

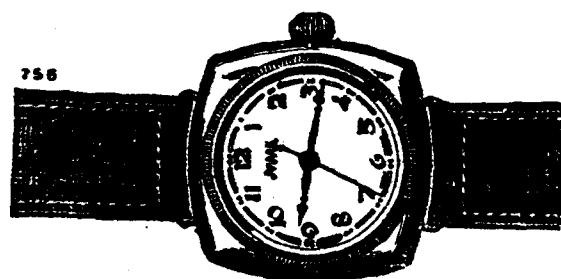
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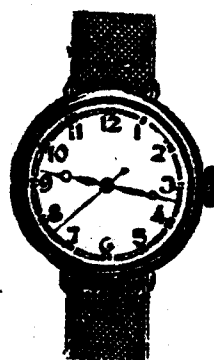


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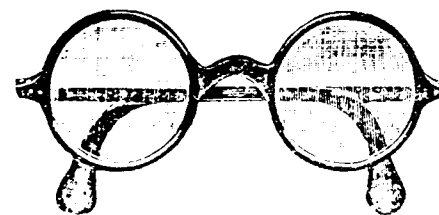
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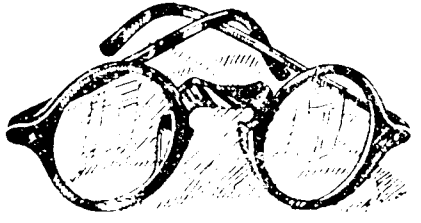
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Vol. XIII April 1934 No. 4

CONTENTS.

	PAGE.
1. MEDICAL JURISPRUDENCE IN MADRAS, By Lieut.-Col. C. Newcomb, B.A., B.C.H., D.M. (Oxon.), M.R.C.S., L.R.C.P., (Lond.), F.I.C., I.M.S. ...	283
2. THE HORMONES OF THE MALE AND FEMALE GENITAL GLANDS. By Dr. Max Doran, Ph. D. (Germany) ...	290
3. INAUGURAL ADDRESS. By Dr. A. Lakshmanaswami Mudaliar B.A., M.D., F.C.O.G. ...	302
4. "CALCIUM THERAPY" A SYNOPSIS ...	315
5. MEDICAL EDUCATION AND THE REFORM ON MEDICAL STUDIES. By Dr. Etienne Burnett ...	330
6. DR. TUT, A POSTHUMOUS MEMOIR. By Dr. C. S. S. Sarma ...	356
7. A CASE OF PARRY-ROMBERG SYNDROME. By P. Krishnan Na'ir, Final Year Student ...	364
8. A CASE OF DOUBLE ECTOPIC By S. R. Raja Ram and V. K. Balakrishna Menon ...	368
9. "PATHOLOGICAL HOWLERS" ...	370
10. THE DOCTOR. By Capt. R. C. Toyle ...	372
11. GASTRIC ROUTINE AS DONE IN COL. PANDALAI'S WARDS. By M. S. Yegga Narayanan ...	373
12. IN LIGHTER VUE ...	378
13. MEDICAL COLLEGE ASSOCIATION AND MAGAZINE RECEIPTS AND PAYMENTS ACCOUNTS ...	384



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THE MADRAS Medical College Magazine

VOL. XIII

APRIL 1934

No. 4

Medical Jurisprudence in Madras.*

BY LIEUT.-COL. C. NEWCOMB, B.A., B.C.H., D.M. (OXON.), M.R.C.S.,
L.R.C.P. (LOND.), F.I.C., I.M.S.,

*Principal, Medical College, Madras and Chemical Examiner to
Government of Madras.*

I apologise for the title of this address. I made it up hastily and without due consideration before I had written the paper and it is much too wide. What I propose is, not to attempt any systematic treatment of the subject—which if possible in the 20 minutes allotted would be very dull—but to confine myself to a few points which I hope may interest you.

Medical Jurisprudence is largely concerned with poisoning and the first point I would bring to your notice is the great difference in the incidence of homicidal poisoning in Madras and in England or to speak more generally in India and in Europe. In England the number of homicidal poisoning cases is small. There are a large number of accidental, suicidal and industrial poisoning cases; but very few homicidal ones, or at any rate, a very few, which come to light, perhaps say half a dozen or so a year. In Madras on the other hand, the Chemical Examiner gets about 300 human poisoning cases a year, and of these about half are homicidal poisonings. Further, one must remember that these are only ones that are discovered. How many remain undis-

* Delivered at the Rotary Club, Madras, during March 1934.

covered is very conjectural. This contrast is all the greater, because homicidal poisoning is more likely to be discovered in England with its very complete system of death certification than in Madras.

Some of the most interesting of poisoning cases we get are the cases of datura poisoning in which the drug is given not with intent to kill—though sometimes the victim dies—but with intent to stupify so as to facilitate robbery. Datura is a plant which grows as a weed in most parts of India. It has large white flowers and a fruit like a small apple covered with thorns—and hence it is often known as a ‘thorn-apple’. It is the seeds inside the fruit which are used for poisoning. Their effect when swallowed is to produce successively giddiness, dryness of the mouth, noisy delirium, unconsciousness and death or recovery according to the dose given. Every year we get a few of these cases and in each the technique of the poisoning is the same, so much so, that one cannot avoid the conclusion that there must be a widely spread gang or caste of people who make their living out of this sort of poisoning, or at any rate, augment their incomes by it. Their activities are spread all over the Presidency, and it is generally considered that they are the descendants of the Thugs—if not the physical descendants, the spiritual heirs. I expect that most of you have read Meadows Taylor’s book on Thuggi; how this caste of people from both religious and mercenary motives used to fall in with travellers, travel along with them, entertaining them with songs and stories each evening until at last at a given signal, each of the Thugs used neatly to strangle one of the travellers with a silken scarf, and after taking his valuables bury him in a previously prepared grave. The modern Thugs are the datura poisoners and less dramatic in their crimes. Captain Cox, in an article on this subject in the *Police Journal* compared the ancient Thugs to his modern counterpart as an eagle to a carrion crow. It must be remembered, however, that the ancient

Thugs invariably killed their victims, while the modern Thug, although he has no dexterity with a silken scarf shows great expertness in adjusting his dose of poison to stupify, but not to kill the victim.

Here is a typical case of datura poisoning. Two traders were going by train to buy sheep and had Rs. 300 in cash on them. In the train they met a stranger who got into conversation with them and learnt their destination and the object of their journey. The stranger made himself most affable—looking after their luggage while they went for food and even offering to get tickets for them, which however, they declined. He stuck to them all day and until they reached their destination about midnight. There he suggested that they would be more comfortable if they went to sleep in the town instead of remaining at the station, and when they agreed guided them to a house on the veranda of which he proposed their spending the night. Before going to sleep, the stranger produced some sweetmeats which he said would not keep till the next day and shared them with his companions. One of the traders noticed an unpleasant taste and shortly after a peculiar dryness of his throat and asked his friend who was not yet affected, to get him some water ostensibly, and quietly to call some one to their aid. He did, and called a beat constable who on learning that there was a matter of Rs. 300 and odd in the case took them all to the police station which was close by. There, both the victims became unconscious and were sent to hospital and recovered, and the stranger was arrested. Some of the uneaten sweetmeats and a vegetable powder found in the stranger’s bag were sent to us and found to contain datura. The case was clearly proved and the stranger got seven years’ rigorous imprisonment.

Here is another such case :

Two men of the shepherd caste started on a pilgrimage to visit a famous temple. They travelled from their village

by bus, and on arriving at the railway station just missed their train, and had had to wait some hours for the next which left that evening. While waiting, a pleasant-spoken stranger got into conversation with them, and said that he too was going to the temple, and after having found out that the two victims had Rs. 30 on them, suggested that instead of going by the evening train it would be much more convenient to sleep at the station to catch another train in the morning. The two victims had a meal of food they had brought with them, while the stranger went to a neighbouring coffee shop and returned with three packets of *uppuma* (flour cooked with condiments). Two of these packets he pressed on the victims and the third he kept himself. What happened after the victims had eaten their portions of *uppuma* no one but the stranger knows. The two were noticed by the station staff next morning wandering about without clothes and behaving in a peculiar fashion, but as they were obviously mad they were left alone and not interfered with. The elder of the two collapsed and died sometime the next morning in the vicinity of the station and his corpse was found about 3 o'clock in the afternoon, but it was not until the next day when the *post-mortem* examination was made, that poisoning was suspected. The other wandered away and was lost for more than a day when he was found by the police and taken to hospital where he recovered. The stranger was not found till three months later, though a head-constable was put on special duty and travelled over all likely parts of the Presidency looking for him. He was arrested at Egmore station at first on suspicion—a suspicion which became subsequently confirmed by finding packets of *datura* in the room in which he was living and by his identification by the coffee shop proprietor and others. He was tried for murder but only convicted of culpable homicide, the learned judge holding that 'it would be straining the evidence to say that the administration of the poison must in all probability cause death'.

To turn now to another subject. The identification of bullets and fired cartridge cases is a subject which has recently come into importance, and is one of the things the Chemical Examiner's department with the assistance of the police has taken up. Although it is not strictly Medical Jurisprudence some account of how it is done may be of interest. The method first came into prominence in connection with the Lee Stack case in 1924. The Sirdar of Egypt, Sir Lee Stack Pasha, was assassinated as he was driving in a car with an A. D. C. and a chauffeur by a group of persons who fired at him with several pistols from the pavements. All three persons in the car were wounded and the Sirdar died of his wounds the next day. The assassins succeeded in making good their escape. Six bullets were recovered from the wounded and nine fired cartridge cases from the scene of the outrage. An examination of these as to the bore, number, width and pitch of the lands showed that four different pistols had been used. Numerous arrests were made, but the police at first found great difficulty in getting any reliable evidence against any particular person. At last they decided to frighten two of the persons they suspected into running away and arrested them in a train just before they had reached the Frontier, and when they searched them found four pistols on them which corresponded in bore, etc., to bullets and cartridge cases used in the crime. Obviously the evidence against them would be much more satisfactory if it could be proved that some of the bullets which hit the victims had actually been fired from these pistols, and especially the bullet which had caused the Sirdar's death. The Sirdar received three wounds, but only one of them was a fatal wound—I mean a wound which of itself was likely to cause death. By microscopic examination of the bullets recovered from the scene of the outrage and others fired experimentally from the pistols found on the accused it was possible to prove conclusively that these pistols had been used for the shooting and the bullet which caused the death

of the Sirdar had been fired out of one of them. Eight persons were eventually convicted; seven of them were hanged and one got penal servitude for life.

This identification of the bullets is not so difficult as it sounds and we have done a lot of experiments lately and been quite successful. (I make no claim to originality in this). What we did in one experiment was this: We got the police to fire about 24 bullets out of four different revolvers all of the same make and bore into water. The Madras Club baths—(so that the bullets were not deformed) and to collect the bullets afterwards. The bullets were numbered haphazard and the police kept a record of which bullet was fired from which revolver and the bullets were sent to me. With the assistance of a police officer who was lent to me for this work we found no difficulty in sorting out the bullets and reference to the police showed we were right in each case. In an examination of this sort the first thing to do is to see if the bullet corresponds in diameter and in the number, width and pitch of the marks of the lands or grooves of the barrel. All these bullets corresponded in all these respects. The next step is to examine the bullets under a low magnification and to look at the numerous scratches which are visible under the microscope on the lands and in the grooves. Every bullet shows innumerable scratches, but some are more prominent than others and by comparing the various bullets one can find certain scratches which appear to correspond in two or more bullets. To make sure that they really do correspond one uses a comparison eyepiece. The bullets to be compared are each put under a separate microscope the two microscopes being side by side—and the bullets are focussed and arranged until the parts to be compared are seen in the middle of the field of vision. The comparison eyepiece is then put on top so as to connect the two microscopes. This eyepiece is so arranged that in looking through it one half of the field is the view down one of the microscopes, and the

other half is the view down the other. One sees therefore the two bullets,—or rather the parts of them under observation—side by side separated by only a line, so that one can see at a glance whether or not the scratches do really correspond. It is, of course, generally necessary to move one of the bullets slightly to get the scratches exactly opposite each other.

When a bullet has been fired into a person it is often considerably deformed and may be so much deformed that it is impossible to make out anything of markings on it, but generally sufficient of the markings survive for identification.

In one case in which a man was shot with a revolver, although the bullet extracted from his body was considerably deformed, it was possible to prove conclusively that the bullet had been fired from a particular revolver which was found on the accused.

To produce such evidence as this in Court, it is generally considered (and perhaps rightly) that photographs are necessary—and here we have not been quite so successful—or rather the professional photographer we called in did not succeed in getting photographs nearly so convincing as the actual view of the bullets down the microscope. It is, however, perfectly hopeless to expect a jury to see anything down a microscope, even if one were allowed to produce in Court, and unless the Court is prepared to take the word of the man who has done the examination as to whether the scratches correspond or not, photographs are the next best thing.

Some photographs were then shown illustrating the points mentioned.

The Hormones of the Male and Female Genital Glands.

BY DR. MAX DOHRN, PH.D. (GERMANY).

Physiologists distinguish between the glands of external secretion and those of internal secretion, though many glands possess both functions. An example of this combined function is that of the pancreas. The tubular tissues of this gland are concerned with the production of an external secretion, the pancreatic ferment trypsin. The ferment thus produced is carried along the pancreatic duct into the intestine. Apart from trypsin, however, the pancreas, as you well know, produces a very important substance, insulin. This substance, which is produced in the islands of Langerhans does not find its way to the exterior by any duct. It is absorbed through the blood capillaries direct into the circulation and produces its specific effect in distant parts of the body, whither it is transported in the blood stream. Thus in its method of production, its distribution and in its effect, insulin possesses all the characteristics of a hormone.

I remind you that a hormone is a product of a gland with an internal secretion, which when transported into the blood stream incites other glands with internal secretion, thus a hormone incites or inhibits the functions of other glands, and there exists a certain balance in the mutual connection of the glands. Disturbance of this balance causes pathological effects. To the glands with internal secretion belong, except the pancreas, also the thyroid gland and parathyroid gland and suprarenal gland, thymus, the genital glands, ovaries, testicles and the

* A Lecture delivered on the 7th February 1934 at the Medical College, Madras.

hypophysis, which is that appendix of the brain, having the size of a bean, in which one distinguishes the anterior pituitary and the posterior pituitary with several very important functions, moreover there is the intermediate portion.

The study of this internal secretion or endocrinology is a product of recent times. Nevertheless certain isolated scraps of knowledge have been known to man for thousands of years and are even used instinctively in the animal kingdom. For example, we may refer to castration, particularly the castration of males. Mankind has known for many centuries that castration produces a change not only in the sexual condition of the individual but also in the whole habitus, such as the build of the body, the distribution of fat and hair and the nature of the voice. Even buck-rabbits know instinctively the value of castration and attempt to render rivals harmless by biting off their testicles!

It would, however, lead us too far astray to follow the historical developments of this subject in its entirety and we must confine ourselves to a brief discussion of the hormones of the male and female genital glands. A hormone can only be isolated when it is possible to estimate it qualitatively and quantitatively, *i.e.*, when we are in possession of a specific test for it. The test for the hormone of the follicular part of the ovary is the œstrus test, which is known as the Allen-Doisy test, after the names of its discoverers. Sexually mature female mice and rats have a definite œstral cycle and the separate stages in this cycle are accompanied by the appearance of typical cells in the vaginal secretion. In the interval or resting stage, the vaginal epithelium is low and allows leucocytes to pass through it. At this stage a vaginal smear shows chiefly leucocytes together with a few epithelial cells (Diapositive 0·8). Prior to the commencement of heat or œstrus

(the pro-œstrus) the epithelium becomes thicker and no longer allows leucocytes to pass through, so that at this time a vaginal smear contains only nucleated epithelial cells (Diapositive 0·8). Finally cornification of the epithelium takes place and at the height of œstrus a vaginal smear shows only non-nucleated keratin plaques or scales (Diapositive 0·8). During met-œstrus (the stage of recovery) these plaques are fewer and are accompanied by leucocytes and epithelial cells. This circle is being repeated every three or four days. When the ovaries of female mice or rats are removed, no sexual cycle takes place. Vaginal smears of such castrated animals show permanently the appearances characteristic of the resting stage, *i.e.*, numerous leucocytes and a few epithelial cells. By the administration of the follicular hormone, an œstral cycle in all its characteristic phases can be artificially produced in these castrated animals. 24 hours after the injection or peroral administration of a follicular hormone, pro-œstrus is demonstrable and after about 48 hours the vaginal smear shows horny epithelial plaques or scales, *i.e.*, the stage of full œstrus has been reached. The amount of follicular hormone which produces full œstrus in at least 50 per cent of the animals injected is defined as a mouse or rat-unit, according to the type of animal used. A rat-unit corresponds approximately to five mouse units.

With the help of this test, it became possible to thoroughly study the occurrence of the follicular hormone and in this way to find a suitably rich raw material for its preparation. Further it enabled us to isolate the hormone in a chemically pure condition. At first the contents of the follicles, animal ovaries and placenta were used as raw materials. The amounts of follicular hormone which occur in these animal organs are relatively small and range between a few hundred upto at most three thousand mouse units per kilogramme of this

costly raw material. My collaborators and I were the first to find the follicular hormone outside the animal body, *i.e.*, in plants. Of great importance was the discovery that the urine of pregnant women contained as much as 20,000 mouse units of follicular hormone per litre. Still larger quantities are however contained in the urine of pregnant mares, which excrete up to several hundred thousand mouse units per litre, whilst from pregnant cows about four thousand. Ascheim and Hohlweg were able to obtain œstrus-producing substances out of the bituminous material such as peat, coal and petroleum. Through the discovery of so rich a source of supply of the hormone as the urine of pregnant women or mares, rapid progress was made in the isolation and purification of the follicular hormone and in 1929 Doisy in America and Butenandt in Germany announced almost simultaneously the preparation of a crystalline form. Butenandt called this hormone "PROGYNON". Further researches gave a gross formula of $C_{18}H_{22}O_2$.

