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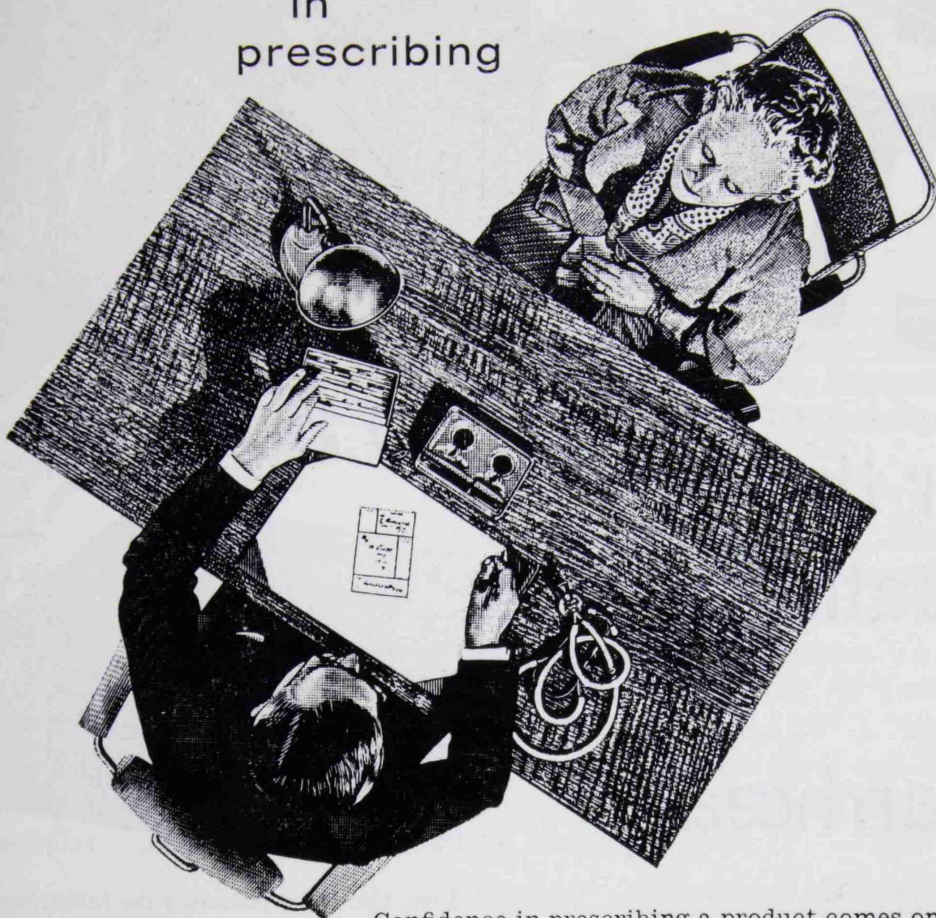
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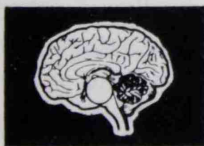
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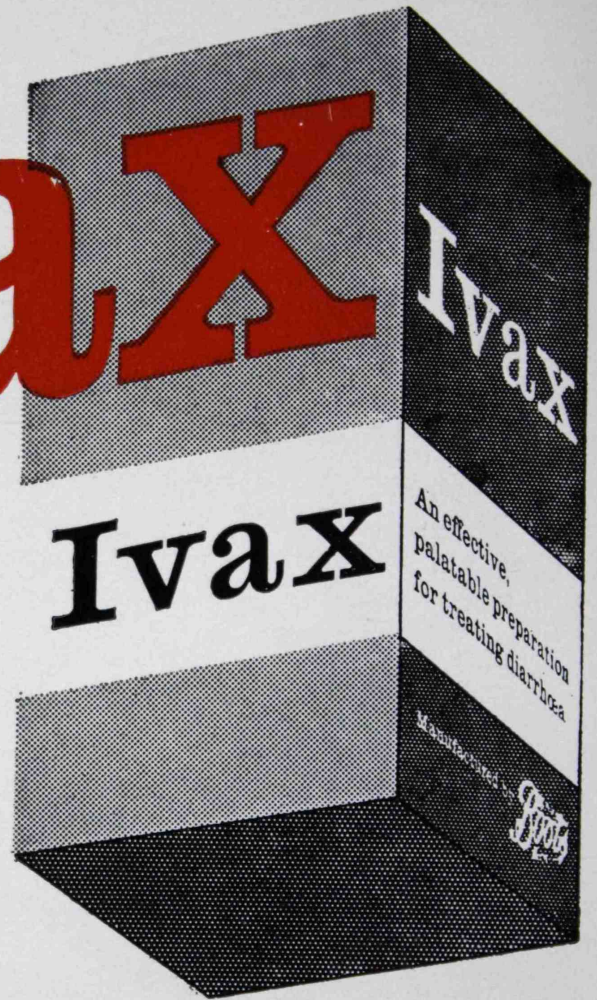
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Literature and further information from International Division

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PIPERAZINE AND HELMINTH INFECTIONS

The efficiency and safety of piperazine in the treatment of roundworms and threadworms is now established, and for both infections, piperazine is considered to be the drug of choice.

Roundworms (*Ascaris Lumbricoides*)

It is estimated (Watson, 1960; Leff, 1960) that approximately 650 million persons are infected with roundworms in the world. This compares with figures of 450 million for hookworm and 50 million for tuberculosis. Thus ascariasis is one of the world's most common diseases.

Infection is by mouth and as each female roundworm lays an average of 200,000 ova per day it will be evident at once that in an area where the infection is established and where there is poor sanitation, the soil and dust of the area become heavily contaminated. In heavy infections the worms sometimes form a 'bolus' and may give rise to intestinal obstruction; in young children this is often fatal (De Silva, 1957; Fernando, 1958). Following ingestion of the ova the resulting larvae penetrate the mucosa and travel in the bloodstream to the lungs and, in cases of heavy infection can give rise to lobular pneumonitis with spasmodic coughing.

Threadworms (Pinworms) (*Enterobius vermicularis*)

Threadworm infection is also common and an incidence of 50 per cent in children of school age and 20 per cent in adults is common. (Watson, 1960) The main symptom is perianal irritation caused by the presence of ova and the movements of the worms in the anal area. An average of 10,000 ova are deposited by each female worm, and these can be carried on the fingers in large numbers to the mouth. They then hatch in the duodenum and the larvae are carried to the caecum which is their normal habitat.

Duran-Jorda (1957) reported on 691 removed appendices in children and found *Enterobius vermicularis* in 52 cases; all these appendices were inflamed. He demonstrated that larvae invade the mucosa of the appendix, thus facilitating secondary bacterial infection. This confirms the findings of Gradwohl and Kouri (1948) who stated that threadworms frequently produce lesions of the appendix which become infective, thus causing many cases of appendicitis. Several other workers, including Faust (1955) and Wilkinson (1959) consider that there is a relationship between appendicitis and enterobiasis.

The Action of Piperazine

Roundworms normally maintain their position in the small intestine by coiling around the lumen and exerting a springlike action on the wall. Threadworms, on the other hand, attach themselves by their heads to the mucosa of the large intestine, particularly in the caecum. In either case piperazine produces paralysis of the musculature, which results in the expulsion of the worms by the peristaltic movements of the host's intestine. Norton and De Beer (1957) describe piperazine as having a curare-like action on the myoneural junction in these worms blocking acetylcholine. This action would seem to be selective for ascaris and enterobius muscle.

Intestinal transit times vary greatly, and passage from mouth to anus may take as long as six days. Alvarez (1948) illustrated this by studying the rates of transit of tiny glass beads and showed that an average of only 75 per cent of the beads were passed in four days. When a laxative was given nearly all the beads were passed within 24 hours. This would seem to have a direct application to the elimination of worms paralysed by piperazine, particularly since it has been shown that roundworms recover on incubation after having been immobilised by piperazine (Goodwin and Standen, 1954). (Standen, 1955).

Following some years of research and development, a new granular preparation containing piperazine, Pripsen, has been evolved, which contains piperazine phosphate and standardized senna (Senokot).

The rationale for Pripsen is based on the fact that the worms are not killed by piperazine and that they rapidly recover in a piperazine-free environment. It is important that the worms should be rapidly removed from the gut and standardized senna has been included in the formulation to ensure this. Whereas with the usual piperazine preparations seven-day twice daily treatment is required to achieve a cure in threadworm infections, it has been shown that with Pripsen a single dose is effective. Thus, Bumbalo et al. (1958) who used a single dose of piperazine citrate alone, achieved no more than 43 per cent cures, while White and Scopes (1960), who used Pripsen achieved 97 per cent. Bumbalo (1962), and Ragan (1962), have confirmed the efficacy of the single dose, the latter with a 100% cure rate.

Pripsen is a pleasant tasting granular preparation; each adult dose (10 G.) contains four grammes of piperazine phosphate B.P. and standardized senna (Senokot). White and Scopes state that their reasons for selecting standardized senna (Senokot) as the laxative ingredient were because it is physiological in action (Burgess, 1958), non-irritant (Douthwaite and Goulding, 1957), non-toxic (Hawkins, 1958) and safe to administer even to infants (Campbell-Mackie, 1959).

TREATMENT

Hygienic Measures

With both roundworms and threadworms hygienic measures form an important part of treatment.

In the case of roundworms, the proper disposal of human faeces, sterilisation of sewage, clean living conditions and hygienic preparation of food, are of obvious importance. Regular washing of hands, particularly before meals, and care in the preparation of salads and uncooked vegetables are also essential preventive measures.

When sanitary conditions are poor, the risk of infection and reinfection is high.

For threadworms (pinworms) again hygiene is important. Ova are found in the perianal area, in clothing, bedding, on lavatory seats and in dust. The ova are light and float on air, particularly when clothing is removed. Cross-infections are almost always dust-borne. Regular changing and washing of bedding and night attire, cleanliness and good ventilation of bedrooms and lavatories are, therefore, important. Hands should be kept clean; tight fitting pants worn at night; and the perianal region thoroughly washed each morning.

When threadworm infection has been established for some weeks, all members of the family are likely to be infected. The importance of treating the entire family simultaneously has been stressed by Kagan (1961). He showed that Pripsen was particularly effective and added:

“The single-dose treatment of the troublesome cases which so often resist repeated seven-day courses of piperazine was very successful . . .”

“. . . This tends to confirm one's fears that family treatment so often failed in the past because the seven-day course was seldom completed by the symptom-free members.”

Pripsen

White and Scopes (1960) have shown that in enterobiasis a single dose of Pripsen produces a cure-rate of 97 per cent, which is equal to the previous seven-day course of treatment with plain piperazine preparations (White and Standen, 1953). The same single dose produces an 86 per cent cure-rate in ascariasis (Tarantola, 1960). With repeat dosage Platman (1962) achieved a 100% cure-rate in 88 cases. The cases requiring more than one dose (2 or 3) were mostly heavily infected.

For adults and children 6 years and over, the full dose (10 G.), containing 4 grammes of piperazine phosphate, is given at night and the worms will be

eliminated the following morning. For children under six years three-quarters of this dose (7.5 G.) is used and here the dose is best given in the morning to ensure that the action takes place during the day. The granules are pleasant and can be taken from a spoon with a drink after each spoonful. The dose may be mixed with milk or water but the mixture should then be well stirred and any sediment swallowed.

In many areas roundworms and threadworms are often found in the same person. The increased efficiency of piperazine will be welcomed as the same single dose of Pripsen will eliminate both infections.

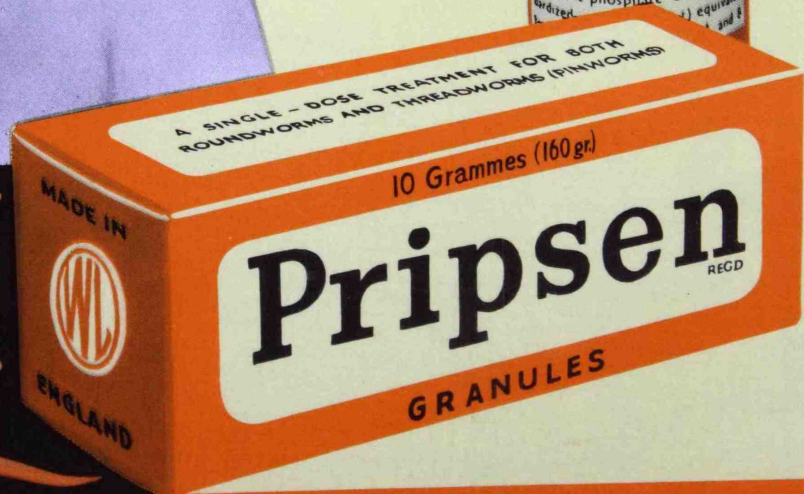
The importance of follow-up treatment will be described in a subsequent article.

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Pripsen

GRANULES



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STANDARDIZED SENNA

Senna is one of the oldest drugs in current medical practice; earliest records indicate its use over 2,000 years ago. It appears in many of the world pharmacopoeias, but none of these contain an official method of assay of its laxative activity.

The potency of the crude drugs is variable; extracts and liquid preparations, such as Syrup of Senna, are unstable and some samples are inactive. In most countries official preparations have fallen into disuse.

The first essential step in rationalising the use of senna was to establish a method measuring the activity of the drug.

Standardization

Working under the direction of Professor J. W. Fairbairn at the School of Pharmacy at the University of London, Lou (1949) elaborated and refined a method of assay using mice. At the same time, Professor Fairbairn and Dr. J. Michaels (Westminster Laboratories Ltd.) developed in 1950, a chemical assay and correlated this with the bio-method.

By the use of these assays, Fairbairn and Michaels (1950) revealed gross discrepancies in the B.P. galenicals (Liquid Extract and the Infusion), and considerable variation both in these preparations and in the crude drug. All the liquid products deteriorated on keeping.

It was essential then to overcome this instability and a process was developed by H. A. Ryan in 1951 (Westminster Laboratories Ltd.) whereby a dry concentrate was prepared which contained the total active principles of the pod in a stable form. This concentrate was standardized by the new assay methods, and provided a basis for two products Senokot Granules and Senokot Tablets.

Clinical Evaluation

A team of workers, consisting of Professor J. C. McClure Browne (Institute of Obstetrics and Gynaecology, University of London), Dr. Vincent Edmunds (Assistant Physician, Charing Cross Hospital, London), Professor J. W. Fairbairn (School of Pharmacy, University of London), and Professor D. D. Reid (Department of Epidemiology and Vital Statistics, University of London), have carried out carefully controlled clinical trials to determine whether the laboratory tests are, in fact, a true index of therapeutic activity in man.

The results, which were subjected to statistical analysis, were published in the *British Medical Journal* in 1957. They provide a complete vindication of the earlier criticisms of the B.P. preparations, and the claims for "Senokot". It was found that the clinical response rates were in agreement with those of both laboratory methods, and that there were extreme disparities between apparently identical B.P. Syrups of Senna and that, at average doses, these were no better than inert controls. There was also a serious deterioration on keeping. On the other hand, Senokot was found to have the potent clinical effect which had been predicted from both chemical and biological assay, and there was no deterioration on keeping.

Action of Senna

The senna glycosides are absorbed from the small intestine — on which they have no action — into the blood-stream where they circulate in a completely inert form and are excreted partly in the urine, and partly in the colon. Here, the enzymatic action of the coliform bacilli provide the final active substances, the precise nature of which has not been finally evaluated. The action is selective, on the colonic musculature and is accompanied by an increase in tonus. Lenz (1924); Straub and Triendl (1937); Okada (1940). The clinical significance of a stable, standardized senna preparation is that it permits precise dosage and the stimulation of the defaecation mechanism by just as much as is needed. Recent clinical work has shown that in the treatment of chronic constipation in all ages, controlled dosage of standardized senna re-educates the defaecation mechanism towards normal function.

