to dry. This produced a short slab half of which was twenty layers thick and the remainder ten layers. With good plaster the slab in a few minutes became rigid enough to enable it to be held in the hand by the thin end, as a rigid board. Those specimens of plaster which had been found unsatisfactory in actual use produced slabs which sagged or bent into a curve when similarly held.

Plaster of Paris is rolled into bandages by smearing the dry powder over the cloth with the hand and rolling up from the opposite end. The powder should be evenly and smoothly incorporated and the correct amount can only be learned by experience, since it varies slightly according to the cloth used. If the completed bandage is rolled too tightly it takes a long time for water to soak in and properly wet it, and if rolled too loosely the centre slips out of the bandage as it is being applied. If the proportion of plaster to cloth is too high a brittle cast results, and if too little the resulting cast is soft and tends to disintegrate rapidly. Various cloths are in vogue. If the cloth is too heavy and of too fine mesh it lacks docility and it is difficult accurately to apply it round prominences like the ankle. Moreover, with fine-meshed cloth the bandage must be prepared with meticulous care because the wet plaster cannot so easily come through the interstices as the bandage is wound on, compensating for any unevenness. Bandages prepared with fine-meshed cloth are much more difficult to wet evenly and quickly. If the cloth is too open in texture, much of the plaster escapes into the bucket from the outer layers of the rolled bandage when it is immersed in water.

(3) Sanyal outlines the following treatment of head-injuries :—The majority of cases of head injury, as met with in civil practice, if treated skilfully, recover without any ill effect. But it requires great attention and constant watch, together with competent nursing.

Leaving aside details, for the sake of brevity, an attempt will be made to bring forth only the salient points in such management.

The chief aim in all head injury cases is to counteract the bad effect of raised intracranial pressure and if not caused by clot compression one may succeed by conservative treatment alone; even in clot compression, the basic idea is the same—reduction of the compression effect by surgical means. Of course any accompanying complication will require special attention.

Treatment should be expectant as the exact sequelae are not known. It is directed to combating shock, and caution is necessary in administering stimulants.

Rest in bed for three weeks (both physical and mental) is a necessary safeguard against post-traumatic epilepsy, in all cases of severe, though uncomplicated, concussion. Strenuous exercises should not be allowed before three months and any return of symptoms—headache or mental changes—require immediate return to bed and careful watch for complications.

Traumatic delirium. Here we are dealing with more-or-less diffuse bruising and oedema of the brain and our aim is to ensure rest to the patient and to lower excessive rise of intracranial pressure, and watch for developing signs of complications.

It is better to nurse the patient in a dark isolated room. To diminish the excitability, sedatives are essential and bromides and chloral hydrate are usually sufficient. Luminal can safely be used when necessary. The doses required are often large, at the same time it is useless to dope the patient while the real indication is a decompression. If oral administration is difficult rectal medication is to be resorted to.

Lowering of the intracranial pressure is obtained as follows:—
Magnesium sulphate enema: This is a very useful method in the treatment of head injury. It reduces the excess pressure without any ill effect and can conveniently be repeated, thus, having a more-or-less continuous effect of decongestion. In an adult, about 6 ounces of 50 per cent. solution is injected into the rectum under low pressure and after half an hour it is washed out with a plain water enema.

Intravenous saline: It is one of the most powerful means of reducing the intracranial pressure. With its first introduction, enthusiasm ran high but moderation came with experience and now it is held a valuable adjunct but with limited field of usefulness. Though there are a large number of adherents to using it in all stages, I do not think it is based on known physiological findings. In large doses it reduces the pressure rather too rapidly and too much, and it is always followed by quick return to the previous level or even higher. It is also futile, and even dangerous, in the early stage of head injury. When used, 15 per cent. of 25 to 50 c.cm. of a 15 per cent. solution is injected into the vein, where the C. S. F. pressure is recorded near the 300 mark. Fifty c.cm. of 50 per cent. glucose may also be injected to lower the intracranial pressure.

Lumbar puncture: As a diagnostic method it is to be done early. But for reduction of pressure it is not necessary to repeat it before 36 hours. The practice of doing it daily as a routine should be discarded. Caution is necessary when doing it in the presence of very high pressure, as too rapid reduction may cause impaction of the bulb and mid-brain in the canal below. As a safeguard it is imperative to use a manometer.

Persistent delirium, in the absence of clot compression, should be treated by decompression.

Treatment of Compression: When clot compression is suspected the only treatment is decompression and removal of the clot.

If the mortality rate is to be improved upon one must be prepared to operate on cases of suspected clot compression. The passive attitude that is being taken in compression cases is largely responsible for the high fatality at present. Though decompression in such cases gives a better chance of recovery the patient may die of the effect of neural damage already undergone.

Operation is also indicated in compound and depressed fracture. Difficulty arises in cases where underlying an apparent innocent scalp wound a linear crack is detected some time later by X-ray. Two cases have thus been lost following late septic meningitis. It is difficult to take the view to operate as a routine in all cases of linear fracture, particularly on the inner table accompanied by scalp injury, though on principle one should.

Convalescence: In short it may be said that when the patient has become conscious and remains continuously so he passes into the stage of convalescence.