It soon became obvious that not only this substance but also a whole group of closely related bodies showed the same physiological effect in various degrees. The important discovery of Butenandt that Benzoate of the crystalline follicular hormone (Progynon) exercises a much more protracted effect on the organism led to the development of a substance much more useful therapeutically. A further improvement in the therapeutic possibilities was realised by the preparation of a hydrogenated follicular hormone molecule, which is much more active physiologically and which allows of the preparation of ampoules containing 100,000 mouse units in 1 c.c. of solvent. (This is an oily solution of "Progynon" known as "Progynon-B Oleosum".)

The effect of the follicular hormone on the vagina has been described above in connection with the test for the

hormone. Its action on the external genitalia consists chiefly in an enlargement and reddening of these. In certain types of monkey, for example baboons, the enormous swelling of the genital and anal regions which normally occurs during the period of heat can be produced artificially in castrated females by the administration of follicular hormone. This experiment was first made by Parkes and Zuckermann in England. The following slides show you very clearly the effect in castrated female baboons. This attempt is always positive (Diapositives 0.49, 0.50, 0.67, 0.68.)

It was of particular interest for us to treat a castrated male baboon with large doses of follicular hormone as it could not be foreseen at all whether this would show any reaction. The success was unexpected and surprising. The penis of the animal became considerably swollen whereby however the interior part of the penis remained unchanged and the swelling was observed on the exterior skin only. Simultaneously a considerable swelling could be observed, which however contrary to female animals was to be seen at the anal region only. In our opinion, both these appearances can be explained by the assumption only that the skin covering the penis as well as the anal region of the baboon are of embryonic female origin. (Diapositive 0.69, 0.72, 0.70, 0.71).

In the uterus the follicular hormone produces a marked proliferation of the musculature and the mucous membrane with the naked eye, but even better in histological preparations, the considerably improved blood supply is noticeable. Whereas in the sub-mucosa of an untreated infantile animal, only a few small gland tubules are visible, the sub-mucosa of an infantile animal treated with follicular hormone shows numerous glands and a high cylindrical epithelium (Diapositive 0.30, 0.31). Follicular

hormone produces a complete development of the mammæ. It develops the completely immature organ of the infantile animal into mature, fully developed organ with a complete glandular system (Diapositive 0.32, 0.33). The automatic regulation of follicular hormone production, by means of its action on the anterior pituitary and on the sexual centre in the brain will be discussed separately. Here we need only say that the follicular hormone exercises a marked influence on the function of the hypophysis.

Steinach, and his collaborators were able to show that the follicular hormone exercises a beneficial effect generally in senile animals. Several weeks treatment of senile female rats which had shown no sexual cycle for many months produced an increase in the body-weight of the animals, the number of red corpuscles in the blood and the percentage of hæmoglobin (Diapositive 0.56). Further a considerable improvement in the fur of the animal was noticeable. (Diapositive 0.53). After 2 to 4 months of treatment, when regeneration was far advanced, the appearance of autogenous heat-periods was observed some time after the cessation of the injection of follicular hormone. The same animal has been crossed and gave birth to living young ones. A complete explanation of this phenomena or reactivation is not at present possible. We must assume that it is caused by the effect of follicular hormone upon other endocrine glands and on the central nervous system. The investigations of P. F. Nigst showed that in rabbits with experimental anæmia the administration of follicular hormone led to a rapid regeneration of the blood picture which frequently took the form of over compensation, whereas in untreated animals no compensation at all occurred or took place very much later. The author concludes from his researches that the sexual hormone apparently exercises an intense stimulating effect on the bloodforming tissues, such as the bone-marrow.

women. Whilst in castrates both hormones act directly on the uterus but the situation gets more difficult in amenorrhoeic women notwithstanding the presence of ovaries. It has been observed that in certain types of amenorrhœa bleedings occur during the proliferative phase, without reaching the functional stage which occur often with female monkeys, but seldom with women. Kaufmann directed his tests to replace the shortage of hormones artificially to ascertain when bleeding began to set in, whether it was derived from the proliferated hyperplastic or from the functional pregravid prepared endometrium, *because it is the purpose to restart the menstruation and not to imitate it*. In a secondary amenorrhoeic, a real menstruation can, in some cases be obtained with large doses of a follicular hormone. In these cases the hormone naturally contained in the ovary was not large enough to incite via the hypophysis a luteinising of the follicle, functioning of the mucous membrane and menstruation. Permanent results were obtained not only in the above mentioned cases, but also in cases of so-called interval-bleedings, in which proper menstruation could be established by giving both the hormones. Much more difficult with Kaufmann was the treatment of the primary amenorrhœa. Here a menstruation could be obtained but no permanent results. Kaufmann anticipated through continual treatment to enlist the co-operation of the inter-secretory glands and in some cases of high grade infantilism of the genitals the very small uterus had been developed to a remarkable growth.

We now come to the discussion of the male hormone. It is a remarkable fact, that until now only the female hormone has been found in nature in great quantities as mentioned before not only in vegetables of our daily food, but also in coal, peat and petroleum. This puts the question in our mind whether the male hormone is being formed in

the female organism. If man takes daily in his nourishment female hormones, the female hormone has been found in his urine and *vice versa* with women taking a male hormone. According to the good work of Goldschmidt on the butterfly *Lymandria*, we know, however, that primary intersexes (*i.e.* intermediate sex) are developed in which hormones are situated beside one another until at a turning point, as Goldschmidt says, one of the hormones wins the upper hand thereby beginning the anatomical structure in the difference of the female or male offspring. We do not know whether in a human being similar physiological actions are brought about. But we know that as in the urine of the women, male hormones are expelled, so is the case with female hormones in the urine of men. Both hormones are also present within the organism of men and women. Why is it so? Because reactions—for example—the growth of seminal vesicles develop quicker under the influence of a mixture of both hormones, as Laqueur in Amsterdam could prove experimentally. Here may be mentioned that it has not been successful up to now to demonstrate the test for a male hormone from a vaginal smear, even also to show with female hormone the growth of the cocks-comb.

As raw material for the preparation of the testicular hormone, we use either animal testicles or human male urine. Unfortunately, in neither of these two forms of material are there large enough quantities of the hormone. From motives of economy we usually employ the urine of young sexually mature men. The male hormone is tested by the cocks-comb test. In young, castrated cocks, so called capons, the comb remains completely undeveloped (Diapositive H. 1.) If these animals are injected with a active extract from the male urine, the comb begins to grow and finally the animal presents the appearance of fully developed cock (Diapositive H. 2). By preparing

photographic shadows of the comb and estimating the increase in surface area after the injection of male hormone, my collaborators have worked out an exact test method. The dosage which under certain conditions, produces a 10 per cent increase of the surface of the comb is defined as a capon unit. In infantile or castrated mammals the administration of the male hormone produces the development of the sexual apparatus, penis, prostate and seminal vesicles to a size and functional activity equal to that of the normal sexually mature animal. (Diapositive H. 12). Up to the present only male urine has been used to obtain the large doses necessary. Quite recently chemical research has opened up the possibility of converting follicular hormone artificially into the male hormone. At this place the remark will interest you that the hen is bisexual, which means that she has on the left an ovary and at the right a crippled testicle. That the testicle is crippled proves that after extirpation of the ovary no apparent change takes place. Only after implantation of testicles or application of male hormones this neutral animal shows growth of a cocks-comb and regular cocks-plumage so that such an animal has quite a peculiar appearance.

The genital glands, ovaries and testicles do not however work independently. The researches of Evans, Ascheim and Zondek and others have shown that the anterior pituitary exercises a controlling effect over the male and female genital glands. The anterior pituitary produces, amongst others, an internal secretion, the presence of which is essential for the normal function of the sexual glands. *Without the hypophysis puberty does not occur and there is no sexual cycle.* Conversely, the anterior pituitary is influenced by the genital glands. Castration leads to characteristic histological changes in the anterior pituitary, which consists in the appearance of the so-called

castration-cells (Diapositive 0'64). The biological examination of such anterior pituitary glands shows an increased contents of gonadotropic hormone. The administration of sexual hormone, *i.e.*, of female or the male hormone, to castrates prevents the development of these castration changes in the anterior pituitary. On the ground of special experiments which they made, my collaborators conclude that the regulating action of the genital glands on the hypophysis is not produced directly but indirectly via sexual nervous centre in the brain. They implanted, however, into the kidney of a rat the anterior pituitary of a normal animal and found that although this experiment healed well, it did not partake in the physiological actions of the normal pituitary, *i.e.*, the one situated in its normal position. They describe this relationship between the anterior pituitary and the genital glands as follows:—The hormone secreted by the genital glands under the influence of the gonadotropic hormone of the anterior pituitary acts directly or indirectly on a sexual nervous centre, which as a result of this impulse regulates the secretion of the anterior pituitary. A decrease or complete absence of the genital hormone leads by its influence on the sexual centre, to an increased activity on the part of the anterior pituitary whereas an increased production of the genital hormone leads in the same way to a reduction in the production of the gonadotropic hormone of the hypophysis. That is to say the sexual nervous centre of the genital glands regulates the activity of the anterior pituitary. Changes in its activity would explain the occurrence of puberty and senility and of certain pathological conditions.

Out of the large number of effects, these genital hormones are known to exercise to-day, I have been permitted to discuss a small selection only. We are only on the threshold of these researches.

Inaugural Address.*

BY DR. A. LAKSHMANASWAMI MUDALIAR, B.A., M.D., F.C.O.G.

LADIES AND GENTLEMEN,

Permit me to express my grateful thanks to you for the honour you have done me in asking me to preside over the deliberations of the Obstetric and Gynaecological section of this Conference. I can assure you that it was with some hesitation that I accepted your invitation, because I felt that the choice might have fallen on worthier shoulders. However as I knew that your invitation was in reality a compliment extended to the school of Obstetrics in Madras and not a personal compliment, I had no option but to obey the call when it came.

Your great City has always been in the van guard of progress and particularly in affairs concerning our profession it has been a matter of great gratification to all of us that Bombay has given the lead and the correct lead in regard to the future of the medical profession. I venture to express the hope that this Conference that you have organised, with so much of elaborate care, will prove equally fruitful in its results and that we shall congratulate ourselves at the end of the Conference not only on a very successful session but on some positive steps taken for the future of Obstetrics and Gynaecology.

At the present time you are no doubt aware that in almost all civilised countries, a great deal of attention is being paid by the profession and the general public to problems pertaining to Maternity and Child Welfare. It is no exaggeration to say that the public conscience has been roused in this direction as it has never been roused before and as a consequence thereof, the Governments of the countries have been forced to take prompt measures to bring home the invaluable gifts of modern midwifery to the public at large. It is unfortunate that despite

Inaugural Address

303

all the great advances that have taken place in the field of surgery and medicine, their applied results in the domain of obstetrics have not yielded such gratifying fruits as one might have hoped. It is painful to realise that the maternal mortality figures have been stationary in many of the countries within the past three decades, despite our great advance in our knowledge of puerperal sepsis and improvements in the technique with obstetrical work in general. It is the realisation of this fact that led to the appointment of a Departmental Committee by the Ministry of Health in Great Britain in 1929, whose interesting report was published in the fall of last year. It is again this factor that led to the calling in of the Whitehouse Conference in the United States of America by President Hoover in 1931 and the interesting reports of this Conference presented at the close of that year are certain well worth perusing. It would thus be seen that the need for enquiry into the conditions pertaining to maternal mortality has been very generally recognised and most countries have taken steps to appoint Committees of inquiry and to launch on schemes of investigation from time to time. One looks in vain to the several provinces of India to find reports of previous investigations in this direction and so far as intensive investigation of the causes in any particular city is concerned, I am afraid that there are few instances indeed of such an investigation having been carried out. The most recent of such investigations was the one that was carried by the Madras Corporation and it was my privilege to submit a report to the Government of the Province based on the investigation of the maternal deaths that occurred during a twelve-month period in that City. This report has been of some use in giving us an accurate idea of the causes of maternal mortality and in making us realise the defects, such as they may be, in the working of maternal and child welfare schemes in the City. I venture to believe that a similar investigation carried on in other large cities and over wide areas would be equally fruitful of good results and that this is one of the directions in which it ought to be possible for the authorities

* Medical Conference, Bombay : Obstetric and Gynaecological Section.

concerned to take early steps with a view to adopt such measures as may be necessary for lessening the heavy incidence of maternal mortality. It is no compliment to this country that the maternal mortality rate in big cities and in provinces is 3 to 4 times as heavy as it is in most of the civilised countries in the world. There are no doubt certain factors incidental to a tropical climate but after all such accidental factors have been taken into account, the fact remains that the majority of the maternal deaths are of a preventable nature and ought to be prevented. Few people will dispute the fact that midwifery to-day is the key-stone in a nation's progress. The future of the childhood of the nation depends upon an efficient midwifery service; the future of the womanhood of the nation depends even in an increasing measure on a well-conducted maternity scheme. I believe that it will be our privilege, as it is our duty, not merely to acquaint ourselves with all the facts connected with the incidence of maternal mortality but to weigh these facts, to assess them, and to come to a sound judgment as to the reasons that lead to this heavy incidence of maternal mortality and the steps that ought to be taken to lower such mortality. I do not feel that I shall be exaggerating when I say that while the maternal mortality in Denmark and Norway is about less than 3 per mille, in Madras it is over 16 per mille; and perhaps in many of the cities of India, the incidence is not less. The ease with which it was possible to organise a maternity service in cities like Madras and Bombay, the readiness with which the public avail themselves of the facilities afforded by such maternity service, makes one realise that if only proper organisation and efficient maternity service were available, the Indian public and the public in any other country will not lag behind in accepting such service and appreciating the utility of such service. Perhaps one aspect of the problem requires to be emphasised. When we speak of a large number of maternal deaths being preventable, we mean it in a slightly different sense from what may be understood by preventable disease, usually so-called in public health reports. The difference needs some

emphasis. Many of the infectious diseases are preventable in the sense that large measures calculated to improve the sanitary surroundings and perhaps to deal with the problem as a problem of the community, may help in reducing the incidence of such infectious diseases; in regard to maternal mortality, it is individual attention that is required for every single person. The personal factor has therefore to be emphasised and from that point of view, the problem of the prevention of maternal mortality is different from the prevention of mortality due to many other diseases. It follows, therefore, that in the prevention of maternal mortality, the public health officer by himself, would not be in a position to do all that is required if very active co-operation of the practitioners is not available. The point has been well elaborated in the Report of the Chief Medical Officer of the Ministry of Health, Great Britain, for the year 1931. Sir George Newman, discussing the problem of maternal mortality and referring to the report of the special committee for investigating into the causes of maternal mortality, states:—

“The outstanding result of the Committee's labours is to demonstrate beyond all doubt, that the crucial and pressing necessity for the solution of this problem is not mere elaborate administration, nor even great expenditure, but sound midwifery. Where that is available, be the organization ever so simple, the mortality falls at once. The provision of an elaborate national scheme, and a complex and comprehensive organization, is of no avail and of no security, unless there be competent professional assistance available during pregnancy, at the bedside, at the moment of delivery and afterwards during the puerperium: in a word, antenatal, natal and postnatal supervision. That ‘error of judgment’ should occur in 40 out of 100 preventable deaths, is a formidable and an impressive discovery. No administrative scheme can, of itself, change that. That can only be changed by improved midwifery and greater care and skill at the bedside. Not only is this the deliberate and considered opinion of the Committee, but it is within the knowledge of

every competent and experienced obstetrician. Moreover, the actual facts which force their attention upon us, confirm this view. There is no possible escape from them. What is being achieved in certain groups of cases, can be achieved in others. Where there is :

- (a) adequate antenatal supervision,
- (b) skilled midwifery and proper attention to detail at the bedside,
- (c) vigilant postnatal care, and
- (d) hospital treatment, when necessary, the mortality is a quarter of the national average."

These words deserve to be emphasised and seriously considered by all those interested in any scheme calculated to lower the maternal mortality. There is a tendency in certain quarters to believe that when once antenatal clinics are established, maternity homes are opened, midwives are entertained and some sort of maternity service is established in the area concerned, there will immediately be a fall in maternal mortality; on the other hand, if one were to venture to make a submission, pessimistic as it may appear at first sight there is a danger in rushing through schemes of this nature without the proper personnel and the trained staff, and without proper safeguards. It is likely to lead to disrepute and produce results far from commensurate with the expenditure involved and the pains taken.