Thus Campbell-Mackie (1959) has reported that in chronic constipation in infants and young children carefully graded doses of standardized senna (Senokot) have a re-educative effect on the constipated bowel and were of considerable value in the establishment of normal habits.

Coekin and Gairdner (1960) in a study of "Faecal Incontinence in Children", report satisfactory treatment of children with "colonic inertia" which, in some cases, had persisted for a number of years. Before treatment radiology had revealed a distended colon, with low muscle tone. Evidence was produced to show that in some cases this lack of tone was congenital. Sensitivity was slowly regained with regular dosage although in some cases this had to be maintained at a relatively high level for some time.

In many elderly patients constipation is but one result of generally diminishing reflexes and muscle tone, and cure is, therefore, unlikely to be achieved. However, Senokot has been shown to keep the majority comfortable with a minimum medication and without recourse to enemata (Smith and Evans, 1961). Some, especially the bedridden, suffer from

spurious diarrhoea due to faecal impaction. Following removal of the impacted faeces regular use of Senokot prevents further impaction.

A new regimen for the treatment of faecal incontinence has been successfully developed by Jarrett and Exton-Smith (1960), who report:

“Faecal incontinence is a common and difficult condition in geriatric practice . . . Recently we have been treating these patients with neurogenic incompetence by imposing periodicity of bowel action by alternate use of agents with opposite pharmacological effects, in this case Mist. Kaolin et. Morph. and standardized senna (‘Senokot’) given at 12-hour intervals . . . Provided that faecal impaction is always excluded by careful digital examination, this regime seems to have considerable value in the management of elderly patients with faecal incontinence.”

For the treatment of constipation during pregnancy and in puerperium, the value of Senokot has been widely demonstrated.

Herland and Lowenstein (1957) obtained excellent results in over 90 per cent of 46 constipated pregnant patients, with no failures.

Suarez et al. (1960), in a trial in 409 postpartum patients, gave two tablets of Senokot one hour after delivery, and then two tablets nightly. This regimen was effective by the third day in 99 per cent of treated cases, whereas in the untreated group the majority had had no bowel movement by the fourth day. They concluded:

“. . . A method of management of puerperal constipation that permits us to reduce the frequency of postpartum enemas from 83 to 1 per cent of all patients cannot be termed less than a complete success.”

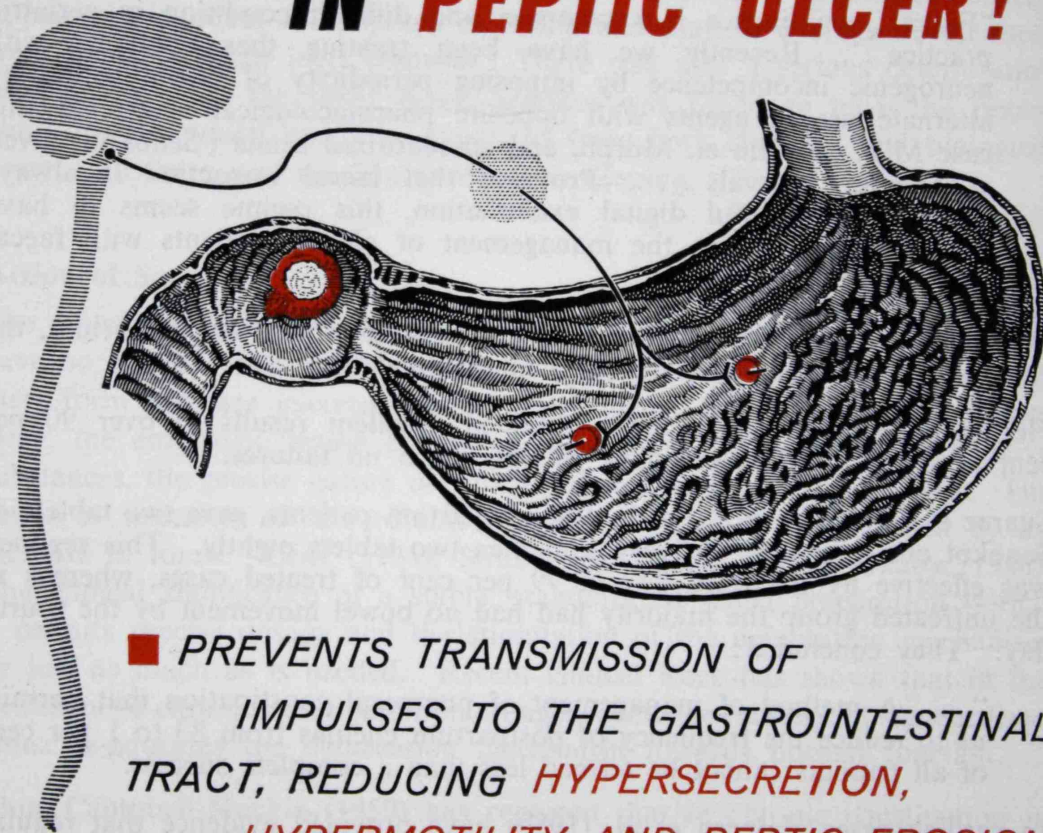
In cardiac cases Halpern et al. (1959) have provided evidence that regular dosage with Senokot can reduce straining.

The interest aroused by this valuable re-educative action of standardized senna has resulted in over 100 references to its use in almost every field of medicine.

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Journal of the Hong Kong University Medical Society

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The opinions or assertions contained herein are the private ones of the writers and are not to be construed as reflecting the views of the Medical Society, Faculty of Medicine or the University at large.

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OBITUARY

ROBERT KIRK

26th January, 1905 — 16th December, 1962

Professor Kirk was a Scot who was educated at Greenock Academy and Glasgow University. He obtained a B.Sc. in 1926 and a post-graduate First Class Honours in Zoology in 1927. The M.B., Ch.B. was conferred on him in 1930 with commendation, with the Gairdner Medal in Medicine and distinctions in Public Health and Midwifery. In 1932 he was admitted F.R.F.P.S. and the following year he took the D.P.H. He held appointments as demonstrator in Zoology and Parasitology in Glasgow University, as house physician and house surgeon and as assistant bacteriologist in the Glasgow Public Health Laboratory. In 1933 he left for the Sudan where he remained for the next 22 years. During this period he made outstanding contributions to various branches of tropical medicine and to infectious diseases.

In Sudan he joined the staff of the famous Wellcome and Stack Medical Research Laboratories then under the direction of Sir Robert Archibald. Ultimately he became Director of Laboratories and Assistant Director (Research) of the Sudan Medical Service. His investigations covered a wide range of subjects — relapsing fever, leptospirosis, yellow fever, leishmaniasis, entomological work on sand-flies, poisonous snakes, trachoma and rabies. Among these, his work on leishmaniasis, sand-flies and yellow fever firmly established his place among the eminent research workers in tropical medicine. In 1952 he left the Sudan Government Service to be the first Professor of Pathology in the University College of Khartoum (now University of Khartoum). The degrees and honours conferred on him during his 22 years in the Sudan were:— M. D. (Glas.) with honours and Bellahouston Gold Medal, 1939; F.R.S. (Edin.), 1943; Chalmers Medal of the Royal Society of Tropical Medicine and Hygiene, 1943; M.R.C.P. (Lond.), 1948; O.B.E., 1948; F.R.C.P. (Lond.), 1954.

He left the Sudan in 1955 to take up the appointment of Professor of Pathology, University of Malaya, Singapore (now the University of Singapore). During his 5 years there he was responsible for reorganizing the department and planning of the new building for the Pathology De-

partment. The fine, spacious, air-conditioned student laboratory in the present University of Singapore serves as a reminder of his broad vision.

In 1960 he was appointed Professor of Pathology and Bacteriology here, the fifth since the Chair was created. I first met him on 14th June, 1960 when he arrived in Hong Kong on board a small cargo-passenger steamer which he observed was carrying many drums of formalin. Soon he settled down and the only complaint was that he wished his home could be nearer the laboratory so that he could go there whenever he felt like it. In his laboratory he had not much faith in the telephone and often mentioned that he had none in his laboratory in the Sudan. He preferred personal contacts. It was not long when his modesty, kindness and sincerity quickly gained the respect of all members of the department. He also realised that the heavy routine work was a problem for his staff who needed not only encouragement but also time "to come to grips with a problem". Thus he undertook a large share of the routine work. He enjoyed doing the morning post-mortems with the "boys". The students found him an excellent teacher and also knew that he had their interests at heart especially during the viva examinations.

At home he was a generous host and had a fine library. One of his treasured possessions was the collection of all scientific papers published about the Sudan during his years there. His inaugural lecture from the Chair of Pathology "Palaepathology of ancient Egypt" showed his interests in that "far away land that I know well". The award of the Gaspar Vianna Medal from Brazil in 1962 for his work on leishmaniasis gave him much pleasure. It revived some of the old spirit and in one informal chat he was explaining to me how to catch sand-flies and to identify those in Hong Kong. A few days before his death he said "The . . . are stealing the kudos of our work in Africa, I must find time to write". His love of that far away land was there till the end. For us it was the loss of a man who had gained our respect and admiration.

T. B. TEOH.

OBITUARY

ROBERT KIRK

26th January 1905 — 16th December 1962

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SANTA

BABY



[Faint, mirrored text bleed-through from the reverse side of the page, including words like "The teacher" and "investigation"]

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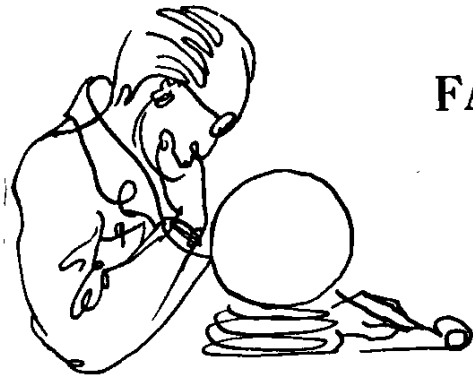
Chinese New Year is always a great event to Dr. Elixir. This year he had planned on spending it with his readers but unfortunately he had another friend whom he takes very much to heart—the printer. Therefore he decided to call on his friend the printer first, a good few days before the turn of the year, so that there would be ample time for his visit with his readers. However, either because of his great personality or some other quality, the printer simply would not let him leave and insisted he stay for the festivities. This he did and it was not until a few days ago that he managed to get away!

So here is our beloved and tardy Elixir, still dressed in his best and gayest New Year apparel. He learnt not so long ago that Chinese New Year celebrations are carried way into the New Year, in fact sometimes right up to the next one and so he did not bother to change. Perhaps it is best summed up in what he has been overheard to be mumbling repeatedly of late, especially after a few helpings of good Scotch whiskey—“Better late than never”.

EDITORIAL

New Year is the time-honoured occasion for new thoughts, new plans and new resolutions. It is perhaps the wrong time to voice discouragement. However, year after year the 'Elixir' appears, and it is sometimes miraculous this is possible, filled with articles by members of the teaching staff, extracts from lectures and speeches by professors and other lecturers, items from the University Gazette with hardly anything from undergraduates. The 'Elixir' is not a staff magazine, it is not supposed to have the authority of the Gazette nor is it primarily a vehicle for publication of research work or other profound discourses on medical and allied subjects. There is talk that undergraduates and members of the staff do not readily and freely intermingle and that the relation between the two groups is too formal. This is due to a number of factors among which are the high student to staff ratio, the de-centralised pattern of undergraduate living and studying, the busy social life in Hong Kong and last but not least, inertia. This lack of communication, as it were, may be partly bridged in print and where could one find a better medium for this than the 'Elixir'? Here is a golden opportunity to express your views, voice your grievances, state your ideas, comment on current events and put forward your suggestions for improvement where this is called for. Hidden talent probably abounds but the average undergraduate is not expected to write like Shakespeare and draw cartoons like David Low. Furthermore there is always the Editor and his consultants to change the odd tense and insert an extra comma. Therefore members of the Elixir Editorial Board in wishing you a happy and successful New Year also sincerely hope that you will give this matter some thought and that you will include among your more definite New Year resolutions the determination to take a more active part in this aspect of the Society's life.

FACT, FANCY AND OPINION



New Year Wish

We hope this issue will be published in time to form a part of your new year assets.

As we welcome a new year, we also welcome a new challenge. To those of you who will be taking the Finals in May go our very best wishes. In the lapse of a few days when the results are released, you will find yourself lifted to the status of a "doctor", and yet this transformation is not really abrupt, it is merely the crowning experience of five years' hard work and training. Let it not be the climax of your career, but the first peak of your Himalayas.

For those of us who will remain as undergrads throughout 1963, we can heave a sigh of relief and enjoy another year of the student life. But let it also offer to us a challenge, viz. to explore deeper into the mysteries of life, and to acquire more knowledge for ourselves by ourselves.

Uncertain though each new year seems, we can adopt the attitude of King George VI, who quoting M. Louise Haskins, said, as he faced an unknown 1940, "And I said to the man who stood at the gate of the year, 'Give me a light that I may tread safely into the unknown'. And he replied, 'Go out into the darkness, and put your hand in the hand of God. That shall be to you better than light, and safer than a known way'."

Limited Examinations

For the sake of those patients with interesting physical signs, but the elicitation of which is liable to cause them some degree of discomfort, it may be a good idea to place a card at his bedside, so that every student who comes to examine him must sign his name, and only a limited number will be allowed to examine that patient in one day. Of course, this method takes for granted the honesty of the students!

What's in a Name?

The Department of Medicine has employed a colourful way of identifying the students—each one is issued a coloured name plate which is to be displayed in the top pocket of the white gown. Two colours are now in use—green for the 4th year, and red for the 3rd year students. (The significance of each colour is not the same as that in the Department of Anatomy!)

The use of these plates, I believe, is not only to emphasize to us the importance of a name (—alas, how very often we forget to enquire a patient's name first, but jump straight to the clinical examination), but more important still, to facilitate the staff to fire questions directly at us (—poor innocent lowly creatures of the hospital!)

Psychiatric illness—a myth?

In his book "The Myth of Mental Illness", Dr. T. S. Szasz in a very interesting way concluded that psychiatrists only succeeded in aggravating the condition of the patients rather than curing them. It is just like Dr. Guillotin's invention, which by providing a more reasonable way towards the end only succeeded in perpetuating capital punishment.

Upon closer reflection one would like to ask Dr. Szasz if physical illness is not a myth after all? Surely we all realize with pain, that since time immemorial vis medicatrix naturae has been the all time best physician.

A Naive Remark

Some "wise-crack" once remarked that it pays to play tennis while doing pre-clinical work, and embark upon golf if at all admitted to clinical study.

Being wiser and sadder, we reserve our comment. But what is obvious is that picking balls in a tennis court can be quite different matter from being a caddy carrying chunks of wood and iron, going over hill and dale, and even desert sand!

Hark! Do I not hear . . .

Wedding bells ringing? Yes, they are ringing, and have been ringing rather frequently in the medical school these recent days.

Let this be an open demonstration to all girls of other faculties (and perhaps a few boys too), that animals normally considered incapable of being emotional, namely the medical students, are not all the time that wooden.

Thanks to the efficiency of Mr. Lee Chiang Tee and Mr. Pan Soo Yeng. And by the way, a great hearty congratulation to both.