To prevent post-traumatic neurosis, the patient is to be warned of early commencement of activity. All mental strain is to be avoided for a long time and also acts that raise intracranial pressure. Sedatives such as luminol should be continued for a long time.

Jr. I. M. A., Nov. 1941

(4) Symposium on modern treatment of gonorrhoea—Govinda Nair	25
Vitex therapy in B. W. F.—Roy	34
Intestinal tuberculosis in Bengal—Tribedi and Gupta	41
(5) Pulmonary oedema in cholera—Banerjee	45

(4) **Govinda Nair** observes that the effective method of treatment of gonococcal infection and its complications is either by the induction of hyperpyrexia especially by the Kettering hypertherm or by chemotherapy with sulphanilamide or its derivatives combined with urethral irrigations, vaccines, etc. The anti-toxin treatment is on trial and the few reports available are conflicting. Pyrexial treatment with the Kettering hypertherm though effective is risky and equally laborious and trying both to the patient and the physician. It requires careful, constant and continuous supervision by competent and experienced physicians and nurses and fully equipped institutions and so is

not likely to be used widely by the general practitioner. Therefore, treatment with sulphanilamide or its derivatives is the method of choice. It is unique in its simplicity of administration, the short period required for treatment, the large percentage of success, its efficacy as a preventive and curative of complications, the small percentage of serious by-effects and its easy applicability by the general practitioner. At the same time it should not be forgotten that it is of no value as a prophylactic and that it should be administered carefully and under the supervision of a physician. Though effective by itself as a curative in gonococcal infections, its value is enhanced if it is preceded by an alkaline mixture as it acts better in an alkaline medium. Local treatment and vaccine therapy to stimulate the protective mechanism of the patient are valuable supplements. Though sulphanilamide and its derivatives have revolutionised the treatment of gonorrhoea, it is to be noted that recurrences and relapses are not unusual. They are not innocuous substance to be used indiscriminately and with no proper supervision. Being toxic they should be included among the dangerous drugs. Even if they give about 50 per cent. cures they are worth having as there is no remedy or mode of treatment which gives the same percentage of success in such incredibly short period and at the same time with minimum inconvenience and maximum privacy to the patient.

(5) **Banerjee** writes that pulmonary oedema is one of the most dangerous and frequent complications of cholera, being responsible for a large number of deaths. In spite of gross renal failure in cholera no oedema in any part of the body ever takes place either during the course of the disease or during convalescence. Oedema of the lung, on the other hand, is the only exception and that invariably takes place during the active stage of the disease. It is generally associated with vasomotor failure. In a series of 25 cases of cholera showing oedema of lungs clinically, 22 cases showed marked involvement of the air spaces being filled up with eosinophilic homogeneous albuminoid material containing few cells. Red blood cells are the only types of cells found. All the blood vessels especially the alveolar capillaries are greatly engorged. The pathogenesis of this condition is discussed in which particular stress has been given on the condition of shock, vasomotor failure and increased permeability of the vessels. A note of warning is given regarding the treatment of this condition particularly in the use of adrenaline, hypertonic glucose and calcium chloride.

It must be noticed that substances which influence the respiratory centre, e.g., cardiazol and narcotine, not only prevent but also relieve. Caffeine and camphor also influence the oedema. Substances which influence peripheral capillary permeability, e.g., hypertonic sugar solution and calcium chloride aggravate the existence of pulmonary oedema.

Med. Digest, Nov. 1941

Cancer Number

This is Part I of the Special Cancer Number and contains twelve excellent contributions from eminent doctors who have had great reputation for tackling the cancer problem in our country. Pillai makes an appeal for starting an anti-cancer campaign, just on the lines of anti-tuberculosis campaign. Joshi discusses the institutional facilities in our country for the treatment of cancer, particularly from the point of view of treatment by surgery, X-ray and radium. What is needed, he writes, is that the existing Cancer Institutions should direct the activities in (1) Educating the general public about the danger of this disease and measures of prevention wherever possible. (2) Training young doctors in this country especially in the district area in the early and efficient diagnosis of cancer, so as to enable them to direct patients early for treatment. (3) Gradually establishing suitable centres of treatment at different places. (4) Emanating tubes could be sent out from these centres to smaller centres with directions for their use. (5) Post-graduate course of study could also be started and training given in the use of radium and X-rays. (6) Publishing research works done in big institutes every year for guidance of others. The research work is very important and highly desirable and should be carried out in big centres. Athle stresses on the importance of Roentgen Therapy in the treatment of Cancer while Rama Rau makes his observations on deep X-ray therapy. Pillai gives succinctly the "Facts and Fallacies about Cancer" and stresses on the view that cancer is curable when adequately treated in its early stages and that the only effective and modern methods of treatment of cancer

ABSTRACTS

CARBUNCLES. Austin Furnis—The Prescriber, Aug. 1941, p. 169.