This brings me on to the subject of the teaching of Obstetrics—a subject that has doubtless attracted the attention of some teachers of obstetrics in this country. Whatever might have been the justification in years gone by for the suggestion that obstetrics was not taught in this country as it ought to be for lack of adequate facilities, I think it will be conceded by even the most persistent critic, that to-day it can well be claimed

that the teaching of obstetrics has improved to such an extent, that maternity institution in this country not only compare favourably with similar institutions in many other countries, but they are decidedly giving a lead in regard to the teaching of obstetrics. Still, I believe there is room for advance as there ought to be in a science so vast in its extent and growing so rapidly as the science of obstetrics. Those of you who have been following the literature on the subject of the teaching of obstetrics would realise that other countries are by no means satisfied with the standards that have been adopted. I would in this connection invite your attention to the Lloyd Roberts Lectures delivered by Mr. Comyns Berkeley in 1929. A perusal of that report will convince you that the teaching of obstetrics in Great Britain and in other countries is by no means satisfactory; in fact, it was to me a matter of surprise that in some of the schools, so little facilities were available to the medical students for the witnessing of obstetric operations and for the follow-up of the more serious types of cases in obstetrics. The large maternity institutions in cities like Bombay, Calcutta and Madras afford facilities which are certainly the envy of many visitors to this country; and I have no doubt whatsoever that students trained in these institutions are in a position to get a much better grounding in the essentials of the science than those who are allowed to take their training by merely visiting a few extern cases, most of them normal, and attending didactic lectures. We are only now getting the profession to realise and particularly those responsible for medical education in this country as elsewhere that obstetrics and gynaecology is the third great branch of medicine, so essential to the general practitioner that it should occupy a place not inferior to that of surgery and medicine, both in the interests of the general practitioner and of the general public. It cannot however be said that these subjects have received all the attention that they deserve, and I hope it will be possible for you in this conference and in subsequent years to give a lead in regard to the teaching of obstetrics to Indian Universities, so that the curricula may be

shaped with a view to turn out efficient practitioners ground in the essentials of obstetrics and gynaecology. This duty is cast upon you as the most competent authority in giving expression to organised opinion and I venture to submit that particularly in view of the inauguration of the All-India Medical Council at a very early date, the need for focussing opinion on this great problem is great and urgent. As one connected with the teaching of obstetrics for over 20 years, may I submit that we can yet improve the teaching in this line and demand a greater amount of attention from the medical student to these essential subjects, rather than to the many small specialities with which the medical curriculum is unfortunately overcrowded to-day. I hold strongly to the belief that the duty of the teacher is not to be misled into an enthusiastic development of the side issues of medicine, surgery or obstetrics, but to give the student the fundamentals, the firm foundations, on which he can build up, with his own knowledge of medicine, to whatever speciality he may take to later. I shall not go into greater details on this subject; but I think you will agree with me that the tendency to-day in most universities, Indian and foreign, is unnecessarily to over-burden the medical curriculum with the smaller specialities which occasionally loom large in the eyes of the specialists and unfortunately are forced into the curriculum of medical studies. Great as is the need for an improved teaching of obstetrics all over, the need for encouraging and actively organising post-graduate teaching in obstetrics and gynaecology is, in my humble opinion, even greater. Whatever may be the training we may give to the medical student, the fact must be candidly admitted that unless he receives post-graduate training after he has passed out, he will not be in a position to take seriously to the practice of obstetrics. The difference between obstetrics on the one hand, and its twin sciences, medicine and surgery, is this: that while a practitioner may be in a position to pick and choose his cases, to consult specialists, probably to weigh the *pros* and *cons* of the case with sufficient time at his disposal with a view

to find out whether he will be able to tackle it or not, the practice of obstetrics does not lend itself to these convenient methods. A practitioner called for a case of midwifery may have to face some of the most difficult problems which may well tax even an experienced obstetrician. Unfortunately very little sympathy will be available from the public—less so from the relations of the patient; and if anything goes wrong, the practitioner is blamed most severely and perhaps with least justification. It is for this reason that a post-graduate training in obstetrics is so essential to all those who intend practising obstetrics whether as a speciality and all by itself, or as a side work in a general practitioner's line. It is with this view that the University of Madras recently started a Diploma in Gynaecology and Obstetrics which demands of the candidates a thorough practical training besides such knowledge of the theory as is requisite for the correct practice of the art. I believe that it will be a good thing if the larger maternity institutions all over India were to give sufficient scope for post-graduate training. I believe also that post-graduate training must be much more systematic than it is at present, and I hope that we shall be in a position ere long to lay down the essentials of what should be an efficient post-graduate training in Obstetrics and Gynaecology.

This leads me on to the need for revision courses or special lectures in our speciality. To the large number of busy general practitioners, there is no gainsaying that these special lectures will be of great benefit. The recent advances in the field of medicine are so many and so varied that it is not possible for even the most studious of the general practitioners to follow these various lines of progress and to adopt them in their every day practice. The specialist also cannot be oblivious of these advances. To-day, the advances in one field is so easily applicable to other fields, that unless opportunities are available for such post-graduate lectures, it will be easily realised that the strain of keeping unto the mark will be a heavy one both on the general practitioner and the specialist.

This again leads me on to the need for starting Association of obstetricians and gynaecologists. While there are so many associations of medical men in various cities and in different provinces which are doing excellent work and which are naturally of great help to the practitioners concerned, I have reason to believe that the time is come when in this country, there should be separate organisations for obstetricians and gynaecologists. The intensive discussions that will be rendered possible by such associations, the greater amount of interest that such associations will infuse into obstetricians and gynaecologists practising these twin arts, and the stimulus that it will give for the furtherance of research, is my justification for the plea for starting a Provincial Obstetric and Gynaecological Association in every province in this country. Very recently, we in Madras have inaugurated an Obstetrical and Gynaecological Society of Southern India and I hope and pray that that association will gather in strength and grow as years roll by, much to the advantage of the profession and to those specialising in this branch of medicine. I hope it will be possible for you in this presidency with the wealth of talent and material at your disposal, to have a permanent provincial organisation which will render it possible for a more effective co-operation on an all-India basis between the different associations in other provinces. May I also venture to express the hope that other provinces will follow suit and that ere long we shall have a net-work of provincial associations of obstetricians and gynaecologists, whose deliberations will be of the greatest advantage not merely to the members of such organisations, but to their sisters and brethren in other provinces and in fact to the whole profession of obstetricians and gynaecologists throughout the world. And here may I venture to make a special appeal to you and to many others that may not be present here this afternoon—an appeal which I consider is not a day too early. We have in this country many excellent journals no doubt, but I think the time is come if it is not already overdue—when we should have a Journal of Obstetrics and Gynaecology of the Indian Empire, wherein will be concentrated the activities of

all obstetricians and gynaecologists through the length and breadth of this country. I need not labour the point very much that a journal of that description will be productive of a great deal of good in the furtherance of the science of Obstetrics and Gynaecology. To-day the specialities demand so much by themselves, that it is futile to think that we can appeal through a general medical journal to those interested in these specialities—much less to the general practitioners who may not find it so very useful to follow some of the minute details of the many controversial topics associated with Obstetrics and Gynaecology. Every civilised country has got its own Journal of Obstetrics and Gynaecology. The American Journal of Obstetrics and Gynaecology, the Japanese Journal, the Journals in France, Germany, Spain, Italy and many other journals bring home the fact to us that it really is unfortunate that upto this late day, we in India have not thought it desirable to start a journal of Obstetrics and Gynaecology. It is no doubt true that the "Journal of Obstetrics and Gynaecology of the British Empire" has tried to gather the opinion from obstetricians and Gynaecologists in different parts of the Empire; but I think you will agree with me that while we are thankful for the generous publication of some communications from this country, it is unreasonable to expect that articles in great numbers could possibly find publication in a journal of that description, where space is limited and which has to serve over so wide an area. A "Journal of Obstetrics and Gynaecology for India" will be of invaluable help to the junior members of the profession in bringing to the notice of their brethren in this country as well as in other countries, their rich experiences; and believing as I do, that the younger practitioners have got a greater future before them than some of us who are somewhat aged, I venture to express the hope that the starting of such a journal will receive the enthusiastic support and appreciation of the younger members of our profession. In this connection, may I state that this particular proposal was considered at a meeting of obstetricians and

gynæcologists in Madras and they have asked me to express their readiness to do all they can to launch such a journal in the coming year. I hope ere long to have the opportunity of discussing the details of the proposals that I have been asked to place before you and I sincerely venture to hope that the idea of a journal will appeal to you and that we shall be in a position to start a quarterly journal of Obstetrics and Gynæcology in the next year.

This brings me on to the subject of research in the field of Obstetrics and Gynæcology. I venture to express the regret that unfortunately, few facilities have been given so far by the authorities concerned to encourage research, particularly clinical research, in the field of Obstetrics and Gynæcology. No where is the need for research greater, and to-day we can safely say that research in this country will be productive of an immense amount of good to the general public. There are many diseases wherein research is urgently required. To mention but a few—Osteomalacia, which is a disease non-existent in southern India, but is so rampant in other parts, is well worth a greater amount of attention. The incidence of eclampsia and its varying mortality in the different provinces; the peculiar factors associated with diet, communities and habits of the people, do require some closer investigation. The subject of the anaemias of pregnancy, on which you in Bombay and we in Madras have been labouring for some time, should progress much more. The incidence of contracted pelvis and its bearing upon childbirth on which one of your professors, Mr. Disai, has done such good work, the need for finding out the cause of frequent abortions in certain types of cases; the many problems associated with tropical diseases complicating pregnancy; the incidence of puerperal sepsis and the many problems attached thereto; the role of vitamins in the causation of certain conditions associated with pregnancy and childbirth—these and many other problems are as much in the cognisance of the obstetrician in this country as elsewhere. And I think we may,

with emphasis, state that research on these lines is bound to be fruitful. In the Report that I submitted to the Corporation of Madras and about which I spoke at an earlier part, I have expressed myself in strong terms that it is the duty of the Government and the Corporation to assist such research work by granting a few scholarships to brilliant young medical graduates, who will be working under some of the clinical teachers and by helping with grants-in-aid and affording such other help as may be needed by the various persons interested in research in these directions. Many are the problems that await solution in Obstetrics and Gynæcology; and many are the peculiar problems of tropical countries such as India, which can only be tackled by Indians interested in the development of this science. The idea that research work is not the ordinary duty of the clinical teacher should be given up, for I believe that in certain fields of research, a clinical teacher is *par excellence* the best person to undertake research. There is—I am sorry to say—an unfortunate tendency to consider all research as mere laboratory research and while I do not in the least bit undervalue the great amount of good that can come from laboratory research, I venture to believe that a closer co-operation of the laboratory research worker and the clinical research worker will be productive of a much greater amount of good; at any rate, in the field of Obstetrics and Gynæcology, this is undoubtedly so. In Edinburgh, for instance, there is a very good research section under Prof. Screw which works in the closest co-operation with the clinical side of the Royal Infirmary and Prof. Johnstone and others. It is research of this description that we ought to encourage and I hope it will be possible through your influence to interest the various universities, some of the corporations and the provincial Governments, to take a more sympathetic view in regard to the encouragement of research in such subjects.

Ladies and Gentlemen, I do not wish to tire you with any further remarks on the subject. I only tried to place before

some of the thoughts that occurred to me and some of the problems that I consider are pressing problems. I hope at the end of the session—which I am am sure from the nature of the papers that are to be read and from the distinguished persons that are to read these papers, will be a great success—we shall have profited a great deal and if some of the suggestions that I have ventured to put forward before you commend themselves to you, I shall be really gratified and exceedingly grateful. It will be our endeavour in Madras to do whatever we can in whole-heartedly co-operating with you in furtherance of the great task that lies ahead of us. It is up to us now to shoulder the responsibilities and to show to the general public that we are fully alive to the needs of the situation and that in us they can confidently expect disinterested advice and all helpful suggestions to improve the condition of the motherhood of the country.

“Calcium Therapy” A Synopsis*

Calcium therapy is indicated in conditions dependent upon or associated with calcium deficiency. Calcium has many therapeutic applications apart from these specific indications. The production of a pharmacological calcium effect may be accomplished by measures which tend to increase the serum calcium and by agents which supposedly increase the ionisation of calcium without materially affecting the serum-calcium level. Parathormone and soluble calcium salts are chief among the former while HCl and ammonium chloride and lactose are included in the latter class. Calcium therapy, to be successful must be based upon an appreciation of factors involved in the absorption, intermediary metabolism and excretion of calcium. The absorption of calcium is governed by three factors: (1) The hydrogen-ion concentration within the intestine; when the pH rises above 7 the Ca is precipitated in the form of tertiary phosphate and to a lesser extent as carbonate. Insoluble soaps are formed with the fatty acids present. (2) The relative proportion of other substances within the gut: diets containing excess of phosphorus in proportion to calcium lessen the absorption of calcium owing to the formation of insoluble tertiary phosphate. Excess of fat is another factor. (3) Vitamin D. This is essential to calcium metabolism. When administered to a rachitic individual it results in increased retention of calcium. It certainly increases absorption of Ca from the gut but a more important effect is said to be “The elevation of blood phosphate, by promoting the increased break down of organic phosphates thus causing increased deposition of calcium with lessened excretion into the intestine and consequent better absorption of phosphate therefrom.” (Bergeim).

* Abstracted from “Calcium Metabolism and Calcium Therapy” by A. Cantarow, J. C. David.

From a practical point of view the agents most useful in producing the pharmacological effects of calcium are, soluble Ca salts, parathyroid hormone and ammonium chloride, singly or in combination.

1. **Calcium salts**—(a) *Oral Administration*.—Soluble calcium salts properly administered are absorbed satisfactorily and can produce an appreciable and, indeed, a considerable rise in the level of serum calcium. A great many salts have been prescribed, including the chloride, lactate, phosphate, bicarbonate, carbonate, nitrate, sulphate and glycerophosphate. The greater the solubility of the salt the better the absorption. The chloride which is used extensively has a very disagreeable taste and is irritating and not well tolerated by the gastro-intestinal tract. So calcium lactate, although not so soluble and having a lower calcium content has gained popularity. A much more satisfactory salt is said to be the *Gluconate* (Sandoz), a calcium salt of gluconic acid. It is tasteless and decidedly not so irritant as the other calcium salts, is fairly soluble and has been shown to be physiologically equivalent in equimolecular concentrations to the chloride, being at the same time less toxic. The administration of Ca salts in amounts ordinarily prescribed is futile. The gluconate must be given in doses of 60 grs. three or four times a day, and the chloride or lactate in quantities of 20 to 40 grs. The maximum absorption has been shown to occur when upper intestinal alkalinity is lowest. So Ca salts are best given 4 hours after or half an hour before meals in water. Nothing should be taken between meals except perhaps lactose which enhances the absorption by increasing intestinal acidity. If these precautions are followed a rise in serum Ca of 2 to 4 mg. above the normal may occur in one to two hours.

(b) *Subcutaneous and Intramuscular injections*.—The chloride and the lactate cannot be given by these routes

without producing an immediate severe inflammatory reaction and necrosis within 48 hours. The pharmacopoeial dose of the chloride for intramuscular injection is as small as 1½ grs. rather a futile dose. The gluconate can be injected without any severe local reactions. 10 c.c. of a 10 per cent. solution is the usual dosage repeated daily or oftener as necessary. A rise in serum Ca of 3 to 4 mg. can be thus produced in 20 minutes, gradually declining and reaching the normal level in 6 to 8 hours.

c. *Intravenous route*.—Practically all soluble salts can be given in this way, the chloride and gluconate being the commonest. The usual dosage is 10 c.c. of a 10 per cent. solution of the chloride and 10 to 20 c.c. of a solution of the gluconate of similar strength. In the case of the latter no irritation is produced by the accidental leakage of the solution into the perivascular tissue. The injection is made slowly at the rate of about 2 to 3 c.c. per minute in order to avoid unpleasant subjective sensations. An increase of 80 to 100 per cent in the serum-calcium concentration occurs within 5 minutes, the pre-injection level being regained in about 2 hours.

2. **Parathyroid hormone**.—This is an obvious remedy for hypo-parathyroidism. This hormone has been isolated in a pure form and calcium therapy has been immensely enriched by this addition. The most satisfactory mode of administration is by intramuscular injection. In human subjects the rise of serum calcium is very quick reaching a maximum in 6 to 8 hours. If this hormone is given for a long period the intake of calcium and phosphorus should be increased so that withdrawal of excessive quantities of these elements from the bones may not occur.

3. **Ammonium chloride**.—Acidosis may be produced by the administration of this salt which in the tissues liberates HCl with the formation of urea. Comparatively large doses,

20 to 30 grs. three to four times a day may be given preferably in conjunction with calcium. Dilute HCl is also used but is not so satisfactory. It is believed that a calcium effect may result from the production of an increase in the H ion concentration through the effect of the latter in raising the ionisation of calcium.

Use in Hypoparathyroidism and Tetany:-

Parathyropenic tetany may be produced by operative procedures around thyroid where the major portion of the parathyroids has been inadvertently removed. Here the indication is to give parathormone. Calcium alone may temporise but cannot have any lasting effect. Both may be combined.

Maternal Tetany is a rare condition occurring in pregnancy and lactation. Its pathogenesis is not clearly understood. The serum calcium is diminished. Treatment is similar to the above. Fortunately the condition is temporary.

Idiopathic Tetany is of two varieties, (1) *Juvenile*, occurring in children from 3 to 18 years of age and (2) *Adult tetany*. The clinical symptoms of both are alike and their etiology may also be similar. It has been noticed that the juvenile form, particularly, does not respond to administration of calcium salts and parathormone unless the antirachitic factor in some form is added as well. Parathyroid deficiency apparently plays a more important part in the pathogenesis of the adult type. The serum calcium is diminished in both forms. A combination of calcium and parathyroid therapy usually results in the disappearance of the symptoms of adult idiopathic tetany. In the juvenile cases prompt relief frequently follows the administration of cod liver oil or irradiated ergosterol. It will frequently be found that in the cases in which parathyroid deficiency is the predominating feature the serum-phosphate concentration is

increased, whereas in those requiring vitamin D therapy this factor may be normal or subnormal. In ordinary dosage, vitamin D therapy results in an increase in serum phosphorus and in increased retention of calcium and phosphorus, where as the administration of parathyroid hormone is followed by a decrease in serum phosphorus and increased elimination of calcium and phosphorus; this is probably because vitamin D in therapeutic doses causes an increase in serum Ca largely by increasing the absorption of calcium from the gut while parathormone produced the same result by mobilising calcium from the bones and perhaps the tissues generally.

Infantile Tetany occurs in children in the first two years of their life. Hess considers that practically all infants with signs of tetany have rickets to some degree. Deficiency in the anti-rachitic factor seems to be of greater importance than hypoparathyroidism. Calcium salts should be given as a routine although not specific. 80 to 120 grs. daily may be given of the chloride in divided doses. Lactose may be added. The chloride has a double effect of increasing the serum calcium and causing acidity which also favours an increase of the ionised calcium in the blood. The gluconate may be given in twice the above dosage. Ammonium chloride may be given in big doses. Irradiated ergosterol and ultra-violet radiation may be regarded as specific.

Osteomalacic Tetany. Here calcium salts along with Vitamin D should be given and produce good results.