THE CHANGING PATTERN OF DISEASE IN CHILDREN

*An Inaugural Lecture from the Chair of Paediatrics
by Professor C. ELAINE FIELD, M.D., F.R.C.P. (LONDON),
delivered on 7th November, 1962.*

There is little that remains the same for any length of time in this world, either there is progress or retrogression, either the process advances or recedes or changes its pattern, and disease is no exception. But what is it that changes the pattern? How far does man's interference upset the natural process? It is my purpose this evening to draw your attention to changes that have taken place and are taking place in certain well known disorders in children and if possible, to draw certain conclusions from these observations.

Acro-dynia or Pink disease was first described by Selter in Germany in 1903. The picture of irritability and utter misery combined with cold clammy pink hands and feet and transient erythematous rashes baffled the experts for many years until 1948 when Warkany in U.S.A. and Fanconi in Switzerland simultaneously discovered small quantities of mercury in the urine of some of these infants. It was concluded that the disorder might be due to a sensitivity to mercury but as this was difficult to prove, at the request of paediatricians, mercury was removed from teething powders, calomel was omitted from tonics and the use of mercury in ointments and diaper rinses ceased. In countries where this was instituted, Pink disease disappeared as a disease entity.

The Coeliac Syndrome has been recognised for many years following the first description by Samuel Gee in 1888. At the weaning period the symptoms commence with diarrhoea and loss of weight and before long the classical clinical picture of large abdomen, wasted buttocks, thighs and shoulders is noted. Again there is a picture of irritability and the typical large pale bulky offensive motions completes the picture. Initially

it was thought that this disorder was caused by an inability to digest fat and every conceivable type of diet was recommended without success. Then just over 10 years ago it was discovered that some of these children had an inability to digest the gluten fraction of wheat and rye. When gluten is omitted from the diet, the improvement is dramatic. I had occasion to see such a dramatic change in my first consultation case here in Hong Kong. Tests failed to prove the clinical impression of Coeliac disease but the dramatic improvement shown by loss of irritability, gain in weight and improvement of appetite was the best diagnostic test. Most workers feel that this condition must be an enzyme defect probably genetically determined but as yet proof of this has not been given. This disease is, as far as I know, not seen in Chinese and other Asian children, the reason most likely being genetic rather than a difference in feeding habits.

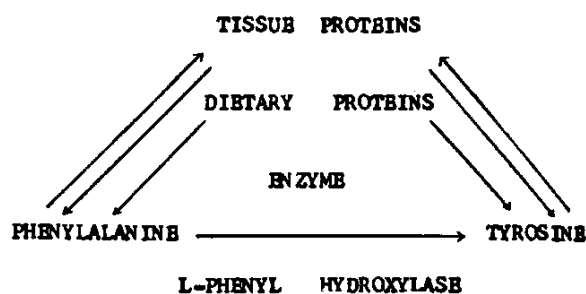
Rickets, a disease recognised in children for over 300 years, has also passed through a metamorphosis. At first, the bending bones, bossing of head, enlarged epiphysis and general malaise with hypotonia were thought to be all due to a lack of vitamin D in the body. When this was added to the diet, the condition rapidly improved. But when vitamin D was given universally to all babies to prevent rickets developing, many cases resistant to this vitamin were discovered. The investigation of these cases has revealed and is revealing a variety of disorders clinically similar to nutritional rickets but with differing aetiological factors. Briefly these can be grouped into those with low serum phosphate—hypophosphatemic rickets—and those with high serum phosphate known as hyperphosphatemic rickets.

In the first group with low serum phosphate we have familial vitamin D resistant rickets, a hereditary metabolic disorder where there is failure of the normal biochemical response to vitamin D. These cases only respond to very high dosage of vitamin D and a high phosphate diet. Also in this low serum phosphate group of rickets is a condition known as renal tubular acidosis with nephrocalcinosis. This condition occurs in several siblings and is thought to be an inborn error of metabolism. The child is unable to excrete an acid urine and there is considerable loss of bicarbonate in the urine leading to a metabolic acidosis. There is however still no satisfactory explanation for the deposits of calcium in the kidneys. If the child is given an oral citrate mixture, the condition is arrested and the rickets then heals with moderate doses of vitamin D. The third well known disorder in this low serum phosphate group is Fanconi's syndrome. This really is a group of disorders showing aminoaciduria, sometimes glycosuria, hypophosphataemia with rickets and osteomalacia. The cause is a renal tubular dysfunction either congenital or acquired. Large doses of vitamin D may help to heal the rickets but the condition is not arrested.

The hyperphosphataemic group of rickets includes all the conditions leading to glomerular renal insufficiency, congenital abnormality of the kidneys, chronic nephritis or chronic pyelonephritis. The picture is typically the renal dwarf with knock knee and pigeon chest and treatment is only temporarily effective. This complex problem of mineral metabolism, bone growth and its disorders is only slowly being unravelled.

Another problem that has remained obscure for so long is the aetiology and management of mental deficiency. Birth trauma or infection or damage to the brain after birth accounted for only a small group. However in recent years two important developments have opened up a new field of study. In 1934 Fölling first described the condition of phenylketonuria. In this hereditary disorder the

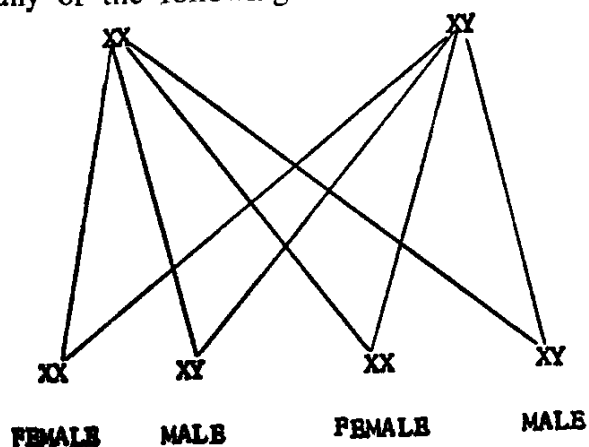
affected children are of low-grade mentality and their urine contains reducing substances producing a green colour on addition of ferric chloride. It is now known that this condition is one of several in which an enzyme defect results in the accumulation of abnormal metabolites which are toxic to the brain. In phenylketonuria there is a deficiency of the labile fraction of L-phenylalanine hydroxylase necessary for the conversion of phenylalanine to tyrosine.



As a result, phenylalanine rises in the blood and damages the brain cells. Further breakdown products of phenylalanine are excreted in the urine and are responsible for the urinary reaction to ferric chloride. The child is born mentally normal but within 3 weeks the phenylalanine in the blood has risen to sufficiently high levels to be destructive and to produce a positive ferric chloride test. If at or before this time the child is placed on a phenylalanine poor diet to maintain the levels in the blood below 5 mgms per 100 ml., then it is possible to prevent mental deficiency developing. Furthermore, this diet has to be maintained until the brain has stopped growing. The problem is to detect the cases at such an early age. It is now becoming routine for midwives and infant welfare personnel to test wet nappies with "Phenistix", a small strip of testing material which turns green after one minute if reducing substances are present. By this means the incidence of the disease in England is found to be two per 100,000 population. This discovery has led to the investigation of other enzyme defects in mentally defective children. Of the amino acid enzyme

abnormalities there is the Maple Syrup Syndrome, Oculo-Cerebral Dystrophy or Lowe's Syndrome, the Hartnup Syndrome and Oat-house Syndrome. In carbohydrate metabolism, Galactosaemia is now known to be due to an enzyme defect in the conversion of galactose-1-phosphate to glucose-1-phosphate so that if the baby is fed on a lactose free diet, the mental retardation and jaundice can be prevented. This disorder is also genetic being due to an autosomal recessive gene. This field of study has now been extended to include water and electrolyte metabolism, as well as mineral metabolism. The lipid disorders such as Tay-Sach's disease and Chondro-osteo-dystrophy (Gargoyle) are also probably due to enzyme defects.

The other revolutionary discovery in the aetiology of mental deficiency is the abnormality in the chromosomes. Normal persons have 46 chromosomes (23 pairs) in each nucleus of their body cells. In mongolism, a type of mental deficiency known to all, there are commonly 47 chromosomes, with trisomy for autosomal chromosome 21, that means an extra chromosome is attached to pair 21. Many different chromosomal defects have now been described in children with multiple congenital defects often associated with mental deficiency. Perhaps the most interesting study to date is the association of mental deficiency and abnormalities in the sex chromosomes. Of the 23 pairs of chromosomes one pair are sex chromosomes. In a female the pair are described as XX and in a male as XY. The results of mating can be any of the following:—



Abnormalities of this arrangement however are liable to occur and when this happens the results are commonly a variety of intersex abnormalities with mental deficiency. A group of workers mainly from Edinburgh (Maclean et al 1962) studied 4,514 mental defectives from institutions. First testing for sex chromatin in buccal smears, they found 37 of these had abnormal nuclear sex in relation to their phenotypic sex. On these 37 cases full chromosome studies were done and the results of the sex chromosomes were as follows:—

- Of 28 males 17 XXY
- 4 XXXY
- 2 XXYY
- 5 Mosaics
- Of 9 females 7 XXX
- 1 XX/XXX (Mosaic)
- 1 XO

Remembering that the normal male is XY and the normal female XX, the above abnormalities must be the result of abnormal division of the sex chromosomes. Such abnormalities produce not only mental deficiency but also problems of intersex.

Recently I came across such a case which can be cited as a good example. When born, both the midwife and doctor thought the child was a girl so the parents registered her as Pauline. However the parents, who were intelligent, noticed the enlarged phallus and later felt something in the groin which was thought to be a sex gland or gonad. Further investigation showed that the nuclear sex chromatin was the male type so it was assumed that the palpable gonad was a testis and the parents were advised to bring the child up as a boy, so Pauline's name was changed to Peter. A month or two later however a hernia developed at the site where the gonad was palpable. A surgeon was consulted and an operation was performed for repair of the hernia. To his surprise, however, a uterus and fallopian tube was also prolapsing through the

hernial orifice and a second gonad could be felt. Biopsy of the gonads was taken and the hernia repaired. The histology of the gonads showed largely undifferentiated cells which however were more of the male than female type. Chromosomal studies showed that the child was a mosaic XY/XO, the majority of the cells investigated showed XY, but about 30% showed XO, that is the Y chromosome was missing. Careful examination of the genital tract revealed a small vagina. To summarise therefore, the chromosomal sex was mosaic XY/XO, the gonads undifferentiated but more like testis than ovaries, the internal sex organs were female and external genitalia more female than male. This child could never function sexually as a male but could function reasonably well as a female although she would be sterile, so according to present thinking, in spite of the chromosomal sex, it is best to bring this child up as a female. So once more the name was changed this time from Peter back to Pauline. Fortunately, all these changes had occurred within the first year of life before the child could remember. It is usually inadvisable to change a child's sex after the age of two years because of the psychological trauma that may result. In Pauline's case no further treatment will be given until puberty. If male secondary sexual characteristics begin to appear then, the gonads must be removed and endocrine therapy instituted to bring about the secondary sexual characteristics of the female. This is just one example of the complex picture of intersex as it is now seen using modern methods of investigation. The main features governing the upbringing of intersex patients are a) how can the patient best function sexually; b) psychological effects of change of sex after two years of age. Plastic operations and hormonal substitution therapy can deal with most of the other problems.

The next disorder to be discussed is one that has received much publicity in the press during the last six months. It was in 1961 when cases were first

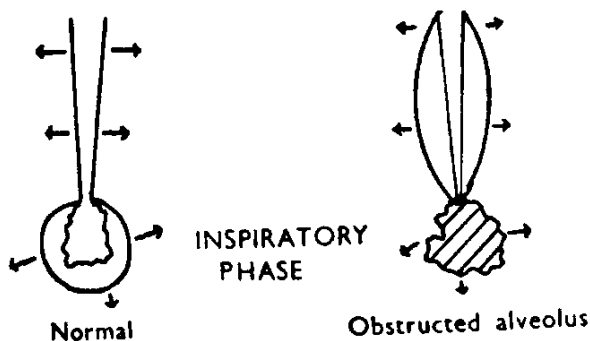
reported in Germany and Australia and soon after that in Great Britain and now in many countries. Ectromelia is a condition where babies are born with gross underdevelopment or hypoplasia of the limbs, the term "limbless babies" has been used in the press. All forms of maldevelopment are seen from a tiny bud to a slight shortening of one bone. Such a condition was quite rare until 1960 when cases began to appear and in 1961 to appear with alarming frequency. Soon it was found that some of the mothers had taken during the early months of pregnancy a certain tranquiliser known as thalidomide sold under various trade names such as 'distaval', 'valgis', 'valgraine', 'asmaval', 'tensival' and the German brand 'contergan'. As soon as this relationship was suspected, the drug was withdrawn from the market, but the damage was done. Good salesmanship had assured that this drug was widely distributed all over the world. Smithells (1962) reviews the situation in a recent article in the *Lancet*. Not only have ectromelia and lesser limb deficiencies been noticed but also microtia which is a hypoplasia of the ear pinna and external auditory meatus sometimes with facial palsy. Associated abnormalities also include cardiac and renal anomalies, hypoplasia of the gall bladder and appendix and facial nerves. In his 30 cases of ectromelia Smithells found only 40% of the mothers gave a history of taking thalidomide in the first three months of pregnancy and he made a very thorough investigation, but it was retrospective. Nevertheless the evidence suggests that other factors may be at work in this explosive outbreak of "limbless babies". Time alone can probably give us the answer for if, when all thalidomide has been withdrawn, cases still continue to occur with any frequency, other causes must be found.

The limb buds appear at the 6th to 7th week of foetal life and are formed by the 8th week so this is probably the critical time for the damage to occur. Smithells estimates that thalidomide will have been responsible for at least 800 malformations in England and Wales.

and the number is much higher in Germany where the drug was first introduced. Such tragedies must not be repeated and already it has been suggested that a controlling body be formed to ensure proper testing of new drugs before they are released for general use.

To conclude the picture I am trying to draw of the changing pattern of disease, mention must be made of the disease process which first drew my attention to these changes and the important repercussions they may have. I have made a study of bronchiectasis for the last 24 years and the story is a fascinating one. In infants the predisposing causes vary from country to country but the pathological aetiology is, I believe, a constant one. Occlusion of alveoli from pneumonic consolidation or collapse produces increased negative pressure on the supplying bronchi which dilate. This is reversible providing the occluded alveoli later expand, but if infection is superadded and the alveoli become organised and permanently closed, then irreversible bronchiectasis is established.

MECHANISM OF BRONCHIECTASIS



The earliest description of this disease was at the beginning of the 19th century by Laennec. Quoting from the translation of his book by Forbes, Laennec writes "The organic lesion which I am now to notice seems to have been hitherto entirely overlooked both by the anatomist and the practitioner." But he was himself noticing only the severe cases most of which were confirmed at autopsy. One of his case records may be quoted:—

'Case 1—Acute dilatation of the bronchia after hooping cough. A child

three and a half years old, and affected with hooping cough for three months, came into the Hôpital des Enfants, in January 1808. The cough returned in fits after an interval of several hours, and was followed by a copious expectoration of a yellow, very fetid, puriform fluid. This fluid, which smelt like the pus from an abscess, was brought up by mouthfuls, rather than by the usual process of expectoration. The child always lay on the left side which was found to yield a dull sound on percussion. In the intervals of the cough, it slept well, and seemed to feel no pain. It died about a fortnight after admission.'