A carbuncle may be defined as a large and severe boil, with a flat indurated centre, which involves several neighbouring follicles and tends to break down and discharge pus through cribriform openings. The lesion commences as an infiltration in the subcutaneous tissue or the deeper parts of the true skin; it is at first but slightly raised, firm, rounded in outline, and bright red on the surface. In most cases the inflammatory process extends, and in a week to a fortnight forms a deep-seated, circumscribed swelling as large as the palm or larger, with a brawny base, the skin over it being of a purple colour. Softening takes place in the centre, and the surface becomes dotted with suppurating points, which break, giving exit to blood-stained pus. This cribriform method of rupture is quite characteristic of carbuncle. The skin in between the perforations sloughs, and the dead mass or core underneath slowly comes away—taking from a fortnight to two months in the process—usually as a yellow, ragged slough, sometimes as a pulsatious mass, and sometimes as a black, dry eschar. The neighbouring lymphatic glands are almost invariably swollen. Constitutional symptoms are usually severe—fever, rigors, general malaise, and aching in the back and limbs. After the slough separates a deep, irregular cavity is left, which heals by granulation, a dense, puckered scar, which is not infrequently pigmented, resulting. Carbuncle is generally single, and occurs especially where the skin is thickest—on the nape of the neck, on the back, the buttocks, shoulders, and forearms. It is rarely seen on the face. Death may result, especially in weakly or elderly subjects, from exhaustion or septicaemia, especially when the lesion occurs on the face.

Aetiology: The exciting cause of carbuncle is, as in the case of boils, an invasion of staphylococci. Males are much more frequently affected than females. Anything that tends to lower the resistance of the body may be predisposing cause, diabetes in particular being often associated with the disease. It may, however, occur in persons in apparently normal health.

Pathology: The process is identical with that of furuncle, but the inflammation is deeper and more destructive, and the abscesses are multiple. The condition is believed to begin in the pilo-sebaceous follicles and sudoriparous glands. There can be little difficulty about the diagnosis, the multiple yellow points, and openings being sufficient to distinguish it from furuncle; and these features together with its circumscribed outline differentiate it from diffuse cellulitis.

It may be necessary to give a guarded prognosis, especially when the lesion is situated on the face. The size and position of the lesion, the state of health and age of the patient, are the chief guiding points. When carbuncles form on vascular parts such as the face and lips the consequences may be serious, since infective thrombosis of the large veins may follow, and this may quickly spread up to the cavernous sinus. The soft and spongy tissue of the cheek is a very favourable place for the extension of the necrotic process and there may be a wide area of mischief under an apparently insignificant superficial lesion. It should be mentioned that there is often a temporary glycosuria of toxic origin, which disappears as the condition improves, but occasionally the gravest symptoms of blood-poisoning (pyaemia or septicaemia) may supervene.

Treatment: For small carbuncles the treatment is the same as for boils. The application of a magnesium paste may abort the pathological process. The usual treatment is to make a free crucial incision and allow the sloughs to separate naturally, assisting nature by antiseptic fomentations. In the later stages, the most satisfactory treatment is to lay the carbuncle freely open under an anaesthetic, and scrape with a sharp spoon or cut away all sloughs until healthy tissue is reached, and then to disinfect the cavity thoroughly with pure carbolic acid or peroxide of hydrogen (10 volumes). The hollow thus formed is packed with gauze soaked in an iodoform emulsion (10 per cent.) or with bismuth gauze or other suitable antiseptic preparation, and allowed to heal by granulation. Constitutional treatment is usually required. It should be directed to supporting the patient's strength by every available means—generous diet, careful regulation of the bowels, and the free use of tonics, especially iron, quinine, and phosphorus. Special preparations

Cal. Med. Jr., Oct. 1941

(6) A study of the agglutination reaction of the sera of enteric cases—Basu and Chowdhury	509
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Planter wart and its treatment—Chakraborty	519

(6) **Basu** and others, using Bengal Immunity's 'V-i' antigens, have studied the agglutinating reactions of enteric sera and come to the following conclusions:

(1) Agglutination reaction of 128 cases of suspected enteric fever were studied of which 16 cases later on turned out to be non-enteric and these 16 cases were also negative to typhoid and paratyphoid antigens. The rest gave a positive agglutination reaction either with one, or two, or all the antigens set up for the experiment.

(2) Blood culture findings showed that 52 per cent. of the cases yielded positive result though most of them were late cases, the average time of admission was in the third week of illness. S. paratyphi A was recovered from two of the cases, the rest showed S. typhi on culture. One of the cases showed positive culture on the 32nd day of the illness.

(3) S. typhi was recovered from the stool in 27 per cent. of the cases and from the urine in 8 per cent. of the cases, and from the pus in one case. Of the cases giving positive stool reaction, one case showed S. typhi within first week of the fever.

(4) One case was peculiar in this respect that S. typhi recovered from the blood was of the smooth type whereas those from the urine was rough in its behaviour.

(5) Two cases gave a positive agglutination reaction against paratyphoid A antigen but the organisms recovered from the blood were S. typhi. The sera of these cases later on showed positive agglutination against typhoid antigens.

(6) Two cases showed S. paratyphi A on hemoculture. But the agglutination was positive against typhoid H-antigen.

(7) By comparative study we found, that "V-i" agglutination gave more positive results than "H" agglutination—and our findings agree with that of Seshadriathan and Pai (1940). "O" agglutination gave next higher figure. Combined V-i O and H agglutinations with various typhoid and paratyphoid antigens leave no enteric case undetected.