Tetany in Sprue and Coeliac disease. In coeliac disease in infants serum calcium is low. This is perhaps due to defective fat absorption which leads to formation of calcium soaps in the bowels. Oral calcium is of no use. Dietary soaps in the bowels. Oral calcium is of no use. Dietary treatment should be first adopted. Tetany occurring in sprue may be treated by calcium, parathyroid and vitamin D. The pathogenesis of sprue itself is not certain.

and apparently complete cures are said to follow intravenous and intramuscular administration of calcium gluconate in doses of 200 to 300 c.c. of a 10 per cent solution. Further investigation of this extremely interesting condition may throw considerable light upon certain complication of pregnancy and lactation in the human species.

Acute Hepatic insufficiency.—The administration of carbon tetra chloride in dogs under certain conditions produces acute hepatic insufficiency, the characteristic pathological lesions being, those of acute central necrosis. Minot and Cutler found that calcium protected against such lesions and also tended to cure them. Those observations have obviously an important bearing upon the therapeutic management of clinical states of acute hepatic insufficiency. It is improbable that the pathological lesions caused by the continuous action of hepatic poisons can be prevented or modified by calcium but the manifestations of acute hepatic intoxication are unquestionably beneficently influenced by such therapy. Calcium gluconate and parathormone may be given by injections. The latter may, if necessary, be given intravenously. In addition carbohydrates in large quantities form an essential part of the treatment of hepatic disorders since it is well recognised that the presence of an adequate amount of glycogen serves to protect the liver from injury. The protein intake may be diminished in order to lessen the degree of guanidine retention, which perhaps plays a most important part in the causation of the toxic manifestations of acute hepatic injury.

In Jaundice.—Calcium has been used in jaundice for years. No abnormality of calcium metabolism seems to exist in jaundice. But it is all the same maintained by clinicians that the administration of calcium salts is an important factor for the control of the

haemorrhagic diathesis of obstructive jaundice. Experimental evidence of an indirect nature, however, is not entirely lacking to show that there is a decreased availability of calcium in jaundiced people. Lee and Vincent found that the blood from jaundiced patients can be made to clot more rapidly by the addition of calcium. Walters and Bowler noted that twice as much calcium is required to raise the serum calcium to the same degree in jaundiced as in normal dogs. These observations suggest the existence of a calcium deficiency not otherwise apparent. Increased capillary permeability is an important factor in the causation of the slow oozing type of bleeding from incised or injured tissues in jaundice. This may represent a diminution in the availability of calcium or a direct bile salt or pigment action. Calcium may also exert a favourable influence in liver function. Whatever may be the underlying mechanism there can be no doubt as to the beneficial effect of the routine pre-operative use of calcium salts in obstructive jaundice. In addition to calcium a low protein diet combined with a high intake of carbohydrate is advisable.

In Haemorrhage.—Wright in 1891 recommended the use of calcium in haemorrhage. He stated that an increase in the coagulability of the blood in normal individuals and in haemophilia could be obtained by giving 1 gm. of calcium chloride three times a day. This statement has been confirmed and refuted by numerous workers and the literature on this point is extremely confusing. It, however, appears doubtful if any significant decrease in coagulation time can be achieved by oral administration of calcium salts. More success has attended intravenous injection. The results of clinical trial cannot be entirely discounted because of negative experimental experience, especially since there are perhaps several factors which cannot be accurately studied

experimentally. The favourable effect of calcium therapy, if it is obtained at all, is produced by a sharp, relatively transient rise in serum calcium level or by a series of such increases. Therefore, calcium chloride, 5 to 10 c.c. of a 10 per cent solution, or the gluconate 10 c.c. intravenously, repeated if necessary, at 4 to 6 hour intervals, constitute the best form of calcium therapy. The gluconate may be given intramuscularly, also. The prolonged maintenance of an elevated blood calcium level may be associated with a secondary increase in coagulation time, with increased bleeding. The reason for this is not clear. The haemostatic action, when it occurs, occurs coincidentally with a decrease in coagulation time whether this had been previously normal or prolonged. Internal bleeding of a slow oozing nature respond best, as for example, in pulmonary tuberculosis, uterine haemorrhage, intestinal bleeding, nasal and tonsillar haemorrhage. If cessation or lessening of haemorrhage does not occur after three injections of calcium or parathyroid, their continuous administration is usually futile.

In Inflammatory Oedema.—Increased capillary permeability is now recognised as an important factor in the causation of inflammatory oedema. The exudates have a high protein content, most capillaries being normally impervious to protein. In addition, there may be in the areas of inflammation an increased osmotic pressure and an increase in the hydrogen ion concentration, both factors tending to cause a local accumulation of fluid. Because of the inhibitory effect of calcium upon cell permeability, its therapeutic employment for the control of inflammatory oedema has been suggested. Typical inflammatory reaction following application of mustard oil was found to be prevented by the administration of calcium salts. Calcium salts have been used orally or parenterally in the treatment of acute inflammatory conditions, particularly sero-

fibrinous pleurisy. Zau reported excellent results obtained by the intravenous use of calcium salts in the treatment of gonorrheal epididymitis. The results of calcium therapy is extremely variable and the efficacy depends on the severity of the inflammation. In general it may be stated that calcium is much more effective in preventing the full development of inflammatory oedema than in influencing an already existing process.

In Non-inflammatory Oedema.—This type of oedema as typified by that accompanying cardiac and renal disease presents a problem which is only imperfectly understood. The oedema fluid in these cases contains little protein and so increased permeability of capillaries may not play such an important part. The oedema cannot be explained by a diminution of the functional area of the kidney in nephritis or as the result of increased venous pressure. In the cardiac type, owing to failing circulation there is an inadequate blood supply to the organs and imperfect metabolism may occur in these cells and the metabolites, instead of being rapidly removed, accumulate in the tissue spaces; the local osmotic pressure rises and retention of fluid follows. The importance of salt retention in the causation of oedema is stressed. Whether this is primary or secondary to fluid accumulation seems to be a matter of controversy. Fischer held that the primary factor is an increase in tissue acidity which causes an increased affinity of the tissue colloids for water, with consequent retention of salts, particularly sodium chloride. In some types of nephrosis, the kidney becomes less permeable to salts. In many cases of oedema, particularly those occurring with kidney trouble, there is a retention of sodium in the tissues. In such cases restriction of the intake of sodium is followed by increased elimination of this element, marked diuresis and diminution in the oedema. Because of the recognised antagonism of calcium to sodium, the

effect of the former on oedema has been studied. The administration of calcium chloride has been found to be followed by an increased urinary excretion of sodium, water, chloride, ammonia and total acid. The calcium is eliminated chiefly through the gut, while the anion is excreted by the kidneys, drawing with it the sodium ion. Blum is of the opinion that the loss of sodium is due to a direct antagonistic effect of the Ca ion, the sodium being eliminated in the urine in the form of sodium chloride, carrying water with it. Haldane says that the diuresis produced by calcium chloride is due to increased acidity, whereby the blood and tissue proteins are brought nearer to their iso-electric point, thus releasing the cations, diminishing the osmotic pressure and causing loss of water. Another explanation is that the diuretic effect of calcium salts in oedema is due to the diminished hydration capacity of tissue colloids. Still another is that calcium proteins have much less affinity for water than sodium proteins. Whatever may be the exact nature of the mechanism involved clinically calcium therapy is effective in producing diuresis and diminution of oedema in cases otherwise refractory. 12 to 18 grams of calcium lactate or chloride have been given for this purpose daily. In cardiac oedema calcium therapy with digitalis is said to produce favourable results. Administration of parathyroids also in nephrotic cases have been found to lead to improvement in renal function.

In certain Allergic States.—In cases like bronchial asthma calcium therapy has been found useful. Reports are made of remarkable cure of the paroxysms by intravenous injection of calcium salts. The mode of action is unknown and the literature on this subject is confusing. It is stated that in such conditions the diffusibility of calcium is increased. The relation of this with the causation of asthma is not known. Giving parathyroid or calcium restores the

normal balance between the diffusible and non-diffusible calcium of the blood. The action of calcium may also depend on its depression of parasympathetic nerve endings in the bronchial muscle. It has been noted that after calcium therapy there is a striking diminution in the amount of adrenaline needed to maintain individuals in comparative comfort. In other allergic states, as in urticaria, the power of calcium salts to lessen cellular permeability may be responsible for the favourable action.

Skin diseases.—In addition to urticaria with dermatographia, in other skin diseases, like eczema of an exudative variety, calcium has been found useful. It has also been found useful in the treatment of the cutaneous manifestations of sensitivity to various agents, including drugs. The gluconate has been recommended in allaying itching in various skin affections. The relation of these findings to the calcium content of the blood is not understood. Diminished capillary and cellular permeability may be an important factor in producing such ameliorations.

In Pulmonary Tuberculosis.—Since calcification of a pulmonary tuberculous lesion is considered to be an indication that the process is healed, attempts have been made to promote calcification by giving calcium salts. A negative calcium balance was said to exist in this disease but this has not been proved. A greater excretion of calcium also has been assumed. In animals with bovine tuberculosis, it was found that approximately ten times as many areas of tuberculous lesion were calcified in animals injected with calcium chloride as in control animals. But similar results have not been noted in the human. Calcium seems to exert a better effect on exudative tuberculous lesions. The amount of sputum decreases and the night sweats also diminish in many cases. This is more a vascular action diminishing capillary permeability and inhibiting inflammation. Pleural effusions are also favourably influenced.

In Tuberculous Enteritis.—The gluconate or lactate may be given by mouth or the aromatic chalk powder may be used. In urgent cases injections may be resorted to. The action of calcium seems to depend on its inhibitory action on peristalsis, its beneficial effect upon local inflammatory process and to local or general dehydrating effect.

In Chronic Ulcerative and Mucous Colitis.—Good results have followed the use of calcium salts and parathromone. The beneficial action is perhaps due to its inhibitory effect upon intestinal spasm, a diminution of oedema and inflammation of the bowel, thus improving the nutrition of the affected tissues and to its effect on bleeding from the ulcerated areas.

In Lead Poisoning.—Various studies have established that there is a selective localisation of lead in the calcareous portion of the bones, where it is probably stored as the very insoluble tertiary phosphate. Any cause that mobilises the calcium in the blood lets the lead into the circulation. Hence calcium administration favours the storage of lead. Severe lead colic may be quickly relieved by administration of Ca intravenously. But this does not explain the striking phenomenon of the relief of lead colic by calcium. Perhaps calcium has an antispasmodic action not demonstrable experimentally. After the acute symptoms have passed off it is better to promote the excretion of lead. This is done by agents which increase the excretion of calcium by causing its abstraction from the bones. Parathyroid medication and ammonium chloride are both effective. Strangely enough the rapid mobilisation of lead and its elimination in this manner is hardly associated with acute symptoms.

In Hyper-acidity.—Calcium carbonate is widely used as a gastric antacid. It is bland, is insoluble and has no effect on the bowel. It causes a minimum disturbance of the acid base balance and mineral metabolism.

In Hypertension.—Calcium has been tried in essential hypertension. Its employment is based on one or both of two premises: (1) Its antagonism towards guanidine, which is believed by some to be an important factor in the pathogenesis of this condition. (2) Its depressing effect on sympathetic tonus which is believed by some to be increased in essential hypertension.

Medical Education and the Reform on Medical Studies.*

BY DR ETIENNE BURNETT.

SPECIALISATION AND SPECIALITIES.

The student cannot learn everything in a six-year course, nor can any one man know everything. Science and technique are, however, being enriched every day, and medicine (both curative and preventive) must turn this to account. The division of labour has therefore become inevitable; but the countries which have carried this process too far are beginning to retrace their steps, while others are in the process of making the same experiment.

A distinction must be made between post-graduate study, continuation courses and specialisation, which are three different things. The training which it is desired to offer the practitioner as a means of maintaining his professional efficiency is not professional specialisation; in any case, there is a tendency for specialisation to be introduced into medical courses before the doctorate. The specialisation which we have in mind means the extension of fundamental knowledge in a given direction after graduation, with a view to theoretical or practical competence in a restricted field. By specialisation we do not mean advanced scientific teaching and research.

Where does specialisation begin? It is frequently a mere matter of degree. The Americans maintain that pædiatrics must not be regarded as a subject for specialisation; and they are right, as it is a subject of which no practitioner should be ignorant (B. S. VEEDER, indeed, describes it as the most fundamental element of State medicine). A doctor who goes

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on improving his knowledge of this subject over a period of years nevertheless becomes a specialist.

The same is true of psychiatry regarded as an aspect of the relations between the individual and his environment. (See F. G. EBRAUGH's article, "The Teaching of Psychiatry", in *J. Ass. Am. Med. Coll.*, September 1931.)

Our "basic doctor" can specialise in three main directions—scientific research, preventive medicine in the service of the State or other public authorities, and clinical medicine.

The question which arises in connection with practical specialisation is whether it should be regulated or unregulated. Are we to introduce diplomas other than the State medical diploma? What value should be attributed to such diplomas as compared with the main diploma or degree? By whom should they be granted—by the State, the university or the medical profession?

It would be superfluous to enumerate the advantages of specialisation from the scientific and medical points of view as from that of the public. The drawbacks are the mechanisation of medicine through the progress of technique; the disintegration of medicine (the organism being lost sight of and the separate organs alone remaining within the doctor's field of vision); a fall in the value of the degree and social standing of the "basic doctor"; and a return to the very situation which it was desired to abolish—namely, the division of medicine into two grades: a higher and a lower.

At the same time, while the general practitioner continues to hold his own in private or individual medicine, the specialist is highly appreciated by organised medicine on account of the technical and financial advantages of a division of labour.

As medical organisation—State, insurance and relief—continues to develop, as health centres and hospitals become

more numerous in rural districts, the division of labour will make specialisation increasingly necessary. The medical profession must include a reasonable proportion of general practitioners and specialists, the latter being consultants and operating surgeons. The "basic doctor" will not, however, disappear. Every specialist will have to begin by receiving a sound general medical education. On this point, there is almost general agreement: there must be no specialisation until the ordinary course of study is completed.

It will be well to examine the system of specialisation followed in various countries, and more specially the point at which specialisation emerges from the stage of study into that of medical practice.

In the United Kingdom, specialisation has not so far been dealt with in the recommendations of the General Medical Council. For educational purposes before graduation, the various subjects of specialisation are not treated as separate entities. After taking the usual degree, graduates can obtain higher diplomas in specialised subjects, combined with university degrees and the qualifications of the Royal College of Physicians, the Royal College of Surgeons, the Society of Apothecaries of London and the Apothecaries' Hall of Ireland. Various diplomas are mentioned in the *Medical Directory*, but only those in public health, sanitary science and State medicine may at present be entered in the Medical Register.

In France, post-graduate specialisation is unregulated. Specialties and specialists grow up spontaneously, thanks to the resources of the faculties and hospitals. So far, there are no special institutions, and each university acts as it thinks fit. The Public Education Advisory Committee, however, is considering the re-organisation of specialised studies in combination with a system of university certificates.

The difficulties begin with the question whether specialties should carry with them a State diploma conferring a definite

legal status or only a university certificate testifying to high technical efficiency.

The medical profession as a whole is strongly opposed to State certificates or diplomas for specialties; first because they would impinge upon the prerogatives attaching to the degree of Doctor of Medicine under the Law of November 30th, 1892, and, secondly, because they would lower the prestige, not merely of the degree of Doctor of Medicine (which in France is also the State diploma), but also, through excessive specialisation, of the general clinical education to which the French school attaches so much importance. For the same reasons, and in order to safeguard the general training of doctors, the Academy of Medicine has already rejected a scheme for a State doctorate in surgery. In other words, the French medical profession champions the practitioner whom we have described as the "basic doctor".

It nevertheless realises that specialisation is inevitable. The question of a State certificate arose, in point of fact, in 1933 in connection with dentistry, which has hitherto been represented by two corporations—the stomatologists and dental surgeons. The two corporations agreed to the unification of this specialty, provided that it received the status of a specialty officially recognised by a State certificate under the Law of 1892. The Advisory Committee subsequently proposed the introduction of several State specialisation certificates, though at first in only a limited number of subject—*viz.*, laryngology, ophthalmology, electro-radiology. The future will show whether the number of recognised specialties will increase and whether they will carry with them State or university certificates. It is possible that, in France, still another solution may find favour—the qualifying examination may be placed under the control of boards consisting of representatives of the universities, medical associations, and, if such a body ever comes into being, of the Order of Doctors.

Certain leaders of the medical profession have stated that, if compelled to accept specialisation diplomas, they would greatly prefer the university diploma to the State diploma.

In the United States, the Commission's report recommends that specialisation should be organised by the schools and *medical profession* as a necessary adjunct to the general course of training. Official recognition would be granted through the maintenance of a list of specialists in each of the several States. Account would be taken of two factors—special training and the preliminary period of practical experience. Recognition and supervision would be in the hands, not of the State authorities, but of the Association of Medical Colleges, under the auspices of the Commission on Medical Education and Hospitals and of the Medical Association. In 1933, the last-named Commission pronounced in favour of the recognition of specialisation in radiology, including ultra-violet rays, X-rays and radium. The requisite qualifications were to be a medical degree and licence to practise and three years' apprenticeship in an approved institution or five years' special practice. The Commission published a list of 1,200 specialists complying with these conditions.

In Germany, the State has preferred to leave the control of specialisation to the medical profession itself. The title of specialist is obtained without any academic examination on the submission of evidence of the necessary education to a permanent committee of the District Medical Association. The name of any doctor assuming the title of specialist without authorisation is struck off the list of specialists, he is expelled from the association and punished by the Board on Professional Etiquette. A doctor cannot become a specialist unless he can prove that he has had one year of practice in general internal medicine, plus three or four years' experience as assistant in an approved special service; four years each in the case of internal medicine (including nervous complaints), surgery, obstetrics and gynaecology; three years for diseases of the

respiratory tracts, diseases of the alimentary canal, nervous and mental diseases, pædiatrics (children below 14 years of age), orthopædics, ophthalmology, oto-rhino-laryngology, dermatology and syphilology. Specialisation in pairs of subjects is permitted, the periods of training being run together; for example, surgery and orthopædics, six years; surgery and gynaecology, six years. Insurance organisations only accept specialists recognised in the manner described above.