For about a century there was no change in the apparent clinico-pathological picture of this disease until in 1922 Sicard & Forestier introduced the method of outlining the bronchial tree with iodised oil. Earlier cases were now diagnosed and the extent of the disease more clearly outlined. In 1929 Brunn carried out the first one stage lobectomy for removal of the diseased part. It was nine years later in 1938 that I commenced my study of chronic chest disease in children just before the general use of sulphonamides. Over 400 cases of children with a chronic persistent cough were collected but only the cases of irreversible bronchiectasis will be referred to in this lecture. The aetiological diseases are changing, at first diphtheria and pink disease were the causes of many cases, then pneumonia, measles and whooping cough, nowadays it is mostly pneumonia. Whilst observing the progress of these children, the treatment changed almost yearly. During the war years 1939-46 emphasis was on medical treatment of postural drainage, breathing exercises and prolonged convalescence. At first, the introduction of sulphonamides then penicillin produced some improvement, then the development of the surgical techniques to include segmental resection resulted in a great increase of the number of operations in an attempt to remove all the diseased parts. But this did not seem to produce the expected clinical cure, so by 1950 fewer and fewer operations were being performed. At first I thought this was the

pendulum of fashion swinging too far the other way, but perhaps the disease itself is changing.

In 1956 a special examination was made of 225 of these bronchiectatic patients of which 121 had received surgical treatment. The children had been observed for 8 to 21 years. Briefly the story is as follows:— In three quarters of the patients the onset of the disease was in the first five years of life, then there was a tendency to improvement which was most marked around puberty and in their 'teens. Thereafter the condition remained stationary but what will happen in the 3rd, 4th and 5th decades? In 35% the cough disappeared; in 69% of those that showed clubbing of the fingers, this sign disappeared; 57% had no moist sounds in the lungs; but 50% still had recurrent chest illnesses. The mortality over a 15-year period was approximately 10%. Is this changing pattern the result of modern treatment or is it the natural history of the disease? I believe a great part of this is the natural history as, long before the introduction of antibiotics, physicians responsible for treating adults had noted in the past history of the patient the story of cough in infancy, then a silent period during puberty and recurrence of the cough in adult life. Nevertheless, during my recent stay in England it was brought to my notice that the incidence of bronchiectasis was falling, so I made a small investigation into this matter. Table I shows the admission rate for cases of bronchiectasis in 5 children's hospitals in Great Britain. I have recorded here the years 1952 and 1960 to show the marked fall in admission rate, in point of fact the maximum rate of fall was from 1955-57. After discussion with paediatricians in England we came to the conclusion that it could be related to the sudden release of the broad spectrum antibiotics in 1954 for use by general practitioners in the National Health Service. Is bronchiectasis a disappearing disease? There is no doubt it is a disease which has shown a changing pattern in aetiology, clinical features, treatment and possibly prognosis and incidence.

TABLE I
ADMISSION RATE FOR
BRONCHIECTASIS

	1952	1960
London (Great Ormond Street) - - - - -	29	12
Liverpool (Alder Hey) - -	37	13
Manchester (Booth Hall) - -	49	8
Sheffield (Children's Hospital)	99*	10*
Glasgow (Children's Hospital)	24	6

*Readmissions included.

I have today attempted to give you a picture of the changing pattern of certain diseases in children. Sometimes this changing pattern is the result of new scientific discoveries, sometimes the result of adjustment to a change in circumstances, in treatment, or natural surroundings. We know that nothing remains static for any length of time but so rapid have been the scientific developments in the last half century, the warning bell is already ringing for a pause in order that the necessary adjustments may take place. There is no doubt that already a new science, the science of adjustment, is developing as the urgency increases. Iatrogenic diseases are on the increase, psychosomatic disorders are becoming a real problem and radiation hazards with the genetic complications are dangerously near, and may I stress that it is the child who suffers first. In an out-patient clinic I was running recently in England 60-70% of the children were suffering from psychosomatic disorders. I cannot help feeling the time has come for our Universities to study more extensively this science of adjustment in order that the best benefits may be obtained from discoveries that have already been made and the lives of our children protected from the menacing developments of science.

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 Maclean, N. et als (1962), *Lancet* 1, 293
 Smithells, R. W. (1962), *Lancet* 1, 1270.

“AUTUMN”

The sun that sheds its golden rays
Heralds the autumn morn.
Trees arch against the clear blue sky,
Cool breezes blow across the lawn.
A gentle rustle fills the air
And lo! the first leaves begin to fall;
As twigs bend under the driving force
That strips them of their russet hues.
Canst thou hear the wistful melody
That lingers on lovingly.
Like a dying man's last protest
Against the stern, old judge?
They sing a song of farewell
To the beautiful hard earth;
But the tree will stand, bare and tall,
Defying the bitter wintry blast.
When storms and tempests upset our lives,
Forget not that we must stand
Defiant and strong, like the bare tree,
Through fire and water, till victory is ours.

by “L'ETOILE”

FAREWELL PARTY TO DR. KENNETH HUI



Members of the Medical Society bid farewell to Dr. Kenneth Hui, Senior Lecturer in Surgery, on 17th January, 1963 at the Jordan Memorial Library.

Dr. Hui, who has been a President of the Society, was made an Honorary Life Member on his departure from the Medical Faculty, after having been with the University for eleven years.

The Chairman presented Dr. Hui with a Chinese scroll which carried with it the students' respect and well wishes for him.





THE SURGEON AND THE STUDENTS



CLINICAL ALPHABET

I have a simple mind, and it took me months to learn part of the alphabet; I hope I can get the "missing links" in the course of time.

- A The walls of Queen Mary Hospital have stood here since 1937; they don't need your support.
- B Know them so well that, if I suddenly go and wake you up in the middle of the night and ask you "What are the three cardinal signs of heart failure?" you can answer me right away.
- C For us, the diagnosis of a case is always easy; we can always open up and see.
- C' I hope one of you will get an osteogenic sarcoma—I mean as an examination case.
- C'' Humph! Don't talk nonsense! . . . What's the time? . . . Oh, well, I would excuse you for you may be suffering from hypoglycaemia.
- C''' There is a murmur! . . . Am I right? Am I right?
- C'''' If I answer this question of yours, I would be coaching M.D. instead of M.B. students.
- F Good Morning, "Professor"!!!
 Good Morning, Sister!!!
 Good Morning, Staff!!!
 Good Morning, Ladies and Gentlemen!!! Now today I am going to teach you how to treat a very common disease, so that in future you need not refer all your patients to people like myself; you want to earn something yourself, don't you?
- *F' You are the most 'shaky' group I have ever met. I must set up a limit for the number of times you may shake your heads during each ward round. If it is exceeded, you will be punished; if not, I'll give you a prize.
- F'' This is not a neck, this is a person; start with the description of his general conditions.
- H Yes-what-else? . . . Yes-what-else? . . . Yes-and-so-on-and-so-forth.
- H' What's wrong with the X-ray film? . . . The patient has moved during exposure.
- L With a young oral examiner, the answers usually should be 'no'; with an old one, they should be 'yes', and take heed not to describe an "elderly" patient as "old".
- M I suppose you have all heard something about my temper . . . and one thing I can't stand is indignity to patients.
- P If I say your ears are better than mine, it is no compliment; but you can hear more accurately than a phonograph can record. This phonogram does not show the murmur which you have described.
- T In this disease, the spleen may be palpably enlarged, but probably not to the extent to be palpable by you.

- **W** For every minute late, there will be a fine of one dollar, to be donated to the Elixir Fund.
- W'** Although you are in this unit, you still have to follow the system of inspection, palpation, percussion and auscultation.
- Y** What I have just told you is outside the scope of our unit. I shall go to the . . . Unit to collect some pay for teaching you.
- Y'** Now, now, positive findings please.
- Y''** What kind of aphasia is this . . . which you are suffering from?

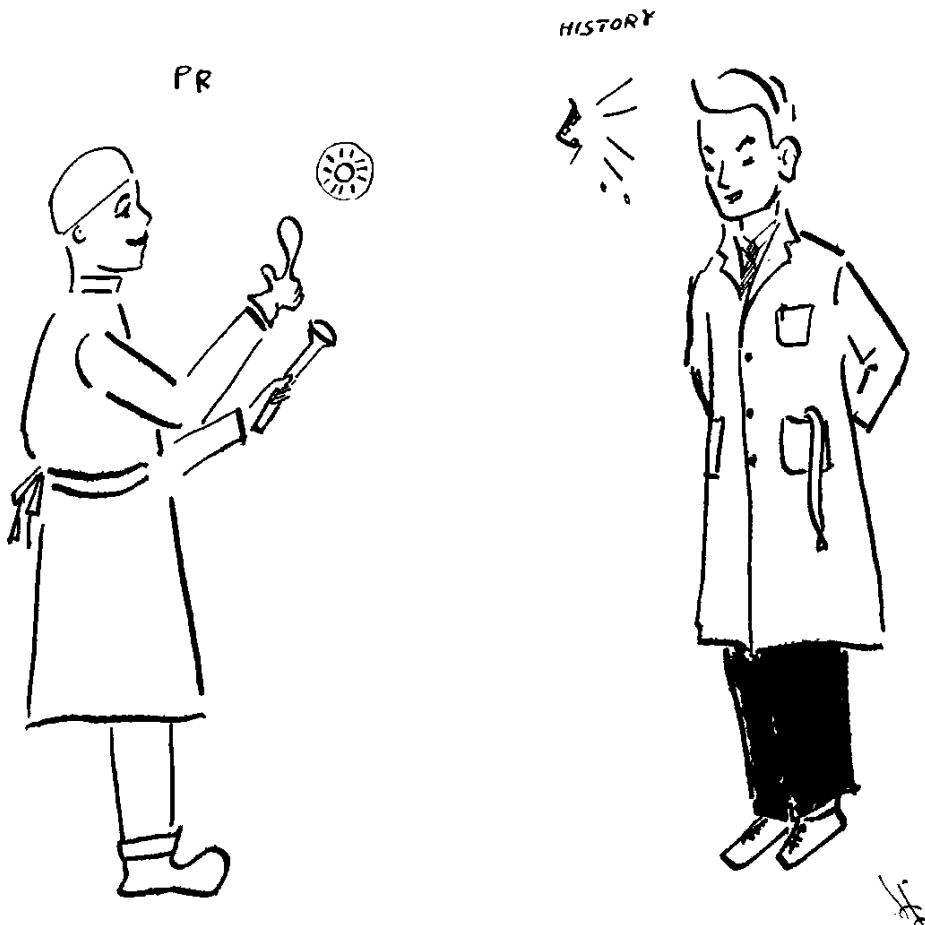
Appeal from the Elixir, by the Elixir, for the Elixir Fund

*It would be a good idea for the proceeds to go into the Elixir Fund. The students can always protect themselves by nodding their heads while saying 'I don't know, sir'. We congratulate Dr. F' on his imminent transformation into a great philanthropist.

**We hope this wonderful rule applies to all late-comers and absentees at lectures, ward-rounds, OPDs, clinics, etc., for . . . as well as students.

(No hard feelings, it's for a good cause.)

— M E —



Different ends of the same tract

SOME MECHANISMS OF CONSCIOUSNESS DISCOVERED DURING ELECTRICAL STIMULATION OF THE BRAIN*

BY WILDER PENFIELD

MONTREAL NEUROLOGICAL INSTITUTE, MONTREAL, CANADA

This is the day of diversity of thought and specialization of technique. But, although there are many sciences, there is only one scientific method and only one brain. Surely, there is no problem in any field more vast than the problem of the mechanisms of the brain and its relation to the mind. In these unstable times scientists would do well to give some thought to the nature of man himself.

The first function of a physician is to cure men and women of their diseases and to comfort when he cannot cure. But that is not enough. He must help to create a true science of the body and the mind of man. It was a physician who first introduced the scientific method into the study of nature. That was in Greece in the fifth century before Christ, when Hippocrates, an Asclepiad of Cos, opposed the philosophers who strove to explain all natural phenomena by "unprovable hypotheses." Indeed, the word "hypothesis" is said to make its first appearance in his writings. Observe and record the ways of nature, he told his disciples. Then conclude as best you can, for "life is short, the art long, opportunity fugitive, experience deceptive, judgment difficult."¹

It was evidently as the result of study of epileptic patients that Hippocrates drew his own conclusions about the brain. For it was in his lecture on the scared disease—the Greek term for epilepsy—that he turned away from the current conception of the heart as the organ of reason. Listen to his words. "Men ought to know," he said, "that from the brain alone, arise our pleasures, joys, laughter and jests, as well as our

sorrows, pains, griefs and tears. Through it, in particular, we think, see, hear—and distinguish the ugly from the beautiful, the bad from the good, the pleasant from the unpleasant." Perhaps this summarizes well enough the knowledge of the human brain for the average man today. In Figure 1 you see the human brain removed from the skull and stripped of its covering membranes. If Hippocrates were here tonight, what could I tell him about the mechanisms within this master organ?

For our recent gains in knowledge we owe a debt of gratitude to workers in the physical sciences. Nevertheless, in this talk I shall assume that no one here has any knowledge of the brain more recent than the statements of Hippocrates. I shall use terms so simple that they will be comprehensible even to physicists whose minds have slipped away, bemused, into outer space.

As a neurosurgeon, it has been my lot to watch the experiments which only disease and injury can carry out upon the brains of unfortunate men and women. Of recent years my special province has been the surgical treatment of epilepsy, removing abnormal areas of the brain, areas in which the unbridled electrical discharges arise that produce epileptic seizures. There are many brain areas that can be removed with little or no detectable functional loss.

During such surgical procedures, the skull is opened and the brain exposed under local anesthesia, while the patient lies on the operating table fully conscious. Only thus is the cause of the attack to be found, and the surgeon's hand guided.

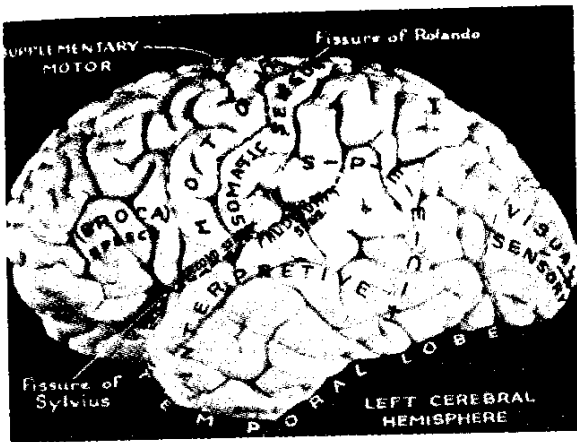


FIG. 1 — *The Brain*

The patient talks and answers the surgeon's questions while he maps out the various functional areas by applying a gentle electrical stimulus here and there on the cortex. The pattern of fissures and convolutions which you see in Figure 1 is never twice the same. The electrode is needed for orientation.

Sir Charles Sherrington,² in whose laboratory I was once a graduate student of physiology, said that brain function is made possible by "transient electrical potentials travelling the fibers of the nervous system."

The transient potentials travel along these fibers from the sense organs to the brain—from the eye and ear, joints, muscles, nose, and skin to the brain. And from the brain, potentials travel outward along other nerve fibers to the muscles to cause them to move in voluntary action. This seems clear enough except that Hippocrates would not have understood the meaning of "potential" or of "electricity." I must confess that I don't either. Here we would have had something in common.

Our present problem is to single out within the total function one small mechanism after another. There was little valid evidence of any localization of function within the nervous system, in spite of the amusing claims of the phrenologists, until Paul Broca,³ a French surgeon, proved by autopsy in 1861 that a small area of destruction in an otherwise normal brain had produced loss of the ability to speak without loss

of other abilities. The lesion he described was in the third convolution of the frontal lobe of the left hemisphere (Fig. 1). This is the so-called dominant hemisphere for a right-handed man.