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Leprosy in India, Oct. 1941

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sometimes used are calcium sulphide and colloidal manganese. Vaccines are employed as in the case of furunculosis; whilst ultra-violet irradiation, both locally and generally, is valuable. With regard to the magnesium paste mentioned, it should be stated that the original formula of Morison consisted of 1½ lbs. magnesium sulphate (exsiccated) with 11 oz. glycerine of phenol, but another prescription, a National Insurance formula, gives exsiccated magnesium sulphate 2 oz., with 1 oz. (by weight) of glycerine (without the phenol). The paste is applied as a cold dressing upon gauze or wool and kept in place until the slough has separated.

TREATMENT OF PERITONSILLAR ABSCESS.
John D. Kernan, Bulletin of the New York Academy of Medicine, Sept. 1941, p. 687.

In view of the dangerous complications which may arise in connection with peritonsillar abscess many have been discontent with the ordinary treatment, namely, hot irrigations till the pus points, then, incision into the anterior pillar. The suggestions have been: (1) separation of the superior pole of the tonsil; (2) partial tonsillectomy, the superior pole of the tonsil being removed; (3) total tonsillectomy. These operations are done during the acute attack.

There appears to be little more to be said for separation of the superior pole of the tonsil than for simple incision or for separation of the anterior pillar from the tonsil with a tonsil hook, a procedure which has long been carried out at the Presbyterian Hospital. When this procedure is successful, it suffices but the pillar may adhere again and so block drainage and, moreover, low posterior abscesses are not reached.

Schroeder reports on the treatment of peritonsillar abscess at the Sundby Hospital, Copenhagen; ninety-two patients were treated by the usual peritonsillar incision and made a satisfactory recovery. Fifty-six patients needed further operative treatment for the following reasons: In fifteen cases no pus appeared after repeated incisions and the temperature remained high; in thirteen cases the abscess was followed by nephritis, in eleven cases oedema of the glottis occurred; in seventeen cases parapharyngeal abscess formed; in two cases there was thrombophlebitis of the internal jugular vein; in forty-three of these patients detachment of the upper pole was done, in five cases on both sides; in the remaining thirteen patients, total tonsillectomy was done. All of these patients recovered without further complications. The procedure was carried out under local anaesthesia.

As early as 1911 (Winckler), total tonsillectomy during the attack was suggested and carried out. Salingre (Helsingfors) is one of those who advocates this procedure, especially in cases threatened with complications, or in cases in which the abscess is low down or far back. He uses local anaesthesia, injected into the palatine foramen and into the lower pole of the tonsil. He employed this procedure in fifty-four cases; all were successful.

Other authors are even more enthusiastic than Salingre, unreservedly recommending tonsillectomy during the attack and even advocating the removal of the tonsil on the opposite side. Blashki is one of these. He reports thirteen patients operated on under general anaesthesia. One of these died from heart failure, the anaesthetic risk being known beforehand. W. Klose urges double tonsillectomy on these patients because of the frequency of concealed abscesses. In twenty-four of these patients an unsuspected abscess was found on the opposite side on the occasion of abscess tonsillectomy. In eleven patients abscesses developed after repeated incisions had supposedly healed the peritonsillar abscesses. In eight patients entirely unsuspected abscesses were found on tonsillectomy. He maintains that many more concealed abscesses will be found if sought for.

One of the advantages especially emphasized by those who advocate tonsillectomy during the attack of peritonsillar abscess is that this procedure makes possible the drainage of pus which has already penetrated to the parapharyngeal space. The tonsil being removed, the fistula leading to the extrapharyngeal collection will be exposed. The enlargement of this fistula will promote drainage into the pharynx and thus external operation will be avoided.

To those who fear the spreading of the infection by tonsillectomy in the presence of an abscess, the article by Gangl-Battig may be pointed out. This author has demonstrated that the height of the attack is the very time when the resistance of the patient is highest. Once a well demarcated abscess is formed, the greatest danger is over. Drainage then becomes the greatest

necessity, and this is best accomplished by tonsillectomy. Surely no one hesitates to remove an appendix in the presence of pus. Why not, then, tonsillectomy?

It may be taken for granted, then, that a good case may be made out for tonsillectomy during the active stage of peritonsillar abscess, especially in cases threatened with complications. I am not quite prepared, however, to recommend the procedure unreservedly. Some bad results have been experienced, especially when the opposite sound tonsil has also been removed. At the Presbyterian Hospital only a meagre number of cases can be reported on. These were all done under general anaesthesia, only the diseased tonsil being removed. The results were most gratifying. All pain appeared to cease at once, and all patients were able to eat freely within 24 hours.

Little has been said as to the use of sulfanilamide in these cases. This is because our results have not yet been sufficiently numerous to make them of value. A number of cases have, to be sure, resolved without developing pus, but you will note on the table that this has also been brought about by hot irrigations. Reports in this literature on the use of sulfanilamide are as yet few. Hubert and Leroux reported on twenty-two patients treated with this drug. Sixteen of these recovered without surgical intervention, and in six, surgical intervention was necessary. They conclude that if given early sulfanilamide may prevent suppuration, but that every formed abscess must be opened.