In Denmark, there is a specialisation commission elected by the Medical Association and consisting of a member of the Faculty of Medicine, a practising specialist, the physician-in-chief of a hospital, a doctor practising in the capital and a doctor practising in a rural district, a representative of the Association of Young Physicians, all of whom are elected for three years. Each specialist's province is defined by the Commission in consultation with the specialists themselves. The list of recognised specialists is published annually. A specialist may practise general medicine, but may not be appointed to a municipal or insurance post without the consent of the local Medical Association.

The requirements for specialisation are quite strict. The basic qualification for each specialty is as follows: a period of six years must have elapsed since graduation; a general internship of one year (six months in medicine and six months in surgery); at least two years' practice outside the specialty.

The specialties are as follows: surgery (three years as assistant or three years in a department primarily concerned with surgery, plus one year in a surgical department); pædiatrics (six months' internship in pædiatrics, plus two years as assistant in pædiatrics, together with adequate experience of contagious diseases, venereal diseases and dermatology); obstetrics (two years' practice, including one year as assistant in a special department, plus six months in a gynaecological department and three months in a venereal department);

orthopædics (two years as assistant in a special department, plus one year as assistant in surgery or two in a mixed medico-surgical department, and three months in a dermatological department or six months in a neurological polyclinic); oto-rhino-laryngology (one year in a surgical department, plus three years as *interne* or assistant in oto-laryngology); general medicine; tuberculosis; psychiatry; neurology; gynaecology; ophthalmology; dermato-venereology; physiotherapy; radiology.

The position is much the same in Norway.

In Turkey, the system of specialties is governed by the Law of 1923 on the exercise of medicine and by the regulations connected therewith. Specialties are divided up into sixteen sections: nine for clinical medicine, six for laboratories, one for hygiene. The status of specialist is obtained by (1) a practical course, (2) an examination; the examining boards are constituted, as the case may be, by the Faculty of Medicine or by the Ministry of Public Health and Social Welfare. Duration of the practical course: three years for medical and surgical specialties, four years for hygiene, two years for other specialties. The practical course is taken in services appointed directly or approved by the Ministry. It may be shortened by one year for candidates who take it, not as free assistants, but as paid assistants and in the capacity of State officials.

One very important point is that *there are first and second-class specialists*. Only first-class specialists can be appointed as specialists in public *or private* establishments. A second-class specialist can become a first-class specialist by taking a further practical course and a further examination.

Any medical practitioner can practise any branch of medicine in places where there is no specialist; if there is one, the medical practitioner can practise medicine and minor surgery, the specialist alone having the right to perform operations.

Only specialists can be appointed chiefs of service in *public or private* hospitals and laboratories. If several specialists apply for the same post, a competitive examination is held.

These regulations are held to have given excellent results and in particular to have promoted scientific work. There is some question of increasing the length of the practical courses.

In Italy, specialisation does not encroach on the doctors' privileges (this is also the desideratum in France). A doctor holding the State diploma is entitled to practise medicine and surgery in all their branches; he cannot, however, describe himself as a specialist unless he is in possession of a diploma in the specialty which he desires to practise. In the University of Rome, there are nineteen specialties (including orthopædics and traumatology, three years; internal medicine and surgery, five years each; forensic medicine, public health, police and prison medicine, two years; tuberculosis, two years; industrial medicine, two years). Specialised experience is obtained at the continuation schools, where both theoretical and practical training is given, and the diploma is granted following an examination before a Board of seven members, including both written (thesis) and practical tests.

We have already described how, in the Union of Soviet Socialist Republics, medical studies are divided into three faculties with specialisation before graduation. After graduation, specialisation may be carried still further (concurrently with refresher and continuation courses for practitioners) in the special institutes at Moscow, Leningrad, Kazan, Kharkoff, Novosibirsk, Odessa and Kiev; the controlling centre is the Moscow continuation institute. Theoretical and practical training in the various specialties last three years, a certificate being issued to successful candidates. The institute possesses clinics of its own (four for therapeutical medicine, two for surgery and specialised clinics), together with 35 professors, 34 lecturers and 80 assistants. All the State institutes

of hygiene are under the control of the continuation institute. Among the specialties may be mentioned railway hygiene, insurance medicine, physical culture, collective farms, State industries and health centres.

It will be seen that the specialisation system, from the point of view both of training and of professional and legal status, varies from country to country. There is, however, a tendency towards the acceptance of the following principle which, in all probability, will gradually come to be general:

Apart from the experiments being carried out in the Union of Soviet Socialist Republics, it is agreed that specialisation should not be made a feature of the normal programme of studies. The various specialties are only taught as branches of general medicine, in order to enable the practitioner to diagnose the general nature of diseases and refer patients to the competent specialists. In the interests both of the public and the medical profession, it is desirable that specialties should be neither too numerous nor too few. In the former case, general medicine would decline and the medical degree would lose its prestige. In the latter case, advantage would not be taken of scientific and technical progress. The most appropriate course would be to provide for the training of specialists at a post-graduate faculty to which students would be admitted after passing through the ordinary medical school or faculty, and where the course of study would allow for greater variety and elasticity.

It is the State which organises and controls specialisation in public health and social medicine. As regards clinical specialties which raise extremely difficult professional questions, a number of examples (Germany, Denmark) show that, while remaining subsidiary to the State diploma, they should be placed under the control of a mixed authority, representing the universities and medical profession (medical association or unions), under the auspices of the State. Such bodies as the

English General Medical Council are most suitable for administrative work of this kind.

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SUMMARY.

The reform of medical study is more than a merely pedagogical problem. It interests a much wider public than the universities and the medical world. It is not only a matter of curricula, but also concerns public health administration and the future of the medical profession. The structure of society has changed and the doctor must be prepared for new tasks.

It is not the purpose of reform to make an abrupt break with the past or to change off-hand schools and curricula. Doubtless, if we knew what society and medicine would be like in fifty years' time, radical reforms would willingly be undertaken. We know only that changes take place. We discern the trend of those changes, and it is in the general interest to bring medicine into line with social trends. As reforms are already spontaneously taking shape, our task is, not to make a revolutionary change, but to encourage instead of opposing the necessary developments.

There may be a crisis in the sense that, at the present moment, the conflicting tendencies in medicine are becoming particularly acute—individualism as opposed to service for the common weal; the tradition of a liberal profession as opposed to the needs of material life; the abstract science as opposed to utilitarian technique. If it were only an intellectual and pedagogical or merely an economic problem, the training of doctors would be a difficult task; but, as with all social problems, the difficulties increase with the complication of ideas and interests.

We will deal here only with the points on which discussion may be focused.

The first question to be asked is, What is and what will be the ethical and material position of the doctor in society? Whatever our personal opinions and inmost preferences, we cannot but note the rapid and irresistible growth, to the detriment of individual medicine, of what is known in the United States of America as "organised medicine", an expression which may be applied generally to State medicine or collective medical services—e.g., in cities, corporations, big manufacturing and trading concerns, health insurance funds and public relief services. The problem finds its most summary expression in the opposition between the two terms—they might almost be called slogans—"free selection", the characteristic of individual medicine, and "the Medical Office", typifying organised medicine. We feel that these expressions are only approximations. Between pure individualism and pure officialdom in medicine, there are many intermediate forms. The major activities of social medicine as already organised—to mention only prevention of tuberculosis and venereal diseases, maternity and child welfare—are instances of the different kinds of contracts concluded between various communities and the physician which do not destroy the individuality either of the patient or of the doctor. While there may be doctors who are one hundred per cent officials, there must surely also be doctors who are officials only to the extent of a half, a third or a quarter; indeed, we find such cases already in all civilised countries, not only in the public health service, but also in curative medicine. There would seem to be no reason why the social position of the doctor should not be like that of engineer, teacher, or even clergyman. Doctors are usually compared with lawyers; but has the legal profession remained entirely individualistic? There is thus no doubt that medical education should prepare the doctor for collective medicine.

The functions of medicine, individual or social, are manifold: the cure of diseases, the prevention of disease, hygiene and prophylaxis, hospital administration, teaching, scientific

research. Five or six years' training does not produce a doctor qualified for all these duties. Moreover, the increase in scientific and technical knowledge has forced schools to make their curricula more and more comprehensive; the student cannot in five or six years learn everything and remember everything. Lastly, we cannot regard a doctor who takes his degree after five or six years' study as a final product to be worked until worn out, like an engine which goes on working unchanged except for a few repairs. Five or six years of training do not make up the whole of a doctor's education; he has to have a certain initial training (obtained at the secondary school) before entering college. After taking his degree, he must go on learning, if only from his own practice. He should, as the man in the street says, "keep up to date"; he may specialise; he must have refresher or continuation or specialised courses. A doctor must be a student all his life. What, then, is the function of the medical school, which cannot in a few years either make the complete physician, or train all the specialists, or teach everything? How can the five or six years of study in the strict sense of the term best be utilised, as they cannot cover the ever-increasing number of special subjects?

It has become generally recognised that the duty of medical schools is to turn out a practitioner "capable of thinking for himself and resourceful." The term "practitioner" being rather narrow, we should prefer to say that the medical school should give the basic instruction necessary to train the "basic doctor", who is really the key-stone of public and private medicine. All the special branches radiate from him as centre—the clinic with its various branches; hygiene in all its branches; medical administration in hospitals and dispensaries; health insurance and public relief medicine. Thus, medical teaching must also expand and be subdivided into basic instruction, specialised instruction and refresher and continuation courses, both for "basic" doctors and for specialists. And just as there are many intermediate types between the doctor

who is wholly an official and the traditional individualist physician, so there are many intermediate types between the "basic" doctor, or so-called general practitioner, and a surgeon who would only perform operations on the biliary tract, or a specialist health officer for antimalarial work, or a serologist specialised in the Bordet-Wassermann test. It is universally agreed, however, that the training of all these specialists should be based on what we call the "basic" doctor.

We give him this new name because he should differ from the old traditional *practitioner*. Like the latter, he needs a first-class intellectual and moral education; the humanities, including classics and *science*, are still the best, the indispensable preparation for medicine, if we are to preserve and raise the standard of the medical profession and of the doctor himself. In strictly medical matters, the doctor should have a new mentality; not that this mentality is wanting, but it needs to be developed. It consists, first of all, in the idea of preventive medicine, which, before any real specialisation is undertaken, should pervade the whole training, including clinical instruction. To arouse this new spirit at preventive medicine and social hygiene, greater attention than has hitherto been given in medicine must be devoted to the study of the normal individual; to the idea of health; not only for its preservation, but for its creation and growth; to the idea that, like the other animals and the plants, man should primarily be protected against degeneracy and then improved—for he can be improved. It is a strange fact that fewer efforts are made to perfect the human race than to improve fruits and cattle. Medicine should look beyond sick humanity and concentrate more and more on promoting health. This explains the demand for more and more time to be given at the start of the medical studies to physiology. Medicine is applied physiology.

Medicine to exercise a positive, not merely a negative, action; a bias towards preventive medicine and social hygiene; seeking the most perfect health for the greatest number;

assuming general utility functions even at the risk of being something of an official; recognising the State as the guide, arbitrator, and controller—this is the spirit which our age demands of the "basic" doctor and which the medical school must develop in him. That this is barreful to the individual conscience is scarcely credible. No one denies that one of the most important tasks of medicine is scientific study, the treatment and cure of the sick, or that the doctor is an independent citizen, entitled to be rewarded adequately for his services, whether individual or social, isolated or organised.

Such is the doctor whom we have to train. In what institution shall we train him? Between scientific education and the abstract science of research institutes on the one hand, and the technique, and even mechanical knowledge essential for the proper practice of medicine on the other hand, the field is so vast that it is open to question where the school should be placed. Shall it be a faculty in a free and autonomous university attached to the National Ministry of Education, or a professional school under the Public Health Department, like the commercial school of the Ministry of Commerce, the Mines School of the Ministry of Public Works or the Pilots' School of the Ministry of the Mercantile Marine? Shall we stress the basic sciences or their application? Shall the doctor's *alma mater* be the lecture-room or the hospital?

In point of fact, all programmes oscillate more or less tentatively between the two tendencies. But no choice is needed. Both depend on circumstances, and they must both be adopted. There is a basic dualism; university *and* professional school, faculty *and* hospital, theoretical education *and* practical training, the school of theory *and* the school of application—in reality, two supplementary schools linked together, each with a basic form of education for the "basic" doctor expanding subsequently into specialised and advanced instruction.

The dualism exists from the start in the institution and in the curricula. Study starts with two years devoted to the basic

sciences, for every student, even though he will practise in a humble neighbourhood, must in his youth have felt the impact and received the impress of science.

In addition to pure science, he must know those sciences which deal with the conditions of human life: cytology, reproduction, evolution, heredity, anthropology, eugenics; and this knowledge must be based on observation and experience, and not merely on superficial reading.

The student will then belong to the hospital, which thus becomes the medical school. Both schools, however, university and hospital, are constantly helping one another; laboratories and clinics supplement one another. Each student or graduate uses them according to his needs and his objectives. There is no doubt that, for the medical practitioner, the essential training is that acquired in the hospital; but it would be unfairly curtailed if he were sent there before he had received a grounding in science and acquired a social outlook.

Two years' scientific study, three years' clinical and one year's practical work—such is the system which is being more and more widely adopted everywhere.

If we want good doctors, we must start training them before they enter the medical school and continue their training long after they have left it. Doctors themselves are proud of a profession which forces them to make a constant effort to extend their learning. The doctor belongs in turn to the secondary school, the faculty, the hospital, the specialist institute, the refresher and continuation courses, to say nothing of the association where he exchanges professional and social experiences with his colleagues.

Secondary education should supply the solid elements of mathematics, physics, chemistry, biology and modern languages, so as to leave the two science years of medical study free for anatomy and physiology. It should, at the same time, by the

study of humanities, furnish a solid foundation of general culture.

The question of specialisation and special subjects has also two aspects, the scientific and the utilitarian. Scientifically regarded, it implies the organisation of courses, clinics and laboratory work. It is generally felt that, except in countries where there are specially urgent needs, specialisation should not enter the programme of undergraduate studies, but should only appear as a subsidiary part of general medicine. From the practical standpoint, the question arises of the legal position of special subjects: To what extent should the State intervene to guarantee the public in the case of specialists as it does in the case of quacks? The State should not favour the specialists to the extent of reducing the value of the doctor's degree, making it, as compared with the specialist's degrees, a second-class qualification (like that of the former French *officier de sante* or that of the intermediate medical school in the U.S.S.R.). Experience has already supplied the solution. A list of special qualifications is to be drawn up. These special qualifications are certified by diplomas which are not compulsory—*i.e.*, the doctor is still free to practise in the whole field of medicine as his conscience directs him, and the State, as such, confers only one diploma, that of doctor. Diplomas or certificates for special qualifications are conferred by a medical body invested by the State with certain power and including representatives of the State, the university, medical practitioners and associations. Generally speaking, examination by this board consists mainly in providing evidence of hospital experience, scientific research and practical work done in order to justify the claim to specialisation.

Refresher and continuation courses exist everywhere. In most countries, it is still only a spontaneous effort on the part of the faculty or the school, and the State has not yet devoted sufficient attention to it. Once we accept the development of organised or collective medicine, the collecti-

vities, whatever they are (States, cities, undertakings, insurance funds), must help, nay compel, the doctor to maintain his knowledge and bring it up to date. It is inadmissible that a system of diagnostics or treatment which any fully trained doctor can grasp should not be applied because he has not had the material means of learning it. Doctors will not protest against being obliged to keep up and improve their knowledge, provided they are also given the means to do so. This would be systematically applicable only in organised medicine, where leave of absence and travelling and subsistence allowances can be granted and where intellectual freedom prevails.

The clinic based on a sound scientific education (particularly in physiology) remains the centre of gravity of medical education. We have studied the general conditions of clinical education: material, personnel, methods, to which attention should be devoted and which should be constantly improved. We have emphasised the question of the "full-time" professor and of independent professors. Most important of all is the system adopted for the student. His work should be guided personal work, in the form of a period of work in hospital internship and a year's practice. Internship organised in accordance with the resources, traditions and temperament of each country is absolutely necessary. In France, internship for specially selected students should be supplemented by internship for all. In other countries, internship for all students may be supplemented by internship for the selected few. French, British, Swedish and American institutions furnish the most interesting instance of practical clinical training.

The English are equally convinced of the importance of the fundamental sciences and of clinical teaching. This is proved by the high level of their physiological teaching and the organisation of their hospital schools (London.) While they recognise that this dualism in medical education is unavoidable, the English authorities consider that it would be a mistake to make the separation too complete, and try to continue scientific education

during the clinical period. This is, indeed, a desirable combination. It occurs naturally in Paris, because the two branches of education unite in the person of the teachers, who are almost all both professors or *agreges* of the faculty and hospital doctors—a system as keenly criticised by some observers as it is praised and envied by others. The combination or union can be effected everywhere by the professor of clinics, if he is equal to his task. He is the person who can best, in lectures of a vivid and practical character, recall the laws of science, leaven his clinical teaching with physics, chemistry, anatomy, physiology, preventive and social medicine, leave his own impress on all aspects of medicine and exercise the powerful influence of a teacher over a student. The clinical professor is the centre of medical education—he can do everything.

Examinations, as has been said, are a necessary evil. They are made for study, not study for them. They should, besides being a check on study, form a framework for study, be a stimulus and a help to the student. Their number, frequency and strictness should be regulated with this idea in view. They should preferably be arranged in the same way as studies—divided into two periods, pre-clinical and clinical. Moreover, they discharge a social function, by barring the entry to a medical career to the weak and mediocre candidates.

This report cannot aim at a detailed analysis of the curricula of all countries, at correcting them on paper or at discussing in an abstract way living institutions closely associated with the history, the academic traditions, the social structure and the intellectual temperament of each nation. While there is room for improvement everywhere, nowhere is medical education so bad as to merit the censor's rod. Our purpose has rather been to extract in each country what is rational, practical and salutary and to show what one country can give another. When we compare the institutions of various countries we are struck both by their differences and by their

resemblances. Under the pressure of facts and the pooling of civilisation, differences apparently tend to disappear and resemblances to become more general, and a converging movement becomes apparent: the different types of medical education fuse into one common type. But this type is not to be found in the present, on the plane on which we live to-day; its place is away in the far distant future where world civilisation gradually and naturally, but still with the help of the human will, will achieve a certain degree of uniformity.