After Broca, the next great advance was the demonstration by Fritsch and Hitzig,⁴ in 1870, that an electric current, applied by an electrode placed on the cerebral cortex of a lightly anesthetized dog, caused one leg alone to move on the opposite side of the body. Fritsch and Hitzig reasoned hopefully that they had found the very place where spirit and body could meet. This, they wrote, was "the place of entry of single psychic functions into material."

Then it was that the neurophysiologists, led by Ferrier, came crowding into the newly opened field of brain localization. During the past century they have had their heyday. With the recent help of electronic engineers and neuroanatomists, their barns are bursting now with new-found facts. The meaning of these facts is not so simple. Much grain remains to be threshed.

There is a visual, auditory, and somatic area for sensation in the cortex of each side. There is another area on each side that is clearly motor, as Fritsch and Hitzig pointed out. This motor area has to do with voluntary, rather than reflex, movement.

The experimentalists, led by Sherrington in one school and Pavlov⁵ in another, have come to understand many of the mechanisms of subconscious reflex action, by their study of laboratory animals.

The cerebral hemispheres are covered by a gray carpet of millions of nerve cells, the cerebral cortex. In the central portion of the brain is the brain stem, made up of gray matter and interconnecting nerve fibers.

The integrative activity that comes between sensory input and motor output must obviously depend in large part upon the connections of the cortex with the underlying brain stem. The central or centrencephalic organization of electrical potentials constitutes the physical basis of the mind. But the detail of its action remains a mystery. To approach this mystery we must study man himself.

Electrical stimulation of the cerebral cortex of conscious men has verified and amplified the mapping of motor and sensory areas of the cerebral cortex as worked out in laboratory mammals. But it has done something else; and that forms the subject of this address.

Experiential Responses to Stimulation.

—Twenty-six years ago I was operating upon a woman under local anesthesia in the Royal Victoria Hospital and was applying to different points on the temporal lobe of her brain a stimulating electrode. She (E. W.) told me suddenly that she seemed to be living over again a previous experience. She seemed to see herself giving birth to her baby girl. That had happened years before, and meanwhile the girl had grown up. The mother was now lying on the operating table in my operating room, hoping that I could cure her attacks of focal epilepsy.

This, I thought, was a strange moment for her to talk of that previous experience, but then, I reflected, women were unpredictable, and it was never intended that men should understand them completely. Nevertheless, I noted the fact that it was while my stimulating electrode was applied to the left temporal lobe that this woman had had this unrelated and vivid recollection. That was in 1931.

It was more than five years later when a somewhat similar psychological state made its appearance during electrical stimulation. This time, however, it seemed certain that the stimulus had somehow summoned a past experience.

The Montreal Neurological Institute was opened in 1934, and a patient, J. V., a girl of fourteen years, was admitted there in June, 1936.⁶ She was complaining of seizures during which she sometimes fell unconscious to the ground in an epileptic convulsion. But, immediately preceding such an episode, she was aware of what seemed to be a hallucination. It was always the same, an experience came to her from childhood.

The original experience was as follows: She was walking through a meadow. Her brothers had run on ahead along the path before her. A man following

her said to her that he had snakes in the bag he was carrying. And she was frightened and ran after the brothers. This had been a true experience. Her brothers remembered, and her mother remembered hearing of it.

Afterward, for some years, the experience came back to her in her sleep, and she was said to have a nightmare. Finally, it was recognized that this little dream was a preliminary to an epileptic seizure that might come on at any time, day or night. And the dream sometimes constituted all there was of the attack.

At operation, under local anesthesia, I mapped out the somatic sensory and motor areas for purposes of orientation, and I applied the stimulator to the temporal cortex. "Wait a minute," she said, "and I will tell you." I removed the electrode from the cortex. After a pause, she said: "I saw someone coming toward me, as though he was going to hit me." It was obvious also that she was suddenly frightened.

Stimulation at a point farther forward caused her to say, "I imagine I hear a lot of people shouting at me." Three times, at intervals and without her knowledge, this second point was stimulated again. Each time she broke off our conversation, hearing the voices of her brothers and her mother. And on each occasion she was frightened. She did not remember hearing these voices in any of her epileptic attacks.

Thus the stimulating electrode had recalled the familiar experience that ushered in each of her habitual attacks. But stimulation at other points had recalled to her other experiences of the past, and it had also produced the emotion of fear. Our astonishment was great, for we had produced phenomena that were neither motor nor sensory, and yet the responses seemed to be physiological, not epileptic.⁷

We have recorded many examples of psychological responses to stimulation in recent years. Let me illustrate:

Case D. F.⁸ was a young woman of twenty-six years, who worked as an office secretary. She had epileptic attacks, which were ushered in by a warning feeling of sudden fear. The cause was

abnormality of the right temporal lobe due to asphyxia in childhood.

Operation was carried out, under local anesthesia, in the right temporal region. I shall describe the steps as simply as possible: An incision was made in the scalp, as outlined in Figure 2.



FIG. 2.—Patient, D. F., on operating table

The bone was cut and turned down with its attachment to the scalp, to be replaced and fastened in position after operation. The brain was exposed, as shown in Figure 3.

A gentle electrical current was then applied at one point after another. Those points at which stimulation produced some effect were marked by dropping a numbered ticket on the cortex, as shown in Figures 3 and 4. The nature of the response was dictated by the surgeon to a secretary who sat behind glass in the viewing stand. Bodily sensations were produced, in part, as follows:

- 3. "Tingling" in the left thumb.
 - 10. A "jumping" sensation in the lower lip on the left side.
 - 15. Numbness in tongue.
- Motor responses occurred, in part, as follows:
- 13. Twitching of left side of face and slight protrusion of tongue.
 - 11. The patient opened her mouth and vocalized with a steady vowel sound: A—A—A until the electrode was withdrawn.

It was now clear that we had located the central fissure of Rolando, as indicated by the line of white dots, with motor gyrus in front of it and the somatic sensory gyrus behind.



FIG. 3.—Case D. F. Right hemisphere exposed by osteoplastic craniotomy under local anesthesia. Arrow points to cortical abnormality which was more marked on the mesial surface. Numbered tickets indicate points at which electrical stimulation produced positive responses.

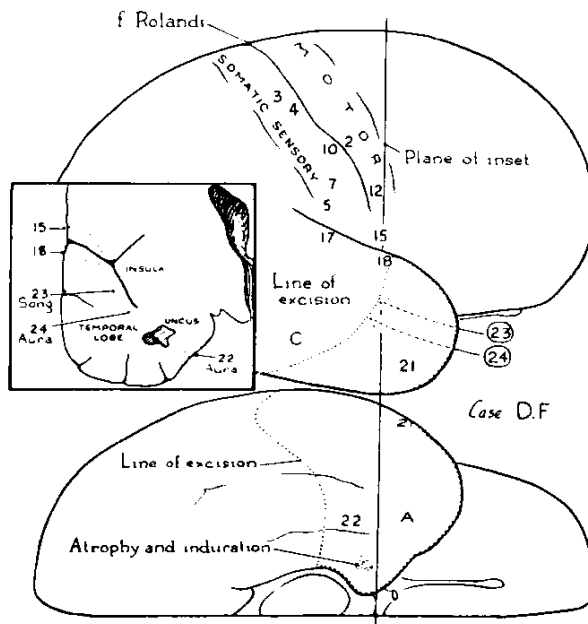


FIG. 4.—Case D. F. Operative drawing. The inferior surface of temporal lobe is shown below and a cross-section in the inset.

Next, an attempt was made to produce the warning of the patient's attack by stimulating different points on the temporal lobe below the fissure of Sylvius, which is marked by the horizontal line of white dots. This failed, until the temporal lobe was elevated and the electrode applied at point 22, as shown in Figure 4. Then she felt the warning that she had called fear, "the one," she said, "I get before an attack."

This, together with the abnormal spontaneous electrical activity that my associate Dr. Herbert Jasper, reported in his electrograph when I placed a recording electrode at point A not far off, made it obvious that the general origin of the seizures had been located. And so the anterior end of the temporal lobe was removed along the dotted line, as shown in Figure 4. A vertical cross-section of the temporal lobe, in the line of removal, is shown in the inset.

When the electrode was applied in gray matter on the cut face of the temporal lobe at point 23, the patient observed: "I hear some music." Fifteen minutes later, the electrode was applied to the same spot again without her knowledge. "I hear music again," she said. "It is like radio." Again and again, then, the electrode tip was applied to this point. Each time, she heard an orchestra playing the same piece of music. It apparently began at the same point and went on from verse to chorus. Seeing the electrical stimulator box, from where she lay under the surgical coverings, she thought it was a gramophone that someone was turning on from time to time.

She was asked to describe the music. When the electrode was applied again, she began to hum a tune, and all in the operating room listened in astonished silence. She was obviously humming along with the orchestra at about the tempo that would be expected.

Other points were stimulated with no result, except at three points, quite close to 23, where the same song was reproduced.

After the patient had returned home, she wrote to me on April 16, 1950. The letter was, in part, as follows:

"Today is a year that you operated on me, and I suppose you are wondering how I am coming along. . . .

"Now to answer your questions: I heard the song right from the beginning, and you know I could remember much more of it right in the operating room. . .

"There were instruments . . . It was as though it were being played by an orchestra. Definitely it was *not* as though I were imagining the tune to myself. I actually heard it. It is not one of my favourite songs, so I don't know why I heard that song. I finally got ahold of a copy of this piece and played it on the piano the other Sunday.

"Thanks again for better health."

In other patients, there have been other similar examples of music production. Stimulation of the surface of the temporal cortex on one side or the other has caused the patient to hear an organ, a complete orchestration, a voice, or a piano. One patient heard the music and saw the man that was playing it at a piano. A boy reported men sitting in chairs singing. Always it was the reproduction of a previous experience. The tempo of the music was neither faster nor slower than was to be expected.

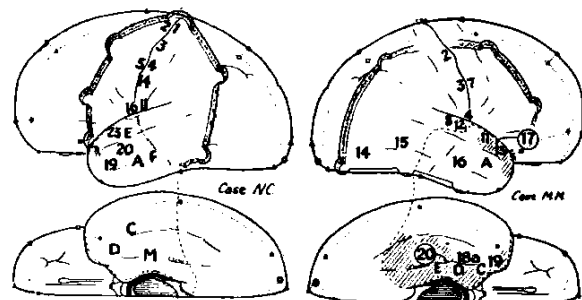


FIG. 5.—Case N. C. Drawing of operation. Numbers indicate the positive responses to stimulation. Letters indicate sites of spontaneous epileptic electrical abnormality determined by electrocorticography.

FIG. 6—Case M. M. Drawing at operation. The shaded area indicates abnormal area of cortex, considered epileptogenic. Operative removal carried out along the broken line.

A young woman (N. C.) said, when her left temporal lobe was stimulated anteriorly, at point 19 in Figure 5, "I had a dream, I had a book under my arm. I was talking to a man. The man was trying to reassure me not to worry about the book." At a point 1 cm.

distant, stimulation at point 20 caused her to say: "Mother is talking to me." Fifteen minutes later the same point was stimulated: The patient laughed aloud while the electrode was held in place. After withdrawal of the electrode, she was asked to explain. "Well," she said, "it is kind of a long story, but I will tell you. . . ."

After an interval of time, the electrode was applied again, without warning, at point 20. The patient spoke quietly while the electrode was kept in place: "Yes, another experience," she said. "A different experience, a true experience. This man, Mr. Meerburger, he—oh well, he drinks," etc. Stimulation at 23 caused her to hear music.

One must conclude that there is, hidden away in the brain, a record of the stream of consciousness. It seems to hold the detail of that stream as laid down during each man's waking conscious hours. Contained in this record are all those things of which the individual was once aware—such detail as a man might hope to remember for a few seconds or minutes afterward but which are largely lost to voluntary recall after that time. The things that he ignored are absent from the record.

Years ago, William James (1910)¹⁰ described the "stream of consciousness" as a river forever flowing. Its content, he pointed out, was never the same from moment to moment. The record of this stream, as we have brought it to light with the stimulating electrode, might better be compared to the sequence on a wire recorder or to a continuous filmstrip with sound track.¹⁰

As compared with motor and sensory responses, these might be called psychical or experiential. The psychical responses may be produced by threshold stimulation without ensuing afterdischarge. They have never been produced by stimulation of the frontal or occipital lobes, nor in the central area. One must assume that the epileptic state tends to sensitize the temporal cortex so that it will respond more easily in a positive manner to the stimulating electrode. When a source of

epileptic discharges is near the sensory or motor areas of the cortex, they too, become more easily stimuable. The experiences reproduced are usually unimportant ones. They had often been "forgotten," although the subject never seemed to doubt that they were his own experiences. In the great majority of cases, these experiences formed no part of any previous epileptic attack.

The experience that appears as the first experiential response when stimulation is begun in any case seems to depend on chance. It may be recent or it may come from childhood many years before. When a response has been produced, however, it seems to have an immediately facilitating effect on the result of subsequent stimulations. A second stimulus at approximately the same point, if not too long delayed, is apt to reproduce the same experience, beginning at the same moment of time. This was true, you remember, in the case of D. F. described above. She heard the playing of a certain song, the same song, each time the electrode was applied.

If restimulation of the same point does not reactivate the same strip of time, it is apt to produce an experience that is similar in content or subject. For instance, a boy, R. W., heard his mother talking on the telephone when two points 3 cm. apart were stimulated twice in quick succession. After a lapse of time when the electrode was set down between the two points, he heard his mother talking with his brother. The similarity of the experience produced does suggest a greater availability of experiences that are related to one another by some common characteristic.

This is borne out by the results of stimulation in the case of M. M. She heard "a mother calling her little boy" when point 11 on the first temporal convolution was stimulated (Fig. 6). When it was repeated at once, without warning, she heard the same thing. When repeated again twice at the same point, she heard it each time, and she recognized that she was near her childhood home.

At point 12 nearby, on the same convolution, stimulation caused her to hear a man's voice and a woman's voice "down along the river somewhere." And she saw the river. It was at a place "I was visiting," she said, "when I was a child."

Three minutes later, while the electrode was held in place at 13, she exclaimed that she heard voices late at night and that she saw the "big wagons they used to haul the animals [of a circus] in."

Eleven minutes later, the original point, 11, was stimulated again. She no longer heard the mother calling her little boy. Instead, she heard "the voices of people calling from building to building."

Later still, when a coated electrode was inserted at 17 so as to stimulate the first temporal convolution deep in the fissure of Sylvius, she said, "I had . . . a familiar memory, in an office somewhere. I could see the desks. I was there, and someone was calling to me, a man leaning on a desk with a pencil in his hand."

The time had changed and the scene. It was at least 10 years later, evidently after she had become a stenographer, and yet the calling was common to all the experiences.

Discussion of Experiential Responses.

—Curiously enough, two experiences or strips of time are never activated concurrently. Consequently, there is no confusion. There seems to be an all-or-nothing organization which inhibits other records from being activated.

This is not a memory, as we usually use the word, although it may have some relation to it. No man can recall by voluntary effort such a wealth of detail. A man may learn a song so that he can sing it perfectly, but he probably cannot recall in detail any one of the many times he heard it. Most things that a man is able to recall to memory are generalizations and summaries. If it were not so, we might find ourselves confused, perhaps, by too great a richness of detail.

Many a patient has told me that the experience brought back by the electrode is much more real than remembering. And yet he is still aware of the present

situation. There is a doubling of consciousness, and yet he knows which is the present. He may cry out in astonishment that he is hearing and seeing friends who he knows are far away. J. T., realizing that he was on the operating table in Montreal, cried out: "Yes, doctor, yes, doctor! Now, I hear people laughing—my friends in South Africa." It seemed to him that he was laughing with them.