Features of 320 cases of Peritonsillar Abscess

Previous attacks	49
" tonsillectomies	9
Tonsillectomies	40
Ruptured after irrigations	57
Incised	162
" more than once	19
Arose from teeth	39
Resolved on irrigation without pus	19
Incised after prontosil	7
Resolved	25
Complications	57
Haemorrhage	6
Otitis media	15
Cellulitis of neck	8
Acute cervical adenitis	6
Arthritis	2
Rheumatism	4
Erysipelas	5
Abscess of pharynx	11

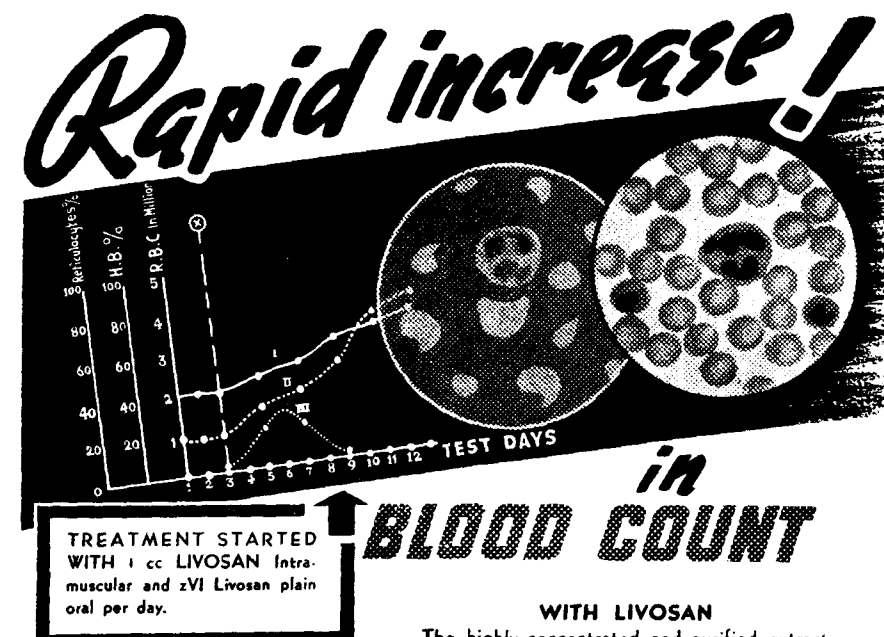
Sonnenschein made a report on two patients. In one of these, the abscess re-ruptured spontaneously; in the other, it resolved without suppuration. These reports are too few to justify any conclusions.

In the past ten years we have had 320 cases of peritonsillar abscess which is shown in tabulated form above.

THE GENTLE ART OF READING A MEDICAL JOURNAL. Editorial, *Am. Jr. of Ophthalm.*, Sept. 1941, p. 1069.

Harvey Cushing, in the introductory lecture to his class, advised his students not to purchase an expensive treatise on surgery. He said that by the time a text-book appeared it was already on the way to becoming antiquated, and that furthermore no text-book could adequately cover the scope of the subject. He suggested, instead, that his students read and study the surgical journals, make and file notes on each subject, and by the end of the year each would have his own text-book, not only on record but, what was more important, in his head.

Those who followed the advice of this great teacher found his words to be true and many continued this habit after graduation, with much profit and enjoyment to themselves and benefit to their patients. Some there are who found it to be a delightful hobby, like stamp collecting, and would take pleasure in mulling over their collection from time to time. As experience developed, discrimination evolved, and worthless notes were thrown away, the valuable ones kept. One of the beauties of this system is that it can be begun at any time, and once begun the habit grows.



Curve I — H. B. %
Curve II — RBC in million
Curve III — Reticulocyte %

Note the reticulocyte response curve III in the above clinical chart on a case of Macrocytic Hyperchrome Anaemia. This proves beyond doubt the rapid building up of the blood picture in cases of pernicious anaemia within ten days of starting treatment with oral and injectable Livosan every day.

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



One reads a medical journal in order to store knowledge for clinical use, or to obtain ideas for research, or to see what someone else is doing, or to satisfy an insatiable curiosity, or to keep abreast of the tide of new ideas.

The purposes of reading a medical journal are obvious, but the methods of reading may be worthless and time wasting. There are even those who subscribe to and then put away their journals unread. At the end of the year the copies will be removed from their original wrappers, collected together, nicely bound, and placed on the shelves, where they satisfy at least the instinct of ownership. Others will tear out and file the articles that interest them and throw away the rest. Some save their copies for what might be called cloacal reading. A few find that the journals are a cure for insomnia.

Emulating Adler, whose book, "How to read a book," was a best seller a season or so ago, a discussion of profitable methods of reading and filing of the material should receive favourable attention, and perhaps stimulate one or two to put some of the ideas here expressed into practice.

The journal should first be read from cover to cover, the important or interesting articles reread, and the pertinent sentences underlined. These sentences are then transferred to a card or piece of paper for filing. Some prefer the ordinary filing card of different sizes according to taste, which fit into an appropriate cabinet.

Psychologists point out the importance of association in fixing the memory of newly learned facts. It is sound practice, therefore, to hitch up the information in the notes with the experience of one's own cases. In this way what might have been an isolated fact becomes a link in a chain of knowledge forming the foundation for intuition.

The art of reading a medical journal is truly a gentle one. It fosters a contemplative vision in the quiet of the study, promotes the welfare of humanity without bluster or threat, instills courage to press on in the hour of discouragement, and pulls the lagging spirit from the rut of daily chore. It catches the fleeting butterfly of thought and impinges it. It deserves the consideration of men of good will.