It is not impossible to suggest on what lines this convergence will be effected; to do so will be the conclusion of our enquiry.

If we consider but the letter, it may be thought to be a small matter, but not if we look at the spirit. The new objective will be social, positive and preventive no less than curative medicine, in the scientific as well as the practical aspect, aimed at promoting health, combating degeneration and improving the human race. The value of rules and curricula will depend on the extent to which they embody this spirit.

CONCLUSIONS.

The commissions which in various countries are engaged on the reform of medical education have agreed that, not only must changes of detail be made in existing programmes, but that medical education might be adapted to the new social requirements and the new forms of medical practice.

Organised medicine is fast developing all over the world. In various ways, doctors or medical corporations are concluding contracts with Governments, municipalities, large undertakings, health insurance funds and public relief authorities. These contracts are intended to ensure the best treatment of the greatest number and the dignity of the moral and material situation of the doctor.

Scientific and technical progress, and the need to safeguard labour and limit expenditure, have led to the development of preventive medicine, involving mainly early diagnosis and treatment, a widespread use of vaccination, and liaison between clinics and public health services.

The purpose of medicine being no longer merely to cure declared diseases, but to promote (preserve and even create) health, a thorough knowledge of the normal human being is needed. Medicine is developing more and more into applied physiology.

It is desirable that medical study should train the student in the cultivation of health and preventive medicine, and should prepare him for organised medical practice.

The plethora of doctors is not universal. Even apart from countries which have no scientific medicine, there is still no rational distribution of doctors in the older civilised countries, and there are areas which, but for State action, would suffer from a shortage of doctors.

The main purpose of medical study is by a basic system of instruction to train the "basic doctor"—i.e., the practitioner suited to the need of modern society, capable of thinking for himself and resourceful; not a specialist, but fitted for the various special branches of clinics, hygiene and scientific research.

Medical study does not represent the whole of a doctor's education. It is preceded by secondary-school education, supplemented by specialised instruction, continued by refresher and continuation courses, and never completed.

The teaching of medicine is a practical instruction with a scientific basis.

The choice is not between learning and practice, between theory and application, between the university and the

professional school, between academic freedom and apprenticeship under guidance; both are necessary. This dualism, which could be harmonised, will be found in the institution, the curriculum and the methods.

The various discussion on curricula have revealed the expediency of dividing studies into two parts: the pre-clinical scientific period and the clinical period, the rule being that science is taught in the faculty and training given in the hospital. The university faculty imparts general and scientific culture; the hospital gives the clinical knowledge and practical training.

There should be a connection and interchanges between the two parts, particularly by the application and continuation of the teaching of fundamental sciences during the clinical period.

Each part comprises basic and higher instruction.

As a preliminary to medical education, the humanities (Latin and Greek) are recommended as the best means of giving a general educational foundation and raising the standard of the medical profession. Mathematics, physics and modern languages, being also an essential part of the humanities and powerful factors of education, are equally indispensable.

Secondary education supplies the rudiments of physics and natural science; the medical school develops this knowledge with a bias towards medical application.

The tendency is to organise the pre-clinical period as follows:

Zoology and botany are taught chiefly from the standpoint of general biology. The student is given concrete instruction introducing him to cytology, the science of evolution and heredity, the influence of environment and eugenics.

In chemistry, stress is laid on organic chemistry, physiological chemistry and biological chemistry.

Anatomy in the basic stage of instruction is divested of academic detail, studied as far as possible in the normal living human being, with the help of radioscopy and cinematography, and linked up as far as possible with physiology and clinics.

Increasing importance is everywhere being attached to physiology as an experimental science, as a means of medical education, and as the key to clinics, and, in particular, to early diagnosis and treatment.

Physiological chemistry is being linked up with general physiology.

Bacteriology, parasitology and theoretical hygiene should be placed in the pre-clinical period.

Taken as a whole, the scientific pre-clinical period is the period of physiology.

Science teaching comprises: (1) consecutive experiments; (2) oral instruction: explanation step by step and development of experiments; (3) informal lectures linking up the knowledge acquired, giving a general picture and promoting mental culture.

Clinical instruction and practical training are given in hospitals.

The hospital has laboratories attached to the clinical departments.

Scientific instruction continues during the whole clinical period and until the conclusion of studies:

- (a) By the teaching of the "medical sciences", such as pathological anatomy, microbiology, etc.

- (b) By the application of physical, chemical and physiological technique to medicine ;
- (c) By reminders of the basic sciences, continually associated with clinical work, particularly physiology.

Instruction in theoretical and practical hygiene, preventive medicine, public hygiene, social medicine and organised medicine accompanies clinical instruction year by year and is associated with it as closely as possible.

It is desirable that the practice of public relief and insurance medicine should be taught at the same time as that of private medicine and hospital medicine.

The practical training of the doctor takes place in the hospital, which must be equipped with laboratories applied to clinical medicine.

The clinic remains the centre of gravity of medical studies. It should be considered from the aspect of material, personnel and methods.

Material—Out-patient departments are equal in importance to hospital services (diagnosis and treatment of illness at the outset ; preventive clinic).

The dispensary and social service are, from the point of view of instruction, annexes of the hospital.

The student requires to obtain a practical knowledge of nursing.

Personnel—The unity of theoretical and practical medical instruction is ensured by the clinical professor. Clinical instruction must aim at being a living synthesis of all the branches of medicine—in particular, of physiology and clinical medicine.

It is desirable that the clinical professor should devote the greater part of his time to instruction and research.

It has become necessary, since students are now increasingly numerous, that clinical teaching should be given, not only in the school clinics, but in sufficient number of hospital wards also.

Scientific and clinical teaching by independent professors may be a source of emulation and progress.

Methods :—Lectures should retain their place in the curriculum ; by this means, the teacher can exercise a vital, direct and personal influence on the pupil.

Instruction may be enlivened by all the appliances of modern science : lantern slides, macroscopic and microscopic films, animated drawings, wireless.

The fundamental items in clinical training are : the hospital stage (clinical clerking and dressing), the internship and the year of practical training.

All students without exception should go through a real period of internship, apart from the special forms of internship reserved for the most promising pupils.

Specialisation has two aspects :

(1) A post-graduate education, forming a distinct, but not separate higher faculty

Generally speaking, (in countries which have no urgent need to train a large number of doctors rapidly, it is considered preferable that specialties should not be included in the basic education, except in so far as they may be necessary to the medical practitioner.

(2) As a form of the medical profession, it is desirable that the practice of specialties should be regulated, without the regulations adopted diminishing the value or rights attaching to the medical diploma. Two means, among others, have been tried ; a board, constituted according to the administrative and

professional traditions of the country, grants specialist diplomas, or draws up a list of the specialties admitted as such and of the recognised specialists in those specialties.

The general opinion in the medical profession is that the title of specialist should be a University title or diploma, rather than a State title or diploma, but that the system adopted should be approved by the State.

In several countries where the regulation of specialties has given satisfaction, the State has not dealt with the matter direct, but has delegated supervision to a board consisting of Government representatives and of representatives of the universities and of the medical associations or unions.

Means of "refreshing" and continuing medical education exist everywhere in a more or less spontaneous and voluntary form.

It is an advantage to organise such education within the frame-work of the faculty and of the hospitals, and even, if funds permit, to make it compulsory.

The form which gives the best results appears to be a central institute with secondary centres.

This instruction must be organised specially for practitioners in small towns and in the country. Use should be made of itinerary or circuit courses and of wireless.

Examinations are made for studies and not studies for examinations.

It is desirable that their dead weight should be reduced, that they should be organised in accordance with the curriculum, and that they should become a stimulus and an encouragement to the student.

A judicious mean should be observed as regards their number, frequency and difficulty.

In order that account may be taken, not only of knowledge, but of character, the student should be known to the examiner, either through an academic identity certificate, or, better still, personally.

There are two elements in the diploma: the certificate of capacity and the licence to practise. It does not appear necessary to institute two separate examinations. The State may, in any form appropriate to the national institutions, associate its recognition immediately with the diploma issued by the university.

Dr. Tut, a Posthumous Memoir.

BY DR. C. S. S. SARMA,

Assistant Surgeon, Proddattur.

The cardio-respiratory apparatus of Dr. Tut ceased to function. The 48 and odd ounces of his wonderful grey matter will soon begin to liquefy and the world will know no more the joys and sorrows that scintillated through its synapses. His liver, which weighed no less and which many a time vainly demanded an audience with its owner, is finally hushed in everlasting silence and can tell no tale.

And yet the papers did not contain even a casual notice under the distinguished dead. What between the races and sundry lucubrations on the local Cricket, the world's blackest tragedy had not evoked even the topical interest that attaches itself to the dullest events. It was sadly interested in finding vitamins in chillies and the therapeutics of Snake-juice in the Silly-ass syndrome.

In thus leaving the world to darkness and to me, the late Dr. Tut has laid me under an enormous responsibility as his posthumous biographer. A staggering task at all times, it is rendered all the more difficult by that last infirmity of his noble mind—to sever his own neck with his own hands, an operation doubtless indicated by the awfully depressed times in which he lived.

It is true that Tut while an youngster looked with awe and respect at the muffassal Aesculapius in his native town. His own father counted the rupees and paid him by the visit. Tut was early intrigued into the mystery of the calling and its handsome remuneration. Surely for ten little taps

on somebody's bared chest or tummy, lasting perhaps as many seconds, nobody got paid the sums a Doctor is. The smith with his hammer, the rustic with his axe splitting firewood, did not raise the equivalent of Rs. five or anywhere near it on a hot summer's day. And yet the people unaware of this loot were perfectly obsequious even when paying him. There was no end to the salutes he received of a morning. People obliged him with brinjals to double bullock carts. And there he was, like the Genie in the tale, ready to dig into the ribs of the next man he met and extract the solid cash that others sweated for and saw not.

And not merely that. A saying went abroad in his time that the children stopped their crying at the mere mention of his name. Some were actually frightened into the belief that he was a cutter up of their naughty ends and only the good and quiet escaped his displeasure.

No wonder the young Tut wanted to be a Dr. Tut one day. He would dig into the chests of a whole Army Corps if it came to that and would not tire to gather the loot.

Thus Tut went through the College. He had difficult preliminaries to settle before he was fully initiated. In addition to filling in his name, age, and the guardian's name and address, and satisfying the College writer that he paid the usual term-fees, he had to get through a more personal and private casuistry of his comrades before he earned their suffrage.

His allotment to Tobacco was early investigated. The smelly weeds of Swadeshi origin were strenly abjured. Butts and ends were deprecated as unworthy of a noble calling on which the aseptic age had dawned. His first duty as a Medico was to realise that subscriptions were the second breath of his nostrils. The intimate groups that gathered after the Sports were only resuscitated by the lavish use of

liquefied subscription. Junior Tut was pumped dry of this material what time his grateful Seniors got wet and dripping with gratitude. He was early enjoined to possess a distinctive dress for each role he was called upon to play in the strenuous life of the Medico. Tennis demanded one set of apparel, dinner in a swell hotel demanded another, and so on and so forth. One to mooch about in the Marina, one to hoodwink the father on his sly audit visitations. A dour orthodox made-up for the prospective father-in-law to impress on him his ancient stock, a convenient Khaddar uniform for national purposes, and the very latest in Swallow-tails for inter-national purposes. Tut was aware of the smart girls in the new era. And as the era became newer everyday Tut alas; beheld girls smarter and smarter yet, until his heart sank and his indebtedness arose. It was no longer only a question of holding his liquor well. He had to stifle Reason and with Lord Byron that "man being reasonable (being oppressed and outraged out of endurance by the faculty of Reason) must get drunk" One thing led to another, and Time and Distance had to be conquered on the strength of a swift conveyance by the hire purchase system. Credit had to be reserved for such categorical imperatives as Coffee, Cigars and Cinema, not speak of Collars, Ties, and Coloured socks.

Concentration on study was a bane even under the best auspices. But the effort was simply debasing when the environments were so unfriendly as the top of a noisy bazaar, or a flat in the heart of the Cinemaland or right into the hub of the Theatre underworld. Yet the great Tut survived the noise and dirt, the crime and dope all around him. He was all things to all men and the few women who stooped to ferret him out of his obscurity.

He cheerfully parted with his last cigarettes to his classmates, he did the endless differential count to his seniors while he sighed inwardly but not audibly at the sight of a

pretty face in the wards inside or the world outside. He could be depended to catch the Professor's eye with his optics bent on diligent notetaking. The innumerable ward-boys looked on his pockets as their own and extracted from them such small change for "those arrack-showers for their thirsting hours" and in return he was whirled round with musical honours on gala days.

Chivalrous by nature, the ladies clung to him for support, and he obliged them with joy-rides on his pillion-seat. The proceeds of the sale of this old books were equated against the dainty outings he was wont to give them. The jolly times he had while at the pictures were the result of much forbearance sometimes on the part of his landlady and often on the part of the Hostel-Warden.

At long last, the giddy pinnacle of achievement reached, one fine morning he emerged a Dr. TUT in flowing robes and drank and responded to the toasts of his Alma mater. It thrust him on the world and banged its doors, of course in paeans of the noblest praise. He vaguely remembered that he amongst forty others was a NEW HOPE, seeking a NEW HAVEN, and worthy of a NEW REWARD.

O, the pity of it. "He remembered it all but too clearly. They asked him to engrave it in lettets of gold. Well, he scorched them into his consciousness in neat Scotch Whiskey. With the cock's crow he expected to wake upon a new world which he trusted would moult over-night into a decent little cock pit for his pent up talent.

Nothing happened to the lazy world but a casual earthquake or two. And even that did not knock much of the old non-sense out. It wanted him to produce letters of recommendation from at least three persons who had known him intimately for not less than seven years.

The first from his wife.

"Dr. Tut is the father of three children. He knows the little tricks to endear himself to children. He is very fond of them himself. In fact all these were born before he fully qualified himself. It was at their first anniversary and the ears had to be bored and their tonsures had to be done that we realised his true specialty lay in Pediatrics. He would apply something to their ears that was at once painless and bloodless. He has a special cream for the tonsured scalps of quite little infants, that would make them cool as a cucumber. My brother had a colic. He took him to his professor who wanted to cut his stomach but he was able to strike the bargain at an appendix and nothing more, to which the great Professor reluctantly consented as a special case. My father had a soft lump on his head, not inside it. In fact the lump was getting quite soft after our marriage and he was determined to have it out before my husband graduated, to save further expense and trouble. People may say I am interested, but only to the extent of nearly Rs. 10,000, the sum my dad spent on Dr. Tut's medical schooling."

The second from his tailor.

We know young Tut from his Arts course onwards. He was the first to appreciate the Anglicized apparel even when all else were steeped in the superstitions of lungis and dhoties and the crass savagery of turbans. He was a perfect gentleman at least as much as our Master Cutter can make him. He trusted in us implicitly. His child-like faith brought us many customers. He bought even other's misfits, just to oblige us. He could be fastidious about the stitching of buttons and swore "the life of a man as well as a pair of pants hung literally on a thread". In one of his inspired moments he uttered after due homage to that Father of surgery—the Barber, the Thread and Needle alone symbolised the creed of the Latter day Calendar of Surgeons.

Dr. Tut, a Posthumous Memoir

He advocated that early devotion to Tailors and the minutiae of their handiwork would be the hall-mark of the Surgeon of the Future. We would be more than gratified if Dr. Tut should get a job and continue to spread this stimulating gospel of Surgery and the Sartorial Art in spheres both here and hereafter. (Morning clothes for sale or hire—a specialty).

The third one from the Hostel-boy.

On the Master's graduation night, it is literally true I was given half a Dimple Scot and a nearly full box of Coronas. He understands the psychology of the waifs and the lowly. This stunning gift is a proof of his knowledge of the inner workings of persons of my ilk on stolen whiskey and the small ends of cigars. He said tuly "Take them, my boy, I am going away from the Hostel, and for seven long years you have known me, you can no longer steal them." This touched me to the quick. If he would endear himself to me, he would naturally be the willing shepherd to the humble poor as well as the audacious rich, when pain and anguish wring their brow and hard cash is loathe to leave their purses. He has an old sporting coat which would be mine if he secures a job. But coat or no coat, he is an old sport and richly deserves a job."

These testimonials fell on deaf ears or rather on blinking eyes, which saw but sympathised not. He still continued to buy the Dailies of his own province as well as the organs of the more outlandish places like Gunroom Times, Golay States Mazette. He peered at their "wanted" and "unwanted" columns through 8 diopters of myopia.

He had a tempting offer to settle down in an idyllic nook of a place. It ran thus:—Oh, come and be our rural Doctor and rid yourself of rotten care. Get enthusiastic about our rural sanitation, reside under the coolest of our thatched roofs and cultivate the company of our neighbouring Cow.

Boil your water on fuel in lieu of fees, and prove to the doubting Thomases of our village that you alone are guinea-worm-proof. Keep in the good-books of our village headman (only lately acquitted by the High Court of murder) and entertain whom you like from the itinerating Vaccinator upwards to the giddy ranks of gazetted services. Quell our epidemics (without much T. A.); above all live the plain life and do what you will in the realms of high thinking. Defy Providence with the Three-in-One system of treatment and blaze the Path for the Pioneers of Rural Development. . . .

No, this did not appeal. What more, it looked so unreal. To move into a place where there were no Talkies, no Shaving Saloon, no Iddalies, no milk, no Practice, . . . imagination simply staggered at the thought of a life so unvarnished. He loved his profession, true, but he loved comforts, the elementary creature comforts, alas! even more. He suffered in a word from—AMBITION.