In general, it may be said that if the experience of that previous time, now so strangely under review, was accompanied with fear or amusement or admiration, he has those same reactions again.

The responses of these patients have been verified and checked in every way possible. Unexpected statements are proved by restimulation without warning and sometimes by warning without stimulation, before they are accepted. The brain has no sensation of its own. Consequently, the patient has no possible means of knowing when the electrode is applied, unless he is told or unless he is aware of a positive physiological effect.

The Ganglionic Record.—How is this record of the past stored in the brain? and where? One may assume that at the time of the original experience electrical potentials passed through the nerve cells and nerve connections of a recording mechanism in a specific patterned sequence and that some form of permanent facilitation preserves that sequence so that the record can be replayed at a later time, in a manner analogous to the replaying of a wire recorder or tape recorder. But this remains a supposition.

Reconsideration of Stimulation Responses.—In the Sherrington Lecture delivered in Liverpool last January,¹² I reviewed all our records of stimulation of the human cerebral cortex, to see whether I could answer these questions of how and where. The number of such patients operated upon under local anesthesia was then just short of a thousand.

Many stimulations—the majority, in fact—are greeted by silence. Not all areas of the brain can respond, because

of the nature of their function. The normally responsive areas are often in a state that seems to block translation of electrical pulse into physiological activity. There are many things that stimulation can never produce. No constructive thinking is produced, no willed or purposeful behaviour. In general, application of this crude electrical current seems to interfere with the normal functional employment of the cortex itself in the area to which the electrode is applied.

For example, if it is applied to one of the speech areas of the dominant hemisphere, such as Broca's convolution, the patient is silent. No words can be produced that way. If the patient is asked to answer while the electrode is still applied, he discovers, to his surprise, that he is aphasic. That is, he can no longer find words to express his thought. But they come with a rush when the electrode is lifted and he says, then, the things he was trying to say while the electrode was interfering with his employment of the speech area of cortex.

My conclusion is that the electrode can produce a positive physiological effect only in those areas of cortex that normally send currents of neuronal impulses to distant collections of nerve cells to activate mechanisms there. Apparently the local electrical state of the cortex must be converted into a physiological corticofugal conduction of electrical potentials.

If an electrical stimulus of 60 pulses per second, for example, is applied to his visual sensory cortex (Fig. 7), the effective stream of neurone impulses passes centrally, not back to the eye. It passes into the subcortical vision-receiving centre because the visual cortex normally serves as a way-station in the pathway of normal potentials that leads from eye through the cortex and on into the centrencephalic circuits of organization in the brain stem.

Exactly the same current applied to the auditory area of cortex, or to the somatic sensory area, sends a stream of neurone impulses inward (Fig. 7), and the patient seems to hear or to feel.

This flow of neuronal pulses produces crude sensations of vision or hearing or tactile sensation. No man is seen, nor is any voice heard to speak. If more clever stimulators could be constructed to vary the time and place of stimulation in a properly planned pattern, the patient might be made to see a man or hear a voice, perhaps. But there would be no sense of familiarity. It would be a synthetic man and a synthetic voice, like the products of the art of Walt Disney.

When the stimulating electrode is applied to the motor convolution just in front of the fissure of Rolando, there are two types of response, one gross and simple, the other complicated. In the first instance (Fig. 8, A), a stream of neuronal impulses passes down through the corticospinal tract and out to the peripheral muscles. If the point touched was the thumb area of the motor gyrus, the thumb flexes or extends and remains in that position. He is helpless to resist. He cannot use that thumb, although he can reach across and seize the thumb with the other hand.

If, however, the electrode was placed on that small portion of the motor convolution that is devoted to vocalization (Fig. 8, B), the patient, quite helplessly, carries out a very complicated movement — opening his mouth, contracting his diaphragm, and uttering a vowel sound — *A—A—A* until his breath is gone. He then stops, and, after taking a breath, he continues. In this case the stream of neuronal impulses passes directly to a vocalization and respiratory mechanism in the brain stem. There is nothing one-sided about the movement of this mechanism. It can also be activated by stimulation in the supplementary motor area of the same hemisphere and at the two homologous points in the opposite hemisphere.

Thus a complicated performance can be produced by an electrode on the cortex, as well as simple performances. But the stream of neuronal potentials must be caused to pass away from the area of stimulus along a route of normal neuronal conduction.

It seems evident, then, that in the case of sensory and motor stimulation the

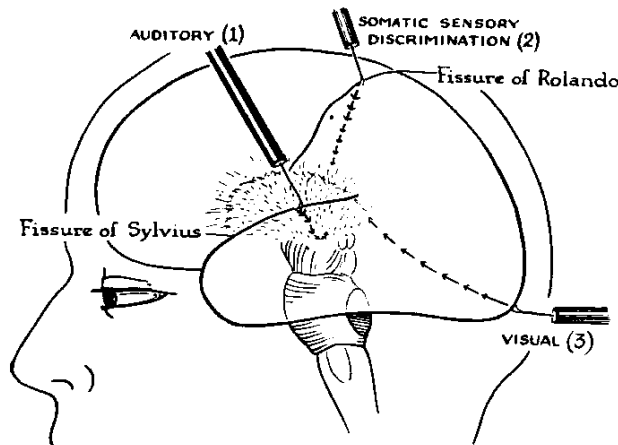


FIG. 7.—Sensory responses to stimulation of sensory areas of cortex: (1) auditory, (2) somatic sensory, (3) visual. Electrical stimulation produces sensation by means of dromic neuronal conductions from each cortical area to a corresponding subcortical receiving centre.

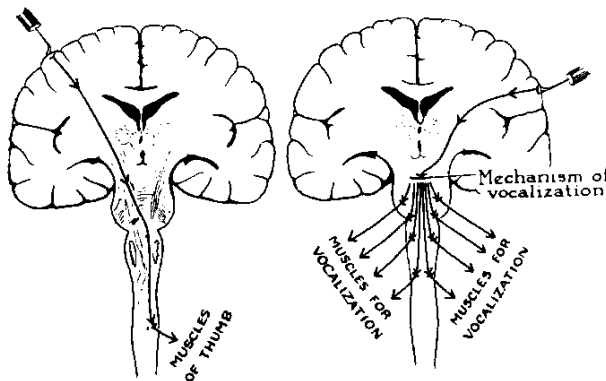


FIG. 8.—Motor responses to stimulation of the pre-Rolandic motor convolution produced by corticofugal neuronal conduction to A, anterior horn cells of spinal cord, and B, vocalization and respiratory mechanism of brain stem.

conduction must be dromic, that is, in the direction of normal functional flow. If this accepted tentatively as the rule governing such reactions, we may return to the temporal cortex.

I would conclude here, too, that when activation of the stream of previous consciousness is produced by stimulation, there is conduction away from the neighbourhood of the stimulating electrode. The ganglionic record of past experience must therefore lie at a distance from that area of temporal cortex. But the key that can unlock the past is to be

found there and apparently only there. The following observations bear out this suggestion.

Interpretive Responses to Stimulation.—In addition to the experiential flash-backs (A in Table 1), which we have been discussing, there is one other type of response. This response may follow stimulation of the same general area of temporal cortex and only there. When the electrode is applied, the patient has a sudden “feeling” about the present situation (B in Table 1). It is an interpretation of the present, but not one that the patient thinks out deliberately. It is a signal, for example, that the present situation is familiar, that it has been experienced before. Or it is strange, perhaps. It may be a signal that things seen are growing larger or sounds heard are louder, a signal that something is approaching. Or it may be the opposite—things going away. It may be a signal of change in the erectness of things or in perspective. It may be a sudden feeling of fear, an interpretation that the present situation is dangerous.

TABLE 1

PSYCHICAL RESPONSES TO ELECTRICAL STIMULATION OF INTERPRETATIVE AREAS OF CORTEX

- A. *Experiential Flash-back:* Random re-enactment of a conscious sequence from the patient's past.
- B. *Interpretive Signalling:* Production of sudden interpretations of the present experience, such as familiar, strange, fearful, coming nearer, going away, etc.

TABLE 2

INTERPRETIVE ILLUSIONS: ALTERATIONS OF PERCEPTION OF THE PRESENT

- 1. Auditory Illusions
Distance, Loudness, Tempo
- 2. Visual Illusions
Distance, Dimension, Erectness, Tempo
- 3. Illusions of Comparison
Familiarity, Strangeness, Unreality
- 4. Illusional Emotions
Fear, Loneliness, Separation, Sorrow, Disgust

For example, the patient M. M. (Fig. 6) said, when point 14 on the posterior limit of the right temporal lobe was stimulated,

"The whole operation now seems familiar." The "feeling" passed when the electrode was lifted. She was then told that the stimulation would be repeated, but no stimulus was applied. "Nothing," she said. Then point 15 was stimulated, and she said, "Just a tiny flash of familiarity and a feeling that I knew everything that was going to happen in the near future." To explain this, she added, "as though I had been through all this before."

When these interpretations of the present are produced by the electrode, we call them illusions, since they are false interpretations¹³ (see Table 2). But in normal life and under normal conditions these feelings are not illusions. They are true. They are reliable signals that can rise into consciousness only after a comparison is made between past records and the present experience. How else could the sudden awareness that this has happened before come to us with true meaning? Or how else could we know that this or that brings danger before we have had "time to think"?

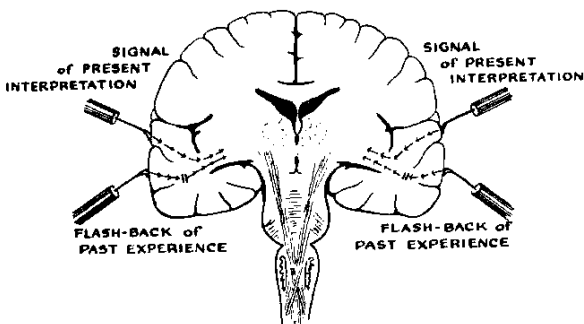


FIG. 9. — "Psychical" responses to stimulation of the (comparative) "interpretive" cortex of temporal lobe. The lines of arrows indicate the hypothetical pathways of neuronal impulses leading into the circuits of centrencephalic integration. In the case of the "flash-back" pathway, the interruption by vertical lines represents the ganglionic record of the past without attempting to indicate its position.

Cortex for Comparative Interpretation.—Thus it is evident that the temporal cortex, on stimulation (Fig. 9), yields two types of response which are psychical rather than sensory or motor. The two

forms are (1) a flash-back of past experience and (2) a signaling of interpretation of the present experience. The two types of response would seem to form parts of one subconscious process, the process of comparing present experience with past similar experiences.

The area of cortex from which these responses are obtained in both hemispheres is one to which no function has been assigned. It covers most of the superior surfaces of the temporal lobes, as well as the lateral and probably the inferior surfaces. For the purposes of further study this area of the cortex might be given a name to distinguish it from motor and sensory areas and the speech areas. This seems to be the area for *comparative interpretation* and might be called that or, more briefly, the *interpretive cortex* (see Fig. 1).

I surmise that the interpretive cortex makes its normal functional contribution in situations such as the following:

When you meet an acquaintance of years gone by, whom you might have thought forgotten, you may be startled first by a sudden signal of familiarity, because of the sound of his voice, his smile, his way of walking. Almost instantaneously some strange mechanism of the brain is providing you with a standard of comparison. You see how this present man differs from the acquaintance in the past—the man you have not thought of for many years. A moment earlier you could not have pictured him. Now you can compare the past with the present in great detail. You detect the slightest change in face or hair. You note that his movements are slowed, the hair thinned, alas! the shoulder stooped. But his laugh, perhaps, has not changed.

I would assume that the comparative-interpretive cortex of the temporal lobes has somehow managed the selection and activation of the short strips of past conscious experience in which this man was once the focus of your attention. It makes possible the scanning process by which past experiences, however scattered they may have been in time, are selected and made available to the present, for the purpose of comparative interpretation.

The problem now is to understand how these functional areas are employed in the total integration of the travelling potentials. That integration constitutes the neural basis of consciousness. The problem is to work out the centrecephalic circuits and ganglionic centres of the higher brain stem which play an essential role in the co-ordination of the action of the cortical areas.

Summary.—There is a permanent record of the stream of consciousness within the brain. It is preserved in amazing detail. No man can, by voluntary effort, call this detail back to memory. But, hidden in the interpretive areas of the temporal lobes, there is a key to a mechanism that unlocks the past and seems to scan it for the purpose of automatic interpretation of the present. It seems probable also, that this mechanism serves us as we make conscious comparison of present experience with similar past experiences.

Conclusion.—The discovery of this interpretive cortex is one step forward. Another territory on the map of the cerebral cortex can be named. But, seen against the vastness of the problem of the mechanisms of the mind, this is a very small step indeed.

These observations that I have reported of the temporal cortex show us another mechanism that must play its part in the total function of the human brain. It is a mechanism that can be separated out by local epileptic discharge or electrical stimulation. Like the discovery of Fritsch and Hitzig that the electrode could move the dog's leg, this discovery that the electrode can cause the past to flash into consciousness again and also provide signals of present interpretation should open a new chapter in the physiology of the brain.

This seems to constitute one of the mechanisms of consciousness. Perhaps Hippocrates would say that this is a mechanism employed by the brain to distinguish "the ugly from the beautiful, the bad from the good, the pleasant from the unpleasant."

* Public lecture, National Academy of Sciences, Caspary Hall, Rockefeller Institute, New York, November 18, 1957.

Note to Editors: This appeared in the Proceedings but has not been published otherwise. You may use it all or in part. Best wishes to you and your fellow students—WILDER PENFIELD.

¹ *The First Aphorism—Hippocrates*, trans. W. H. S. Jones (London: Loeb Classical Library, 1923).

² C. S. Sherrington, *The Integrative Action of the Nervous System* (Cambridge: Cambridge University Press, 1947), pp. 274-276.

³ P. Broca, "Sur la siége de la faculté du langage articulé," *Bull. soc. anat. Paris*, 2d ser. 6, 355, 1861.

⁴ G. Fritsch and E. Hitzig, "Ueber die elektrische Erregbarkeit des Grosshirns," *Arch. Anat. Physiol.*, 37, 300, 1870.

⁵ I. P. Pavlov, *Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex*, Trans. and ed. G. Anrep (London: Oxford University Press, 1927).

⁶ This case was reported by Penfield. W. Penfield, "The Cerebral Cortex in Man. I. The Cerebral Cortex and Consciousness," *Arch. Neurol. & Psychiat.*, 40, 417, 1938; also in French (trans. Professor H. Piéron, in *l'Année psychol.* Vol. 39, 1938).

⁷ J. V. was not cured by that operation, although we managed to remove some of the abnormal area. During the twenty-one years that have followed, we have gradually learned a little more about temporal lobe epilepsy. It is now recognized as constituting the largest single group among the different forms of epilepsy. So J. V. returned for three subsequent operations, and at last she seems to be cured of the attacks.

⁸ The patient is described in detail by Penfield and Jasper. W. Penfield and H. Jasper, *Epilepsy and the Functional Anatomy of the Human Brain*, [Boston: Little, Brown & Co., 1954], (Case Index, p. 882).