SEX HORMONES AND BLOOD PRESSURE. A Guin-dham. The Bristol Medico-Chirurgical Journal, Sept. 1941, p. 20.

The ubiquitous effects of the sex hormones oestradiol and testosterone are becoming increasingly known. Their relation to blood pressure has received inadequate comment. Levy Simpson and Schaefer both indicate that oestrogens will decrease menopausal hypertension. It is claimed that testoviron can either raise or lower the blood pressure by acting as a stabiliser in sympathetic-parasympathetic imbalance, but that it cannot alter the blood pressure in such conditions as hyperpiesis due to organic disease such as renal disease or arteriosclerosis. The brief notes given below may add a little to our not very extensive knowledge of an important subject.

The aim of this short essay is to demonstrate the effect of sex hormones in lowering the blood pressure in other than menopausal conditions and, more particularly, to show the antagonizing effect on blood pressure of testosterone and oestradiol in the same persons.

Case I. A female patient, aged 78, was admitted in a state of restlessness and acute depression, suffering from hyperpiesis. Her blood pressure was 220/120, with gross arterial degeneration and enlargement of the left ventricle. She was put on Progynon (oestradiol) ointment, 2 inches daily (=0.14 mgm. of oestradiol). In a fortnight her blood pressure was down to 150/70. This reduction was accompanied by a very marked improvement in her mental condition. The Progynon was stopped. The patient's blood pressure remained in the neighbourhood of the above reading.

Case II. The patient was a woman of 53, suffering from melancholia. She was quiet, rational and depressed, with marked retardation. She was in a very poor physical state, and arteriosclerotic, the myocardium being particularly deteriorated. Her blood pressure was 164/84. Her peripheral circulation was very poor.

Four days after admission she was put on Progynon ointment, 4 inches (=0.28 mgm. of oestradiol (being rubbed into the skin of the abdomen daily). A fortnight later she was much better mentally and the dose was increased to 8 inches (=0.56 mgm. of oestradiol) daily. After nineteen days her mental improvement was still more marked. Her blood pressure had fallen to 105/65. The dose of Progynon was reduced to 8 inches every other day. Reduction of the dose of oestradiol had a rapid effect in raising the blood pressure, so that three days after the reduction of the dose the reading was 130/80. On the day on which this reading was taken the patient had received no ointment.

It was reported to me that the patient seemed much better on days when she received the ointment. This reduced dose of 8 inches on alternate days was continued a further six days, at the end of which time her blood pressure, taken on a day when the ointment was administered, was 108/60. It seems possible that in addition to the undoubted mental improvement it caused over a long period, the ointment was a particularly rapid mental stimulant on the days on which it was administered—when a regime of alternate days was adopted—and that associated with the immediate stimulant effect was a fall in blood pressure.

Thirty-one days after commencing treatment with Progynon ointment her blood pressure had fallen from 164/84 to 96/60. The patient remained very well mentally and was not distressed physically. For the next month she had no hormone therapy and during that time her blood pressure remained low, though with the cessation of treatment it had risen to 108/60 at the end of the month. She was then put on Perandren (testosterone) ointment. She received 2 inches (=2 mgm. testosterone Ciba) daily. At the end of a week she was much better mentally, being brighter and infinitely more dynamic, and her blood pressure had risen to 130/70. The dose of Perandren was then doubled (=4 mgm. testosterone) and after four days at the increased dosage the reading was 148/70.

These two cases are not isolated examples. They are chosen as representative of two kinds of reaction. It is regrettable that time and circumstances necessitate extreme condensation of these records. The remarkable action of oestradiol needs a great deal more investigation. It is too early yet for extravagant claims, but the existence of an agent capable of producing a gross reduction in a high blood pressure of organic causation is obviously of the first importance in medicine.

In addition to the above cases, I have noted marked reduction in blood pressure after treatment with oestradiol by innunction in female psychoneurotic patients of 30 and 40. This reduction was of a degree quite inexplicable on the grounds of diminution in anxiety, etc. Abnormalities of blood pressure among psychoneurotic patients are notoriously atypical, though I think not so markedly variable as has been claimed. In the cases I have in mind, the cause of the abnormal blood pressure could not be explained on these grounds.

It must be pointed out very definitely that I am not offering the thesis that oestradiol invariably lowers and testosterone inevitably raises the blood pressure. I claim no more than to have unmistakably demonstrated this effect in certain patients. As a result of the many female cases I have treated with oestradiol either by mouth, injection or innunction. I believe that where oestradiol has any effect on blood pressure (and there are many cases in which none is noticeable), it acts in reducing the pressure. But the direct converse is far from true in cases treated with testosterone. In both male and female preclimacteric cases testosterone has caused a marked fall in blood pressure. Where the blood pressure in these cases excessive one might have thought that the testosterone was acting as a stabiliser of the vegetative nervous system, but the further reduction observed occurred in individuals with subnormal blood pressures.