Here was his next chance. It came from Dr. Bungle, the famous Surgeon. "You like Surgical practice, real, good, thumping Surgery of the Bigger kind. You do? Come and join me. Watch me doing the Tricks, until I say STOP. Dote on all my fat clients. Laugh if they laugh and weep if that is in order. Have the sole charge from two days prior to the last rites of their funerals. Thus may your top get chockful of experience, which is only deferred payment cash—sometimes unfortunately deferred until death, disaster or dotage takes you. Remember that reward comes to even those" who merely stand and sponge and let the pageant of Surgery pass. Copy not my mistakes which are few, keep a silent tongue and a deaf ear, if you want to evolve in your own person the technique of Bungle, passed from one Master to another in unbroken sequence! It was at this point that Dr. Tut turned to enter the paid services in foreign lands. It was at this point also that the cries rent the air, "Burma for Burmans", "Malaria for the Malayans," and Doctors to the

Lethal Chamber". It was exactly at this stage in his celebrations that awful sky-signs appeared in the horizon, such as "Retrenchment, New Entrants, Proportionate Pension, and sundry minor flares, like pay cuts, half mileage, etc.

It was at this point he felt and saw with mortal eyes that his tin of cigarettes was standing on his newspaper-strewn and shabby table, as empty as his other two hollow viscera, the heart and the stomach, straight away life bristled fiercely with problems more innumerable than his unmown chin with its three-day's beard. An impulsive insanity lugged him from behind. He clutched at his Razor, as one about to do the Right Paramedian on the supine victim of Sippy's treatment.

But alas! horrible to relate. There was no supine victim. But nothing daunted, he put the first collar incision, then a second and then a third on his extended neck and across the unsuspecting and much memorized Carotid and in a red blaze of glory departed this world as befitted a Surgeon, both of promise and achievement.

A Case of Parry-Romberg Syndrome

BY P. KRISHNAN NAIR.

(A Final Year Student.)

A girl of eleven years old was admitted to the female wards on the 17th January 1934, with an outpatient diagnosis of "Facial Paralysis."

An examination of the patient was made and the following information obtained :—

Name	... Miss X	Race and caste	... Indian, Hindu
Age	... 11 year	Occupation	... Nil
Sex	... Female	Residence	... Kistna District

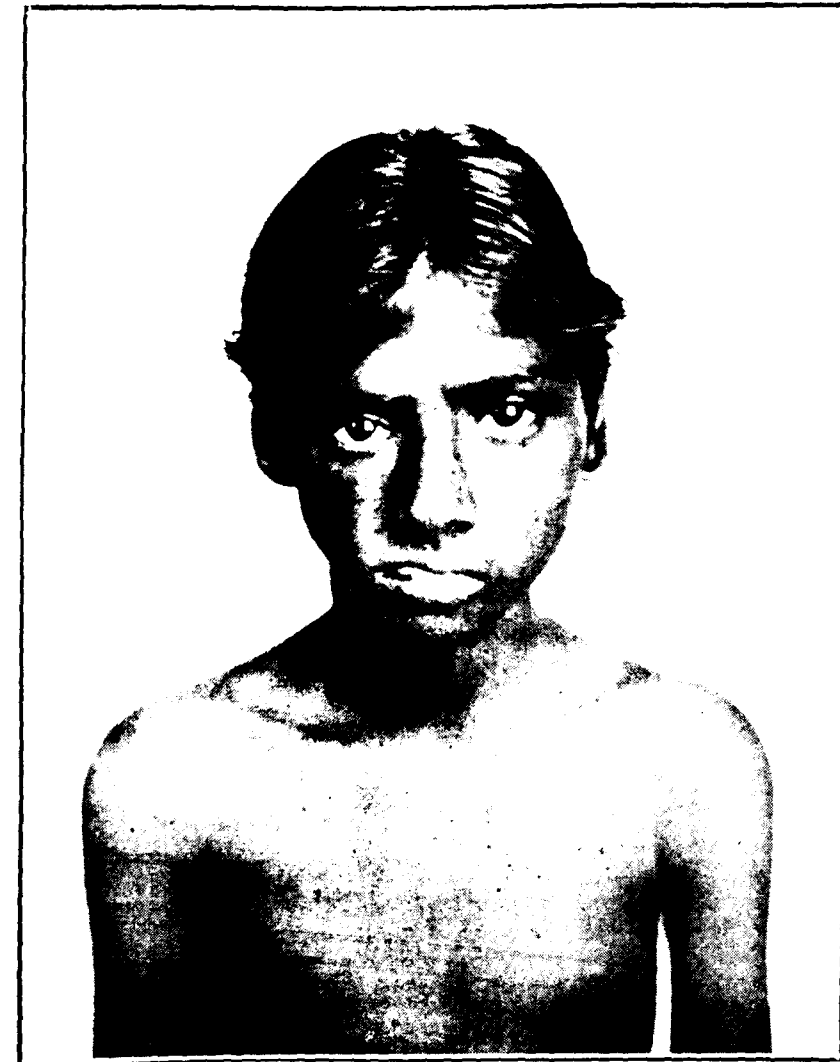
Complaint.—Deformity of the face.

Duration.—Two years.

History of the present complaint.—As her relatives put it, the girl was gradually "drying up" for the last 2 years, the heat specially doing its havoc on the right half of the face. A white patch appeared behind the right ear a couple of years ago. It arose from no known cause. This area of discoloration began to spread downwards, to the front, and slightly upwards.

Previous history.—Up to the eighth year, the patient was quite healthy. Few months after, she suffered from a blister in front of the right forearm. There was no apparent cause for it. At about the same time, she had a foul discharge from the right ear, which subsided after treatment.

Family history.—The patient is the only living child of her parents who are apparently healthy. The first child of her mother was delivered by forceps at full term, but died a few hours later. The next one was a normal delivery. This child died after five months from infantile causes. The third one is Miss X herself. She was delivered naturally. Another child was born to her mother, five years back, but it passed away after six months.



Parry-Romberg Syndrome.

Physical signs and symptoms.—The girl is eleven years old; appears ill-nourished and undersized. Her height is 3 feet 11 inches, weighs 42 lbs. She is not anæmic, but looks unhealthy. There is a dirty white scar in front of the right forearm. The skin condition is fair except for a round unhealthy ulcer of about the size of an anna in the middle of the right thigh.

The right half of the face shows a marked contrast from the left. It is discoloured, glossy and feels parchmentlike. The subcutaneous fat has completely disappeared. The pinna of the right ear is thin and wrinkled. The facial muscles can hardly be made out on the right side. The site of the buccinator and the suctorial pad of fat is replaced by a hollow. The right malar bone is thinner and smaller than the left. The tongue is deflected to the right, and partially atrophied. The right half of the palate shows signs of atrophy. Corresponding side of the neck and the upper part of the trunk are under developed. This asymmetry seems to stop short, at this part of the body.

(The accompanying photograph may illustrate the above statement)

The patient is fairly intelligent and reasonable. The visual auditory and olfactory functions are not affected in the least. The sensation of taste is present on both halves of the tongue. Touch, temperature, pain, and vibration of senses are normal on either side of the face and body. Cranial nerves are normal. The tone of the voluntary muscles is fair and equal on both sides. There is no want of co-ordination. Superficial and deep reflexes are normal.

The cardiovascular and respiratory systems function normally. The tonsils are not enlarged. The bowels are regular. Liver and spleen are not palpable. The urine is normal in amount and composition.

Investigation made and their results.—

1. *Electrical reaction of the affected muscles.*—React to strong Faradic current. No R. D.
2. *Blood.*—Wassermann—negative (27-1-34)
Blood film—normal.
3. *Urine.*—Sp. Gravity 1018; albumin; no sugar; no casts.
4. *Motion.*—No round worm or hookworm ova.
5. *Lumbar puncture.*—Could not be done.

Diagnosis.—A progressive atrophy of one half of the face and the corresponding side of the neck and shoulder without any disturbance of the sensory or motor functions, seems to be the leading feature.

Differential Diagnosis.

1. *A congenital deformity of the right half of the face* is a possibility to be thought of. A definite history that the child was all right upto her eighth year of life, rules out this possibility.
2. *Amyotonia congenita* is a disease usually congenital in origin or occurs during the first year of life. There is no muscular wasting, the amyotonia is symmetrical, affects the legs often, but never the face.
3. *Facial paralysis producing contracture* in the later stages may be a probable diagnosis. But this patient has no difficulty in closing her right eye as tight as the left. The naso-labial folds are equally prominent, when she is asked to clench her teeth. The absence of R. D. of the muscles on the right side, the malady being extended to an area covering the lower four cervical nerves, and the atrophy of bones are all points against this diagnosis.
4. *Progressive muscular atrophy* is a disease which begins after puberty. It is bilateral, affects generally the small muscles of the hand. Twitching and fibrillation of the muscles are very characteristic of this disease and are of great diagnostic value.
5. *If this is a case of Progressive Bulbar paralysis*, the patient must have shown a bilateral general facial weakness and wasting which, with the everted mouth, patulous lips, and dropping jaw, produces a characteristic facies is easily recognised.
6. *The facio-Scapulo-humeral type of muscular dystrophy* is another possibility. This is a herido-familial disease, in which the face is dull and expressionless, the naso-labial fold is obliterated, the lips are separated and the lower jaw projects. This myopathic facies is absent in this case. The affected muscles, which are generally bilateral in distribution, show reaction of degeneration to an extent depending upon the amount of degeneration present.

This is a case of that rare condition, *hemi-atrophy* of the face. There is atrophy of the skin, subcutaneous tissue, muscles and even

A Case of Parry-Romberg Syndrome

bones on one side of the face, shoulder and the upper part of the trunk. The sensory and motor functions being normal it is a trophic disturbance of the fifth cranial nerve, the superior and inferior maxillary branches being chiefly affected. The trophic function of the upper four cervical nerves of the right side is also disturbed, for the right half of the neck and shoulder show similar atrophy. A blister which appeared in front of the right forearm may be looked upon as another evidence of trophic disturbance. A face, which seems to have been made of two separate halves, one showing the life and vigour of youth, the other the care and worry of age, with a history, signs and symptoms like the one we have here, clinches the diagnosis of Facial Hemiatrophy or Parry-Romberg Syndrome.

I have great pleasure in expressing my indebtedness to Rao Bahadur P. Krishnaswamy, M.B. C.M., M.R.C.P., for having given me encouragement and valuable help to publish this case from his wards. Lastly, I am grateful to the Special departments, which have been of tremendous help to me in getting the necessary materials in form in such a short period of time.

A Case of Double Ectopic

By S. R. RAJA RAM AND V. K. BALAKRISHNA MENON.

The Double Ectopic that recently turned up at the Government Maternity Hospital for Women and Children, Egmore is worth recording.

Name: Mariamma. Age 25.

ii-Para. First Pregnancy ten years back. Natural Blind. The patient sought admission into the hospital at 9.45 A.M. on 5th November 1933 for pain in the abdomen and bleeding per vaginam from 6 A.M. that day. She gave a history of amenorrhoea for four months. In the early hours of the morning she felt a sudden pain in her lower abdomen and ever since she had been confined to bed.

Condition on Admission.—Patient somewhat restless; increasing pallor and anaemia of mucous surfaces; cold and clammy sweats on the face and extremities. Heart sounds feeble and fast, pulse thready, sighing respiration with dyspnoea, all showed the classical picture of collapse due to haemorrhage. Temp. 97 Pulse. 146.

Vaginal Examination.—Os was not dilated. There was a tender swelling in the right fornix. In the posterior fornix was felt the retroverted, enlarged uterus.

Immediate operation was decided upon by the Second Obstetrician.

Abdomen was opened by a para median incision under spinal anesthesia, 5 per cent. Ethocaine. Blood welled out in large quantities, flooding the abdominal rent. Hand was plunged into the pelvis and the Uterus lifted up when a tubal rupture on right side was noted. Two clamps were forthwith applied on either side. The tubal gestation at the swelling turned out to be a rupture of the ampulary end. The left adnexa was next scrutinised, when it revealed a tubal swelling with a few adhesions. The adhesions were gently separated and the tube brought up and clamped on either side. This tube was distended with fluid blood, its ampulary being closed, it presented a typical retert

A Case of Double Ectopic

369

shaped swelling, due to an intra-tubal rupture. A Right Salpingo-cophorectomy and a left Salpingectomy were performed. Next, blood clots of fairly good dimensions were removed, and a large quantity of fluid blood was mopped out. A pint and a half of saline was put in and the abdomen closed in three layers.

With the usual post operative treatment the patient rallied round rather rapidly without any complications.

I wish to express my deep sense of gratitude to the Second Obstetrician for his kindly help and permission to report this case.

"Pathological Howlers."

In a recent Examination, one of the questions asked was about "Tar Cancer". The following are some of the answers :

1. "The source of irritation may be tar or vaseline" (We wish to know if brilliantine comes in this list, as some of us have been unknowingly using it for years and have so far escaped cancer.)
2. "Animals fed on cockroaches also showed signs of malignancy" (The vegetarians are lucky devils!)
3. "Tar Cancer occurs as a result of Carbolic acid poisoning". (As two students wrote this same answer, it is reasonable to conclude that they were sitting under the same fan and used the same kind of fountain pen.)
4. "Chronic irritation is the place where Cancer is produced". (A high tariff might effectively prevent the import of this commodity in this country.)
5. "After application of tar, the skin peeled off and the hair were gone earlier." (Hard lines, Skin! Better luck next time! You are the runner-up anyway!)
6. "Cancer is one of the most horrible diseases which produces much havoc to humanity, and in spite of many researches done on the subject by eminent and enthusiastic people, no cause has been yet come out." (This candidate would have done well as a platform orator or a temperance worker.)
7. Another candidate speaks of it as "Dark Cancer". (He takes the darker side of the problem. Evidently he is a pessimist.)

Another question asked was about "Epithelioma". Here are some model answers :

1. "Some think it is due to auto-intoxication resulting from constipation." (The habitual use of Agarol might root out the disease in no time.)
2. "Epithelioma cheek is usually cut away by electric needles." (Why not wireless, in these days of rapid advances in science?)

"Pathological Howlers."

371

A third question asked was about "Gumma". The following are the answers :

1. "Gumma is the condition that happens in syphilitic affections. It is described as a kind of granulation tissue that develops in the beginning stages." (One of the every day "happenings" of modern times.)
2. "A gumma is a lesion due to syphilis. It is a hard growth often described as shotty." (Buck shot or cartridges?)
3. "In the female, gumma of the mammary gland is also common." (Quite impartial in these days of equality of the sexes)

A fourth question was about "Renal Oedema". The following are the answers :

1. "Renal oedema is due to neuropathic disturbances." (We would like to know how many of the inmates of the Mental Hospital are suffering from renal oedema)
2. "The kidneys may have nephritis and thus inefficient." (Possession is nine points of law no doubt, but supposing kidneys are not hospitable enough to accommodate nephritis, what happens?)
3. "I really do not know this." (Honesty is the best policy though it did not pay in this case.)

Still another question asked was about "Coagulative necrosis". Note these answers :

1. In coagulative necrosis the tissue becomes dull....." (We advise a Pelman Course to the tissue.)
2. "Necrosis is of two types : "Exhaugenous" and "Endogenous" (The answer is certainly "Aboriginal")
3. Coagulative Necrosis is a necrosis found in a fluid media. The area of necrosis would then be known as a red infarct. (For example, take the lung.) There is more blood coming in than is leaving the lung. As a result, there is stagnation of blood and later, coagulation forming a necrosis." (We are awaiting the 1935 edition of Muir's Pathology to verify facts, before awarding the prize to this answer).

The Doctor.

BY CAPT. R. C. TOYLE.

The doctor after all is human too
But has his feelings dev'loped more than you!
A timely comforter is he for those
Whose doubtful hearts in him good faith repose.
A hundred secrets test his discretion,
Embrassments a thousand his mission
And tact; he percusses and auscultates
And tests, observes and tries to diagnose well,
With careful notes, for diff'rent tests he waits,
To know the changes pathological.
The patients' blood, faeces and urine too
Exams he first and aft so carefully
To discover for guidance, changes true,
The parasites, their growth and family.
For fracture, growths he has the X-ray room
Which helps him more to drive his doubts and gloom.
A case acute he treats with extra care
And chronic one with marked patience long
For ailments some appearing strange and rare.
He stops his drugs and slow whistles a song.
So tries he something new and useful oft
And patients heal and soothe with nature soft;
His gentle words, advice and kindly touch
And drugs or knife in time relieve them much.
The doctor candid loves his patients more
Than what lay-folk in haste about him think;
He's not a fool but sure a man of lore
Who tries his methods best and does not blink.
In this, the present world he is a flower,
For cheer and strength of mind a sacred tower!
So wish him, treat him well, and pay him well
For he would sorrow, illness all dispel;
His smiles alone ease patients' minds with peace
And act as sooth'ning psycho-therapies,
The doctor after all is human too
But has his feelings dev'loped more than you!

Gastric routine as done in Col. Pandalai's Wards.

BY M. S. YEGNA NARAYANAN

As soon as the patient is admitted—

A. Short history is taken:—

- (1) Pain, nature and position.
- (2) Duration of the pain.
- (3) Relation of food to pain.
- (4) History of vomiting or not. If vomiting is present, how long after food and whether induced or spontaneous; whether after vomiting relieved of pain or not.
- (5) History of relapses.
- (6) Habit of the individual—alcoholic or not.
- (7) Any history of dysentery.
- (8) Condition of the teeth.
- (9) History of haematemesis.
- (10) History of previous biliary or appendicular trouble.

B. Patient is examined and the following points noted:—

- (1) Any rigidity or tenderness in the right margin of the rectors in the transpyloric plane of Addison.
- (2) Any rigidity or tenderness in the appendicular region.
- (3) Any enlargement of liver or spleen.
- (4) Any enlargement of lymphatic glands—cervical, supraclavicular, epitrochlear, etc.
- (5) Patient is given a cup of water to drink and carefully observed for any visible peristalsis.