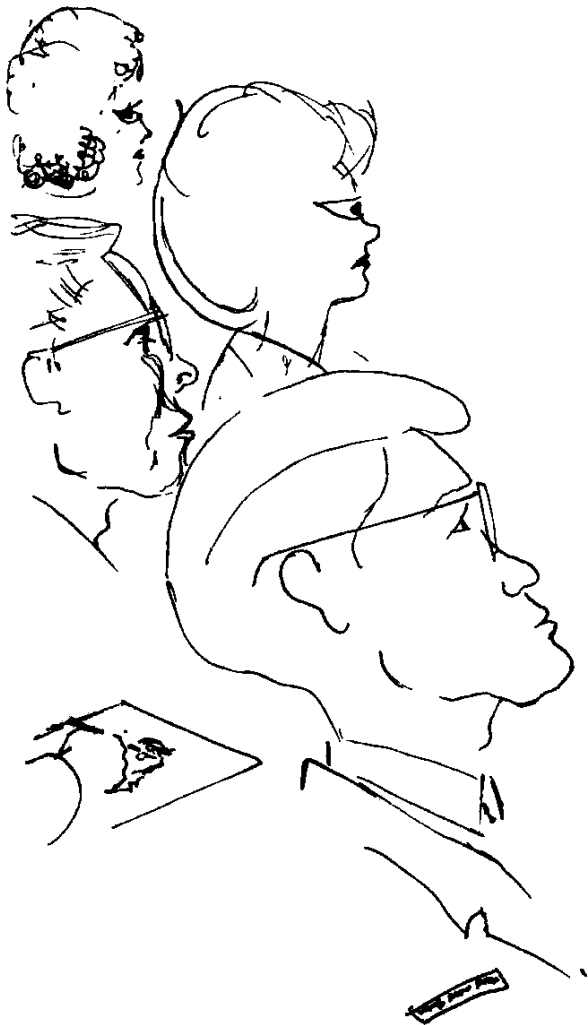
⁹ William James, *The Principles of Psychology* (New York: Henry Holt & Co., 1910).

¹⁰ The electric current that I have employed during recent years is produced by a square-wave generator at a frequency of 40-100 pulses per second. We usually use a pulse of 2-5 milliseconds duration and a current of 1-5 volts. It is our custom to place recording electrodes on the cortex during stimulation, so that my associate Herbert Jasper can study the electrical condition, before and after stimulation, on his electrograph placed outside the glass of the viewing stand.

¹¹ W. Penfield, "The Role of the Temporal Cortex in Certain Psychological Phenomena," *J. Ment. Sc.*, 101, 451, 1955.

¹² W. Penfield, *Physiological Observations in the Human Cerebral Cortex—a Study of Conscious Responses to Stimulation of the Human Brain*, (Fifth Sherrington Lecture) (Liverpool: Liverpool University Press; Springfield, Ill.: Charles C. Thomas, 1958).

¹³ My associate, Sean Mullan, analyzed the cases of 217 of our patients who came to operation for relief of temporal lobe seizures (Mullan and Penfield, to be published, 1958). Of these, 38 had such interpretive illusions either at the onset of their attacks or as a result of cortical simulation or, more often, both.



"A Word of Warning About Your Relationship With The Nursing staff . . ."

AIDS TO THE BETTER UNDERSTANDING OF FEMALE MEDICS

Medical students — male — I dismiss with a flick of my finger. Self-conscious little brats nervously straightening their society ties and ostentatiously swinging their white coats. Take away all these, plus that beady association insignia, and they look as unprepossessing as mamas' little boys without the maternal aprons to hide behind.

It is said that clothes make the man. And no doubt they make the woman as well. With one important difference. For example, the female medics. Do a strip tease with their white smocks, their blazer with the society insignia, their professional cases, and what do we have? You see what I mean. Yes, that's what I like about them too.

Besides, one can't afford to ignore girls. As somebody pointed out: "Women are not much but they're the only other sex we have." One of Nature's happy mistakes.

In my younger and brasher days, I set out to subdue the World of Girls. It was to be a case of I came, I saw, I conquered. Now I am an older, wiser, sadder and defeated person. We won't go into that demoralizing process. But with a vengeance, albeit cloaked in chivalrous praise, I here set down, for the guidance and instruction of the uninitiated, a number of case histories and diagnoses. You may make of them what you will.

Basically speaking, female medics are no different from other females. But circumstances conspire to make them superficially different. For example, a queer notion persists about this university that non-medical boys are not interested in medical girls. Out of a natural gallantry, I set out to rectify the situation. Incidentally, the new generation seems anxious to overcome this absurd faculty discrimination. A group of this year's freshmen walked into the canteen and could have passed for models, starlets, debutantes. Where they hide their white coats, stethoscopes, files,

books, etc. I don't know. It helps, I suppose, that huge handbags are in the fashion nowadays. Sometime ago, I saw one the size of a suitcase. Anyway, with all this camouflage of formfitting dresses and stilleto heels and pancake mix one wouldn't think of asking them what faculty they're in. Whatever it is it must be heaven for the boys, you think.

Case History One: I was cha-chaing with this sweet-faced lassie. I introduce myself, my department and year and then I ask: "What's a girl like you doing in a place like this?" (This line never fails to break the ice). Well, she swirls around, does two turns, and I lose her. When we meet again in another section of the room, she murmurs in reply: "Yes, I think the weather has been horrible too." So, I ask again, in a more straightforward way what she's studying. Same escapist technique. That's the trouble with these modern dances; they give the girls too much freedom. This time when she returns, she answers demurely: "No, I didn't see the Chapman Report." I give her a last chance, and holding her tightly by the hand, yell above the blare of the percussion. She yells right back at me. "Yes, I think Aristotle is the greatest!"

Diagnosis: This female medic was not deaf, no sir. She was just unwilling to admit that she's a medical student.

Case History Two: I was waiting at Garden Road one rainy morning for a kindhearted bus-driver to stop long enough for me to squeeze a toe onto the steps. Then this eggshaped car stopped in front of me. An escape hatch slid open. It was all very sudden. A voice within the shell instructed me to enter. I got in, half expecting to be drowned in egg yolk. At the steering column, there's this attractive girl with the long black hair. Without looking at me, she engages gear and we roll along. Then she says: "Tell

me something about amenorrhoea. I didn't get to that chapter last night." Before I can figure out if amenorrhoea is even distantly related to diarrhoea, she hurries me: "You don't have to spare my feelings. Don't tell me you're shy!" So I give her what I know. I say: "'Amen' means 'truly' or 'certainly' in Latin, Hebrew and Greek. It is best known as the finale to prayers in which case it'll mean 'May it be so'." She saves me the trouble of trying to explain what — orrhoea means in Latin, Hebrew and Greek. She interrupts: "You don't sound like Michael." She peers at me. "You don't even look like Michael." Which was not very surprising since I am not Michael.

Diagnosis: Female medics are short-sighted, romantically so. But wait, there's more to this tale.

We introduce ourselves. She's in Medicine and I'm in Philosophy. We talk. And then she asks: "Do you find us less feminine than other girls?" Before I can answer with an enthusiastic "Hell, no!" she unreels a case history of her own. "There I was dancing with this nice looking boy at the social gathering and we are getting chummy and I would like to go out with him and I'm all prepared to say yes to the question he's going to pop which is will you go to the Union Ball with me and I'm thinking I'll invite him back to the Med Ball and we continue chatting and then he asks me what course arts I'm taking and I say no I'm medicine and after a while he goes off somewhere and I never see him again." Pause. She inhales all the available oxygen in the car. "This has happened not once but twice, thrice, four, five, six, seven, eight, nine times!" She is getting so het up that she zooms past the main building and the next thing I know we're in front of the mortuary at Queen Mary. A sigh of despair. Hers, not mine. She says: "Men aren't chivalrous anymore."

Diagnosis: Female medics are just as dangerous as other females when in control of a car. We could have easily ended up *inside* the mortuary.

Case History Three: Don't be fooled by the dumb appealing look that most female medics sport in society. They're only following 18th century advice: "A woman, especially if she has the misfortune of knowing anything, should conceal it as well as she can." At a party, I played scrabble with one of them. It was an absolutely incomprehensible game with words such as FLATUS and ENURESIS and BORBORYGMUS on the squares. I couldn't stand it any longer and when she sandwiched NO and made it MENOPAUSE, I asked her for an explanation of the word. After all, it meant a 50 point bonus for her and I couldn't let that go without questioning it. She refused to tell me.

Diagnosis: Female medics are reassuringly shy.

Case History Four: Female medics are sometimes willing to show their appreciation for the artistic aspects of life. "Oh Peter," she sighed, "I envy you philosophy students. You deal with such universal topics, you learn a great deal about Life, and you read such a lot. And your English is so marvellous! We speak the language passably but you make it sound so melodious, so tuneful to the ear. I suppose you write beautiful poems and essays." I bet this is the only time that a female medic has praised a philosophy student.

Conclusion: Boys will be boys even when they're men, and girls will be girls, even when they're medical students.

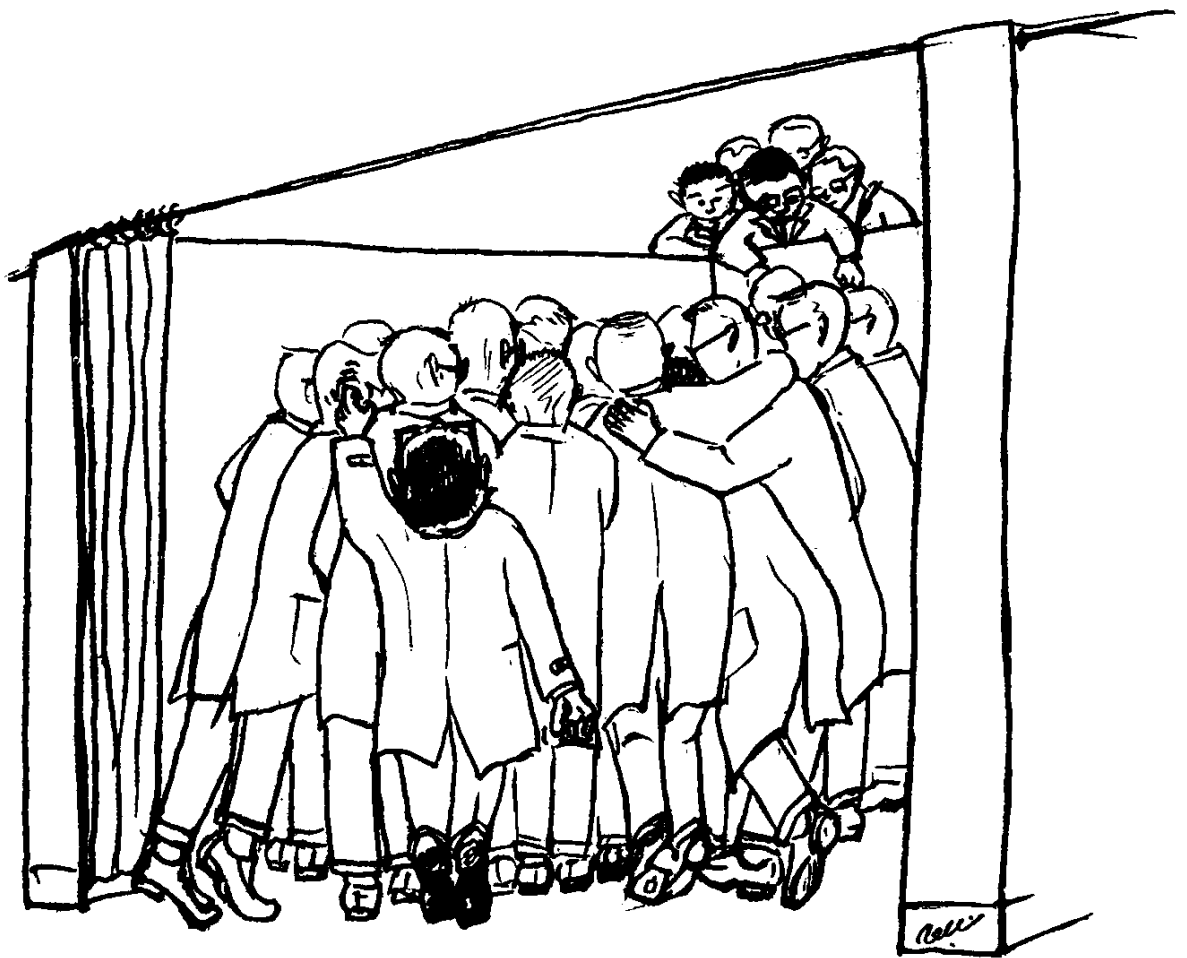
PETER KILDARE (B.A.)



An Editor's Note:

I regret that I have not had the pleasure of meeting the very interesting characters to which Mr. Peter Kildare refers. It seems he has a much more comprehensive understanding of our female colleagues than I have, so much so that he merits the name "Gynaeco-philosopher".

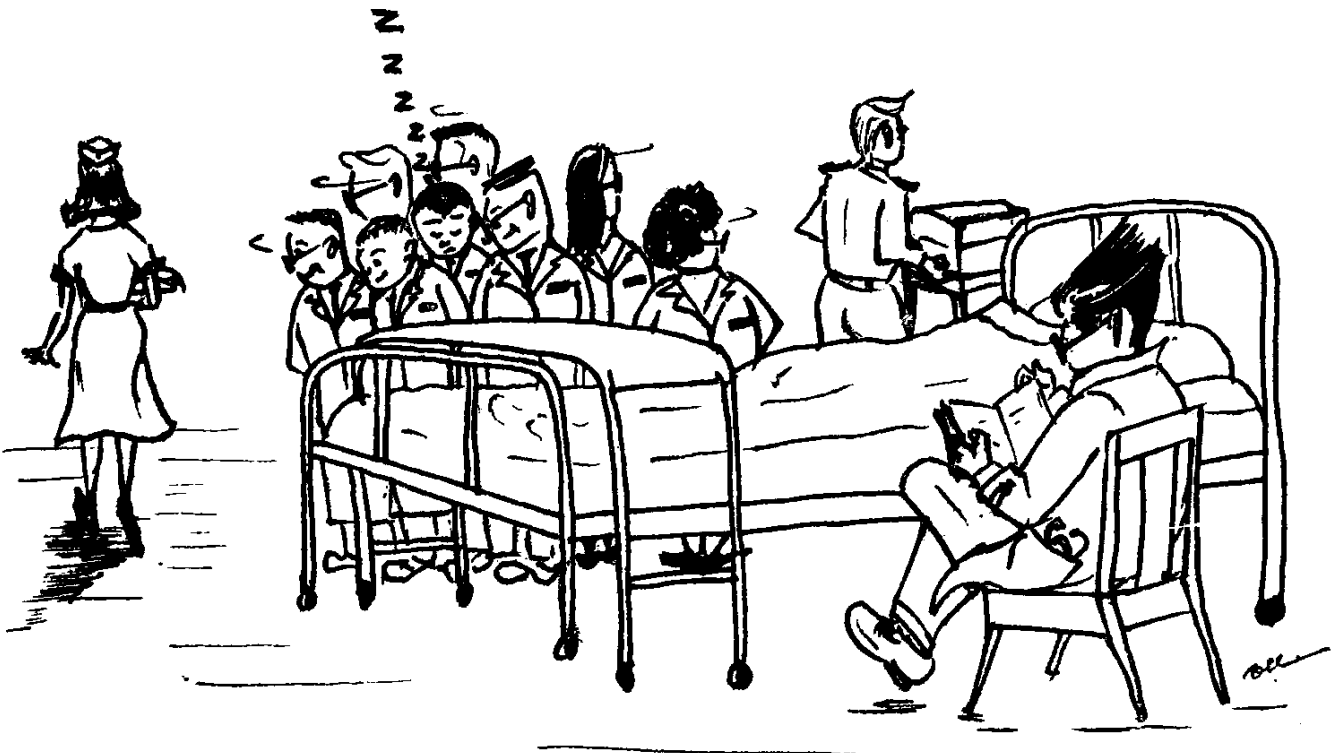
THE HUNGRY GENERATION



For Knowledge —



For Food —



For . . .