Blood Substitutes in the Treatment of Acute Haemorrhage.—Buttle, Kekwick, and Schweitzer, in the "Lancet", October, 1940, consider the therapeutic value of various blood substitutes from the experimental standpoint, and discuss the question of storage. Under standard experimental conditions, they compared the therapeutic actions of various preparations with those of whole blood, and reached the conclusion that plasma is the only one which, in the cat, consistently gives results approximate to those obtained with whole blood. The other substitutes are placed in the following descending order of value: serum, haemoglobin-Ringer solution, gum-saline, red cells in crystalloid solution, isotonic saline, and isotonic glucose.

Hæmoglobin-Kinger solution (3.7% ox hæmoglobin per 100 c.c.) may produce renal damage and in their hands has given uncertain results. The other preparations all proved unreliable because of the tendency of the crystalloid solutions to pass easily from the circulation into the tissue spaces. Thus they are unable to raise the blood volume for more than a brief period.

The relative merits of plasma and serum are important. In the cat we have found two experimental objections to the use of serum; immediate reactions are more numerous than with plasma, and the return of the blood pressure is not sustained as well.

Certain difficulties still present themselves in the preparation and storage of plasma, the most formidable being the ease with which it becomes infected. In order to overcome this methods of removing water from the plasma and keeping it as a dry powder are available. Infection may also be eliminated from plasma by filtration.

A strong case has been made for the use of plasma since it eliminates the delay between hæmorrhage and treatment by its availability for storage over long periods.—(Courtesy: G. P., Australia.).

The Etiology and Treatment of Soft Corns.—Soft corns, situated between the toes consist of softened and at times macerated calluses and usually occur between the fourth and fifth toes but may be found between any two toes, depending on the presence of certain mechanical factors. Their softness arises from their confinement between the toes and from the associated moisture of the feet.

The base of the proximal phalanx of the fourth toe commonly is prominent laterally, and bears somewhat of a point; likewise,

the distal end of the proximal phalanx of the fifth toe is prominent medially. When improper shoes are worn pressure is applied and a callus may result. The symptoms are pain, at times intense, and a tendency to infection; the latter results from trimming and from the use of home remedies. This apparently innocuous callus may be dangerous to the individual who has a blood vascular disease or diabetes.

Treatment consists of removal of the prominent portion of the phalanx of either the fifth or the fourth toe. As the callus usually is situated over the prominent base of the proximal phalanx of the fourth toe, it seems more logical to excise this prominence than that of the fifth toe. It is important that the prominence be removed so cleanly and smoothly that sharp spicules, which would produce further symptoms do not remain.—H. B. Macey, M.D., in "Proceedings of the Staff Meetings of the Mayo Clinic, 15: 549-550, 1940"—(Courtesy: G. P., Australia).

Purification of Water in War Time.—In a broadcast talk on methods for the purification of water in war for drinking and cleansing purposes, Lt.-Col. Mackenzie, Director of Water Examination, Metropolitan Water Board, recommended the use of chlorinated soda and photographic "hypo". The *Pharmaceutical Journal* (August 17, 1940) publishes a useful formula:—"Dissolve 3 ounces of crystalline sodium carbonate in 5 fluid ounces of water. Triturate 2 ounces of bleaching powder with 15 fluid ounces of water. Mix the two liquids, and allow to stand, with an occasional shake, for three or four hours. Filter and dilute the filtrate to 50 fluid ounces. Keep in a stoppered bottle away from the light. Pack in 4 ounce coloured bottles, fitted with rubber or rubber compound corks, and label. Add 10 drops to 1 pint of water; stir, and allow to stand for five minutes. Then add a crystal of 'hypo' and stir. When dissolved, the water can be drunk." The somewhat unpleasant taste of the chlorine is destroyed by the addition of the photographic "hypo".—(Courtesy: G. P., Australia).