- (6) Patient is carefully examined for any heart or lung or spinal disease to eliminate referred pains due to heart disease, pneumonia, and caries of the spine; care also is taken to eliminate in women referred pains due to Ovarian or Fallopian tubes trouble.

- C (1) Urine is examined especially for sugar and albumin.
(2) Blood pressure is taken.

It is noticed that majority of the patients have got a low blood pressure on an average systolic about 90 m. m. Hg., and diastolic about 65 m. m. Hg.

- (3) Bismuth meals and X-Ray is done only in atypical cases.
(4) Weight of the patient is recorded.

D. After deciding for operation the patient is prepared in the following way:—

- (1) *Preparation of the abdomen.*—Abdomen is shaved at 4 p.m. previous to the day of operation. Washed with soap and water. Well rubbed with turpentine, which is removed with alcohol, and the whole part is painted with alcoholic picric (3 grs. to oz. i of rectified spirit). Sterilised dry gauze is put over the part and bandaged.

Next day at 8 a.m., the same preparation is repeated.

- (2) Patient is given an enema at 8 p.m. previous to the day of operation; another at 6 a.m. on the day of operation. Old custom of giving castor oil is entirely stopped.

- (3) Patient is given at 6 a.m. on the day of operation 6 oz. of glucose water.

- (4) The patient is given $\frac{1}{100}$ gr. atropine subcutaneously at 9 a.m. on the day of operation.

Operation.—Posterior gastrojejunostomy and appendicectomy is done in the majority of cases. In certain cases where the transverse mesocolon is very short antecolic posterior gastrojejunostomy is done by making an opening in the gastrocolic omentum.

Post-operative treatment.—Patient, as soon as he is taken into the post-operative ward is kept flat in bed, covered up with blankets and hot water bags applied to the extremities.

Vomiting.—Few patients bring out stale blood and begin to vomit owing to the irritative action of stale blood. In such cases the stomach is washed out with Soda bicarb oz. i to a pint of water. The whole vomiting ceases.

Distention.—Some people develop distention. This is treated by giving a turpentine enema.

R.	Castor Oil	... oz. $\frac{1}{2}$.
	Oil of Turpentine	... " i.
	Mucilage of Starch	... " xx.

In very few cases distention persists and it is treated by giving Eserine $\frac{1}{100}$ gr. and Pituitrin $\frac{1}{2}$ c.c.

Bronchitis.—Some people develop bronchitis as a result of irritative action of CH Cl₄. If there are not definite moist sounds in the chest, generally by putting the patient on sedative mixture,

R.	Soda bicarb	... grs. xxx.
	Tr. Camp. Co.	... dr. i.
	Vin. Ipecac.	... m. xxx.
	Syr. Tolu	... dr. iii.
	Aqua ad	... oz. iii.
	oz. i t. d. s.	

Patients get over it. But if the patient shows definite signs of pneumonia, patient is put on expectorant mixture containing digitalis—

R.	Tr. digitalis	... m. xxx
	Am. Carb.	... grs. xv.
	Spts. am. aromat.	... dr. i.
	Liq. am. acet.	... oz. i.
	Syr. aurantii	... dr. iv.
	Aquam ad	... oz. iii.
	oz. i t. d. s.	

Oxygen inhalations 10 minutes every hour.

Attention to wound.—Wound is dressed on 3rd, 5th, 7th and 9th day, touched with alcoholic picric (3 grs. to oz. i. of rectified spirit) and dry gauze put in. 10th day sutures removed.

Feeding during the stay in post-operation Ward.—Rectal glucose saline (two teaspoonful of NaCl and one tablespoonful of glucose to one pint of warm water) after returning from the theatre.

Day of operation and 1st day after operation.	Rectal glucose saline 1 pint every 4 hours and sips of glucose water.
2nd day to 6th day	Dilute milk and egg flip feeds with orange juice (two oranges).
6th day	Biscuits and milk.
7th and 8th day	Bread and milk diet.
9th to 14th day	Bread and milk or <i>if ordered by Surgeon</i> —Half ordinary diet (rice and curry) and milk.
14th day	Full ordinary diet <i>if ordered by Surgeon</i> .

Attention to Bowels:—

3rd day	Glycerine enema.
5th day	Castor oil oz. i; if bowels not opened S. W. enema in the evening.

Before the patient is discharged his weight is recorded.

Patient is discharged about the 20th day after operation.

Before closing this I wish to thank Dr. C. P. Visvanatha Menon, M.S., for the help he has given me in getting up this article.

In Lighter Vein.

Jones.—Are not your daughter's music lessons costing a fearful lot?

Brown.—On the contrary, they enabled me to buy the next house at half its worth.

"Ma", asked a young girl who was reading a book on Geography, "where is the shade of matrimony"?

"That", said the mother, "is one of the United States".

Household hints.—To remove tea stains from the table cloth, use scissors.

To test the freshness of eggs—break them on a bald head.

A married man who called at his bachelor friend's house, congratulated him on his beautiful quarters, to which the friend replied that if bachelors have good quarters, married men have better halves.

The wife of a blindman, married only a week before, said to her husband "How I wish you had eyes and could see how good looking I am". The blindman replied, "If you were as beautiful as you think, anyone with eyes would have married you".

A man wrote a letter to his fiancée, copying it from "An Aid to letter writing". The fiancée wrote back saying "The reply is to be found at the back of the same page".

A bachelor, when asked by his friends why he would not marry, replied that girls never kept secrets and that he did not want others to

know his secrets. His friends promised to find a really good girl for him and they did so. On the first night of the wedding, the man began to groan with pain. His young wife was alarmed and wanted to fetch a doctor. Her husband said "If you promise not to let out my secret, I will tell you why I have this pain". She promised. Then he said, "Every night I lay an egg and this pain is due to that." Saying that, he took out a warm egg from inside his clothes and showed it to her. The innocent girl believed this and as soon as it was morning she confided the secret to her neighbour. The news spread like wild fire and everybody in the neighbourhood came to know of it before the day was much old. The man's old friends who had asked him to marry also learnt this and came to see him. As soon as he saw his old friends, he exclaimed "Did n't I tell you before? Now who is right, you are or I?"

A fire-eating Irishman challenged a barrister to a duel, which was accepted. The duellist, being very lame, requested that he might have a prop. "Suppose", said he, "I lean against this milestone?" "With pleasure," replied the lawyer, "on condition that I may lean against the next." The joke settled the question.

A young gentleman who had been acquainted with his girl two nights, attempted to kiss her at the gate. Afterwards he told the doctors—just as he "kiss her, earth slid from under his feet, and his soul went out of his mouth, while his head touched the stars." Later dispatch shows that what ailed him was the oldman's boot.

A young Frenchman lately married an English lady, and while taking his intended bride to the altar, on finding the weather dull and gloomy, observed "shape we shall shortly have a leetle." To which the lady replied, "I think, my dear, I would rather have a little daughte".

"Papa", said the daughter of the household, "how did you propose marriage to mamma?" "Don't ask me", answered the old man,

"I can't remember a thing about it. Go and ask your mother, she managed the whole affair".

An Irish Judge addressed a prisoner—"You are to be hanged, and I hope it will prove a warning to you".

A gentleman at the theatre sits behind a lady who wears a very large hat, "Excuse me, madam, but unless you remove that hat, I can see absolutely nothing". Lady ignores him. "Excuse me, madam, but unless you remove your hat, something unpleasant will happen." Lady ignores him again. Gentleman puts on his own hat. Loud cries from the audience "Take off that hat! take off that hat!" Lady thinks they mean her hat, and removes it. "Thank you, madam".

"Kittu, what does your father do for a living?" "He is a Philanthropist, Sir". "A what?" "A phi-lan-thropist, Sir. He collects money for the Flood Relief, and *builds houses out of the proceeds*".

A student told his professor that a barrel of ale found in his room had proved so beneficial to him that whereas two days before he could hardly lift it, he could now lift it with ease.

A man was asked by another, with whom he was not on good terms, where he had taken up his abode. "Oh," he replied, "I am living by the Canal at present. I should be delighted if you would drop in some evening".

Johnny (studying arithmetic): "Mamma, I wish I were an Australian Rabbit". "Why, Johnny". Johnny "well, teacher told us to-day that rabbits in Australia multiply rapidly".

"What is meant by an author's posthumous works?"

"They are the works an author writes after he is dead".

A man hearing that a raven would live 200 years, bought one to try.

The clergyman was reading the funeral service, until he came to the part which says "our diseased *brother or sister*" without knowing whether the diseased was male or female. He turned round to one of the mourners and asked whether it was a brother or a sister. The man very innocently replied, "No relation at all, Sir, only an acquaintance".

"The Human frame," said the Professor, lecturing at the High School for Girls, "changes completely once in seven years. You, for instance Miss Budde," he continued turning to a pretty girl of seventeen, "when you are twenty-four, will virtually be Miss Budde no longer"—"Indeed, Professor, I hope not," she said, with a pretty blush.

A young man who was considered especially stupid managed to pass an examination, much to the astonishment of his associates. One of the examiners was asked how it came about.

"Well," he said, "it was quite simple. When the young fellow came up we asked him two questions, and he required a percentage of fifty to pass the examination. The first question we asked was, 'What is the colour of blue litmus paper?' The candidate replied 'Red' That was wrong. That second question was 'What is electricity?' He replied 'I don't know' and that was correct. So he passed."

(By Courtesy of G. R.)

An Editor's revolver, being stolen, he advertised that if the thief would return it, he would give him the contents, and no questions asked.

"Good, Sir, give me something for myself and two twins". "How old are the twins?"

"One is seven weeks old, your honour, and the other eight months".

It is reported that a woman was true to her lover and married when he came back from America after an absence of twenty years.

N.B.—He came back rich.

Auntie was trying to induce a little boy to go to bed at sun down, by saying, that the little chickens went to roost at that time. "Yes," said the child, "but the *old hen* goes with them".

C. S. H. to Recruit.—"What is your height?"

Recruit.—"The man that measured me told me it was five feet ten or ten feet five. I am not exactly sure which, but it was either the one or the other".

During a heavy shower, a business man, carrying a very wet umbrella, entered an office to pay a call to his friend upstairs. After placing his umbrella to drain, he wrote upon a piece of paper and pinned it to the umbrella—"N.B.—this umbrella belongs to a man who strikes a two hundred and fifty-pound blow. Back in five minutes. He went upstairs and returned after fifteen minutes to find his umbrella gone and in its place a note: "P.S.—umbrella taken by a man who walks ten miles an hour. Won't be back at all".

Lessing, the German author was so absent minded that one night he called at his own house and asked the servant if the Professor was at home. The servant, not recognising him in the dark, said:—

"He is not in". "Oh, very well," replied Lessing, "I will call another time."

An Irish man said "I saw Pat Ryan the other side of the road. I thought it was Pat," and Pat thought it was me but when I came up, it was neither of us".

Elderly Suitor—"I have spoken to your mother, Helen, and—,"

Helen—"Oh, I am so glad. Did she accept you?"

When a man considers himself as 'one in a thousand,' he naturally regards others as ciphers.

Printer's devils :—

We shall be hanged (changed).

The enemy was repulsed with great laughter (Slaughter).

Eating a Coachman (beating).

Small ox (box) in a lady's pocket.

"Are you fond of Hogg's Tales?"

"Yes, I like them roasted, with salt on them".

"No, but I mean, have you *read* Hogg's Tales?"

"No, my hogs are all white or black. I don't think there is a red one among them".

A young lady, on being asked what calling she wished her sweetheart to follow, blushing replied, that she wished him to be a husbandman.

Busy body.—"Hullo! Old fellow, how came you to be so dreadfully hoarse?"

Korfer.—"By adswerigg the fools that ask me how I cought this code. Good bordigg".

Another hugging a four year old, said: "Charlie, what makes you so sweet? "I think mother, God must have put some *thugar* in the dust".

"Do you think raw oysters are healthy?" asked a lady of her physician. "Yes," he replied, "I never knew one to complain".

Never marry a girl named Ann. 'An' is an indefinite article.

"That motion is out of order," said the Chairman of a political meeting, as he saw a rowdy raising his arm to throw an egg.

How some women change their minds respecting their husbands! Mrs. Jinks was for ever telling her husband that he wasn't worth the salt on his bread. But when he got killed in a railway collision, she sued the company for Ten Thousand Rupees damages.

"What is that racket upstairs?"

"That is ma, dropping a hint to pa".

"He that will never look upon an ass,

Must lock his door and break his looking-glass".

*Receipts and Payments Account of the Madras Medical College Association and Magazine for the
year ending 28th February 1934.*

RECEIPTS.	Rs. A. P.	Rs. A. P.	PAYMENTS.	Rs. A. P.	Rs. A. P.
<i>To Cash Balance as on 1-3-1933 :—</i>					
Association Account	90 6 9		By Association :—	0 2 0	
Magazine Account	1,032 14 0	1,123 4 9	Conveyance and cooly	664 0 6	
			Graduates' Day reception and entertain- ment	3 8 0	667 10 6
.. Association :—			Miscellaneous		
Subscriptions		696 0 0	.. Magazine :—	1,234 5 3	
Interest on Bank Current Account		15 5 9	Printing and Stationery	3 10 0	
Miscellaneous		2 0 0	Conveyance	14 3 9	
.. Magazine :—			Postage	142 0 0	
Subscriptions		1,452 8 0	Establishment	42 0 0	
Advertisement		187 2 0	Portrait (Col. Hingston's)	18 8 0	
Suspense		40 4 0	Contingencies		
Miscellaneous		1 4 0	.. Closing Balance as per Cash Book :—		1,444 11 0
			Association Account	136 2 0	
			Magazine Account	1,269 5 0	1,405 7 0
Total		3,517 12 6	Total		3,517 12 6

Examined and found correct.

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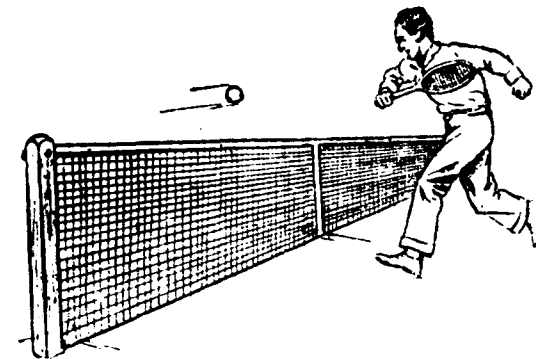
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MADRAS,
17th March 1934.

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SAHARANPUR,
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[Sd.] K. N. GOEL,
Capt. Late I.M.S.,
Medical Officer Incharge,
Civil Hospital.



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[Sd.] P. B. MOTIVALO,
Chief Medical Officer,
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[Sd.] P. N. MEHTA, C.M.O.,
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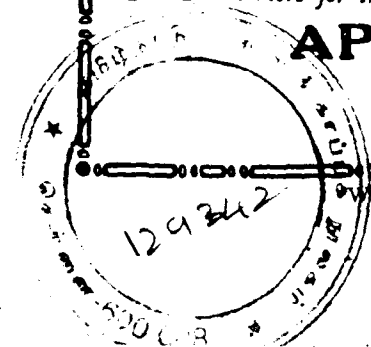
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Gastric Tetany may occur as the result of excessive loss of chloride by vomiting which results in an increase in the available base (Na and K) and consequently bicarbonate of the blood and tissues, leading to a diminution of ionisable serum calcium. Thus a disturbance in the acid-base balance occurs. The primary therapeutic indication is the restoration of the normal acid-base equilibrium. Since the fundamental fault lies in a diminished chloride concentration in the blood, good results are obtained by injection of saline. Ammonium chloride may also be given. This salt may be used intravenously for this and other kinds of tetany due to alkalosis from any cause.

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The treatment of rickets and osteomalacia by vitamin D is well known. Vitamin D influences calcium metabolism and in the manner already indicated it helps the absorption and retention of calcium and its deposition in the bone.

In Fractures. There appears to be no physiological or experimental basis for the employment of calcium salts, parathyroid hormone or the anti-rachitic factor for the purpose of stimulating the healing of fractures. In human beings it has been found impossible to correlate delayed union or non-union with the serum calcium or phosphorus concentration.

In Dental Caries. Mrs. Mellanby made the significant observation that there is a definite relationship between dental structure and dental caries in children. Carious teeth, examined microscopically were frequently badly constructed and showed great defect in calcification. Children kept on a diet poor in calcium and Vitamin D exhibited nearly four times as much new caries and spread of old caries as those maintained upon a diet rich in these factors. Cereals were

found by Mellanby, Pattison and Proud to promote the development of caries. The essential constituents of an adequate diet in this respect are Vitamin-D and calcium. Cereals should be given in limited amounts.

In Pregnancy and Lactation.—It has been shown that there is retention of calcium and phosphorus by the maternal organism during pregnancy. This is perhaps a reserve supply to meet emergencies. During lactation there is a negative calcium balance. It would therefore appear that calcium salts should be added to the dietary of women in the later months of pregnancy and especially during lactation in order to avoid the dangers of osteomalacia, tetany etc.

In Eclampsia.—The calcium level in the blood in these cases seems to be variable. Minot and Cutler, noting the resemblance between the clinical picture of eclampsia and the toxæmia of acute hepatic injury in dogs, studied the guanidine content of the blood of 8 patients with pre-eclamptic toxæmia and 4 with true eclampsia. This was found to be increased in every case. The observation, together with the well recognised hepatic lesions associated with eclampsia, suggested calcium therapy. Prompt and striking relief from extremely urgent symptoms in eclamptic and pre-eclamptic patients followed the intravenous injection of 10 c.c. of a 10 per cent solution of calcium gluconate, repeated if necessary. The blood guanidine was unaffected but the associated low blood sugar level was raised. Convulsions ceased within a few hours. The blood pressure also dropped.

In Milk Fever in cattle.—This is a condition of extreme interest because it apparently represents a fundamental disturbance of calcium metabolism associated with lactation. The blood calcium has been shown to be diminished and an associated increase in the elimination of both calcium and phosphorus along with a decrease in the serum phosphate has been observed. Remarkable and immediate symptomatic relief

21
L. H. M. P. S.