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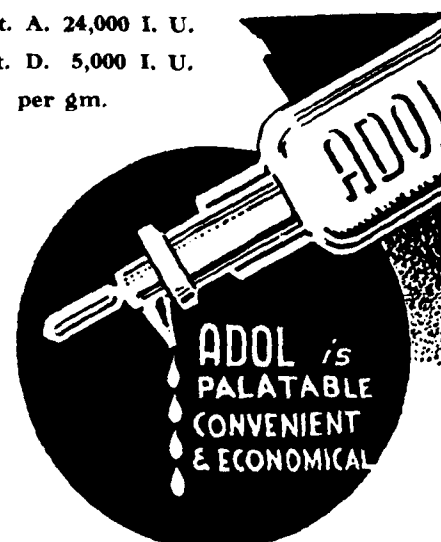
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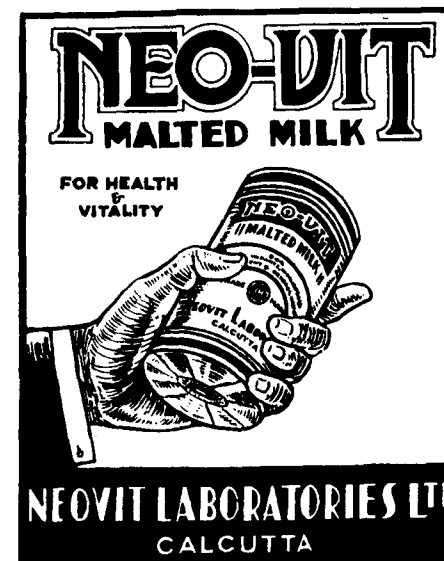
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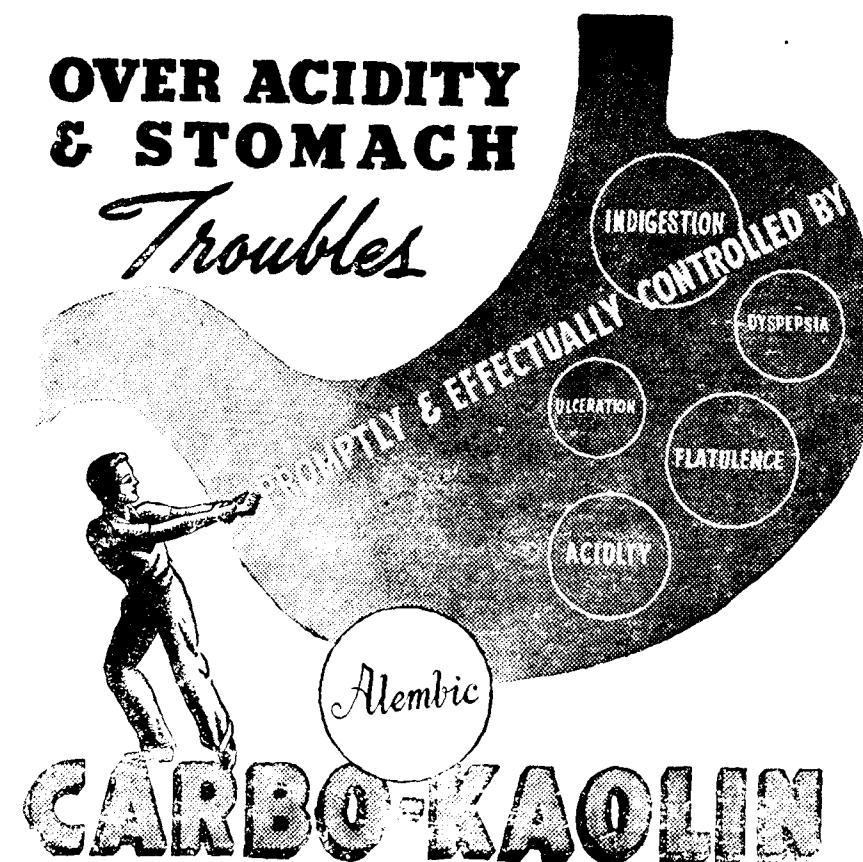
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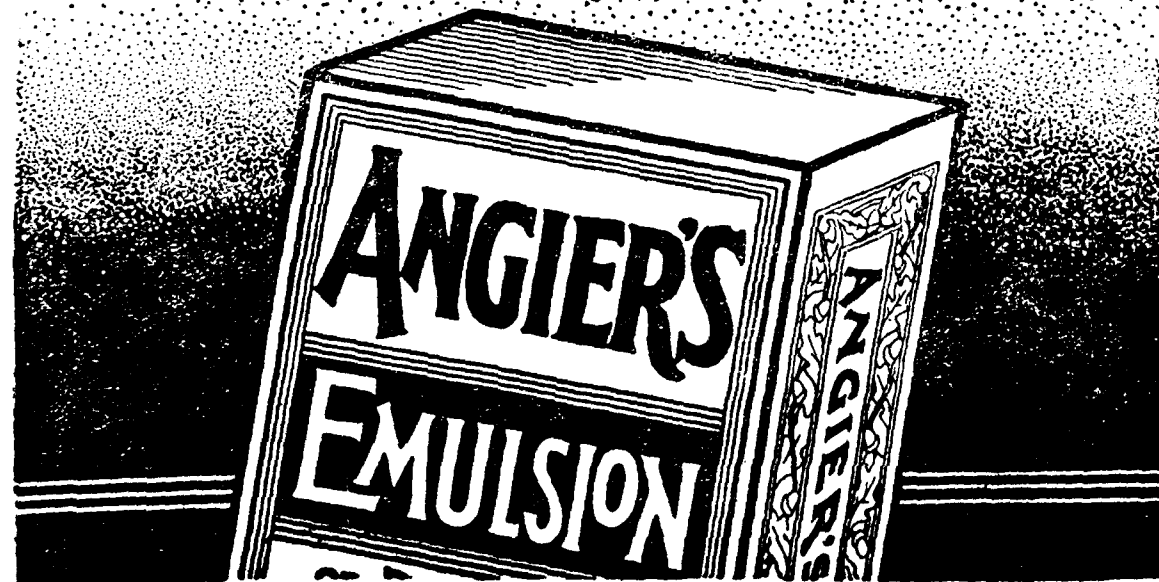
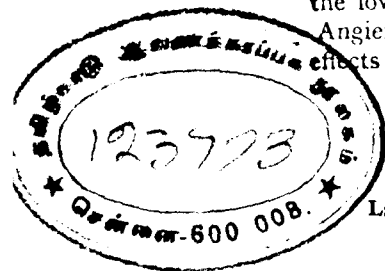
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EDITED AND PUBLISHED BY DR. A. VISWANATHAN AT 27, KRISHNAN KOIL STREET, G.T., MADRAS

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PRINTED BY MR. M. CHAKRAVARTHI IYENGAR AT THE MADRAS PUBLISHING HOUSE, 19, MOUNT ROAD, MADRAS