(L. F. C.)

TUBERCULOSIS—

“A disease which medicine never cured”.
(Dickens)

“They brought her to the city,
And she faded slowly there,
Consumption has no pity
For blue eyes and golden hair”.

So wrote a Houseman in the 19th Century and such was the story that could be repeated to infinity when an adolescent Celt became host to the tubercle bacillus.

And Young Keats who had bypassed a medical career could verse immortal observations on his tuberculous contemporaries, strengthened no doubt by his painful family experience of the hopelessness of the disease. He was to learn, however, that he was unwittingly telling his own very near future when he wrote—
“Youth grows pale and spectre thin and dies.”

for at that time his own two lungs were largely destroyed.



John Keats in his last illness.
Copied from the sketch by Joseph Severn.
Jan. 28, 1821. “DRAWN TO KEEP ME
AWAKE — A DEADLY SWEAT WAS ON HIM
ALL THIS NIGHT.”

Chopin, who was attended by three of the most famous physicians of Majorca during his terrifying episodes of haemoptyses made only one uncomplimentary recommendation about them — “One said I had died, the second that I am dying, the third that I shall die.” Like Chopin, pining shadowy consumptive youths who could so afford flocked to balmy climates with sunny skies hoping to dodge death in the illusion of refuge afforded by the Caribbean Islands, Colorado, Monte Carlo or Monaco,— each rendezvous claiming to be— “A lovely country. But the cough of the consumptive is never still, even there.” But generations of young adults were earmarked for an early death and despairing poets introduced the sadness associated with the universal phthisis of Autumn to symbolise the discouragement of languishing and departing youth due to the pervading presence of tuberculosis. . . .

“The melancholy days have come, the saddest of the year,

Of wailing winds and naked woods,
and meadows brown and sear”.

When Thoreau saw the year's first tarnished maple leaves he thought—
“Decay and disease are often beautiful like . . . the hectic glow of consumption.”

We may say that disease coloured the whole temperament of civilisation — “The captain of all these men of death that came against him to take him away, was the Consumption, for it was that that brought him down to the grave”. And the grave formed a constant theme for the poets. In their language the earth was known as “The grave-paved star”. Then the 19th Century went by and at its close the curtain fell on the melancholy strain of doleful dirges and poetic deaths by which it was so lavishly dramatized—but the tubercle bacillus played on—its own sure melody.

Tuberculosis probably constitutes the major infectious disease that bothers the human race. We saw the 20th Century opening with a pronounced belligerent accent in its approach to the insidious enemy: — “To combat consumption successfully, requires the combined action of a wise government, well trained physicians, and an intelligent people”, and it is obvious that this century will go down in history for the outstanding manner whereby men all over the globe took responsibility for their own social welfare. Clarion calls resounded through many lands and resulted in the adoption of decided military formulae. Campaigns were planned — Crusades followed — Organisations developed — Unions appeared — Welfare Powers mobilized — Associations formed — Battles fought — State Departments legislated — Teams trained — Committees clashed — Legions of volunteers enlisted — Turbulent discussions endured — Programmes outlined — Codes adopted — Powers of propaganda exploited — and all to waylay the wily tubercle bacillus. At the international inter-governmental level could be seen the specialized agencies of the United Nations such as WHO, UNICEF and the U.N. Technical Assistance Fund and then the more specific commissions of the International Co-operation Administration of the United States and the Colombo Plan of the British Commonwealth. Non-governmental voluntary organizations are typified by the International Union against Tuberculosis which is a Federation of National Tuberculosis Organizations, hoisting the heterogeneous campaign’s emblematic flag of the brilliant Red Cross of Lorraine which was adopted 50 years ago at a Conference in Berlin as the symbol of a universal warring party. In countries where the prescribed protocol was followed with relentless endeavour the once powerful enemy began to show signs of capitulation and to survive merely by small epidemics

arising from sporadic undetected hosts. Thus today, in the Northern States of Europe and America, tuberculosis is well-nigh forgotten while in parts of Asia, Africa and South America, it still looms large as the number one Public Health problem. The stunning success achieved on some of the theatres of our bacillary war could be attributed to the fact that they were endowed naturally and artificially with an abundance of the requisite resources, climaxed in the last decade and a half with possession of the powerful ally — chemotherapy — holding a lethal potion for the adversary.

“And death is in the phial, and the end of noble work”.

But we cannot belittle the instinct for survival inherent in the tubercle bacillus. It has learned the tactics of counter-attack and is now in the process of manifesting an enormous self-defence by the development of a dissimulating Resistance Movement which we shudder to think might outlive our rate of production of destructive weapons.

And so, alongside the euphoria of victory we are not unmindful of the subversive potentialities with which the Campaign might have to reckon in countries where the disease is still rampant. In this automatic decade when we are geared to the company of electronic computers and focussed on vistas of outer space we must from time to time reshuffle our ideas to keep in tune with the more gravitating experiences of a land claiming five million tuberculous victims scattered over more than half a million villages whose horizons may be blurred by bullock-cart transport.

Before this jet age century has sped its course it is to be hoped that all hitherto unexplored territories will have had their tuberculous D Days leaving no hangover to be

“Thrown among the rocks by the sullen waters of oblivion”.

SISTER M. AQUINAS

* * *

Surgeon to dozing anaesthetist: “If the patient on the table can keep awake, why can’t you?”

WITHOUT PREJUDICE

(With apology to the British Medical Journal)

In answer to a question on the treatment of haematemesis, countless candidates said that the patient must be given oyster soup. This was traced to a lecturer lately imported from Glasgow who had told them to give the patient "ice to suck."

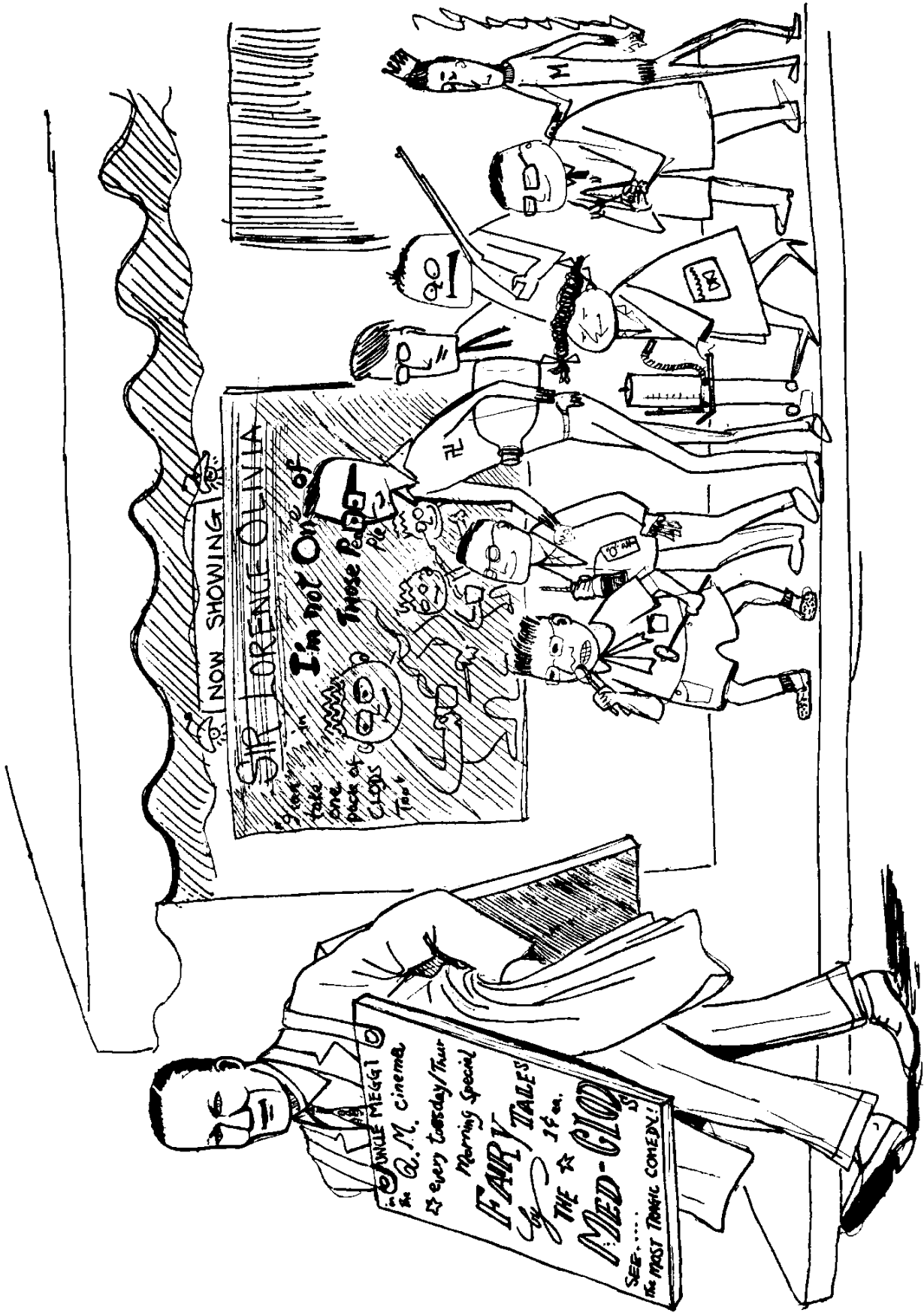
As the Examiner sees it
Lancet, 1947.

Chief: "Who is Argyll-Robertson?"

J.C.: " . . . "

Chief: "Do you know that when you are asked who a fellow is, you are expected to say whether he was a Glasgow graduate or not? Well the issue is that this chap *was* a Glasgow graduate!"





NOW SHOWING

SIR LORENCE OLIVIA

I'm not one of

those people who take one pack of CIGARS and say 'That's all!'

That's all!

JUNGLE MIEGHT
in the P. M. Cinema

★ every Tuesday/Thursday
Morning Special

Fairy Tales

See it in

THE MED-GLO

See...
the most tragic comedy!

E. S.

Have you ever been startled by an English answer to the Chinese question you put to a Chinese patient? I have. And then on looking up I could find the sign 'E.S.' hanging above the bed. "Ah, that's it." Subconsciously, I would begin to talk to him more carefully, more tactfully and perhaps, even more politely than before. That was what he expected me to do after his showing off.

Why does an E.S. patient warrant my extra attention? I presume that the primary purpose of the sign is to warn us not to talk about certain professional matters in colloquial English, for fear of bewildering or upsetting him. However, I cannot help associating this sign with better intellectual and social status, and my human nature is still too crude to make me treat all patients equally, irrespective of personal and financial factors. And the strangest part is that, in paying less attention to those who know Chinese language only, I seem to be despising the very language which I myself was born to speak, to read and to write. But this is only one of the many instances of paradoxical attitudes.

Yesterday I was watching a match between a Chinese team and a foreign team. The Chinese team was enthusiastically cheered by the Chinese spectators — who made up the majority of course. And all of a sudden I recalled that only a few hours ago a certain lecturer was telling us about some proverbs from a classical Chinese medical book; we gave him some sort of "cheering" too, in addition to some whistling and laughing. I wonder if this is the typical attitude of Hong Kong medical students towards Chinese medicine.

It is true that many Chinese herbalists and bone-setters here are not enjoying a good practice; otherwise they would not need all those fashionable advertisements in newspapers. The Chinese doctors who graduated from universities of China some years ago and who came here recently also have difficulties because their qualification do not permit them to practise medicine. The classical Chinese

medical profession apparently has broken into pieces, like the nation to which it belongs. Chinese herbs have been blamed for provoking various symptoms and even diseases. Indeed, they are rightly blamed in a number of cases. It may be postulated that the majority of these cases is due to ignorant Chinese laymen having taken some herbs indiscriminately, out of their own fancy. Although I am no politician or sociologist, I dare say that the high incidence of abuse of herbs here is largely due to the low standard of education in our over-crowded and competitive community. Abuse of drugs is not a Chinese characteristic; even the "super-civilized" country of our century is worried about over-consumption of tranquillizers by her people.

Do not be under the impression that I am trying to defend old traditions and primitive ideas. Nor do I have close relatives or friends who are practising as herbalists, bone-setters, or are unregistered Chinese doctors. I simply feel it would be very wrong if I despise Chinese medicine altogether. After all there is always a good side and a bad side to everything. To shun a piece of knowledge merely for the fear of 'contaminating' myself with the faulty part of it would make me a very cowardly scientist. If ever I am given a chance to study some elements of classical Chinese medicine, I would not miss this chance — even though I may waste part of it due to my deficient knowledge of classical Chinese. If I were to become a multi-millionaire, I would set up a big research centre where Chinese herbs would be extracted, purified and analysed; where classical books would be translated into modern languages; and all the worthy results of the research will be contributed to universal medical progress — sadly, I have little more than twenty dollars in my piggy bank, to which I must add sixteen dollars more of future savings, before I can buy my Gynaecology text-book.

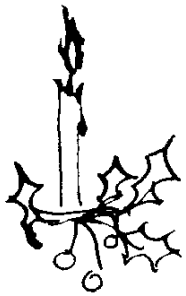
But for the moment I am content with the golden opportunity given me; I trust that the fundamental medical education

I have been receiving represents one of the best types available in our time. We are taught to think, to reason, to conclude and to act in scientific spirit. This is the type of education which I hope, someday, all future members of the Chinese medical profession will be privileged to obtain.

The first graduate of our medical school, Dr. Sun Yat-Sen, sacrificed his potentially successful medical career at the time when China was badly in need of a national leader. He has become an immortal figure revered by peoples and nations. There is no need for us to make

such a sacrifice, because we have entered into an age in which contributions to the welfare of the human race are more valuable than what is done for one's nation alone. And it is not fame and power which we are driving at. In the patriotic spirit of our earliest and finest senior colleague, there are so many ways in which we may serve our nation and the world through the medical profession, as long as we keep our hearts warm, our minds open, our thoughts pure, and our stethoscopes.

— A CHINESE MEDICAL STUDENT —



Elixir calls on Queen Mary Hospital at Christmas Time.

The Li Po Kwai Prize Essay, 1962.
By kind permission of Prof. F. E. Stock,
Professor of Surgery, Hong Kong University

THE THORACIC OUTLET SYNDROME

FRANKLIN W. P. LI, M.B., B.S., F.R.C.S., F.R.C.S.E.

The pathology and the treatment of pain radiating along the course of the sciatic nerve in the lower limb have frequently been documented and great measure of agreement has been reached. The causes and the methods of treatment of pain in the upper limb, however, are under much controversy, the reason being mainly that the causes of "brachial neuralgia" are by far more complex and multiple. Many lesions which compress or stretch the nerves in the upper limb may produce pain and paraesthesias. Apart from the well-known cervical spondylosis and carpal tunnel syndrome, there is a group of pathology at the thoracic outlet which produces such symptoms. In the vicinity, the brachial plexus and/or the subclavian vessels may be compressed or stretched by the same agent. The neurovascular disturbance thus caused is collectively known as the thoracic outlet syndrome.

This syndrome is by no means only known as such. At one time, a cervical rib or its equivalent was the sole compressing agent known, and the "cervical rib" syndrome was then a popular term. It was soon discovered that the presence of this structure was seldom associated with symptoms and its absence was almost the rule when symptoms appeared. Calling attention to the role of the scalenus anterior muscle as the compressing agent, Adson and Coffey (1927) coined the term "scalenus anticus" syndrome. Among other commonly used terms in the literature are "first rib" syndrome, "costoclavicular" syndrome and "subcoracoid-pectoralis minor" syndrome.

MECHANISM

The symptoms of brachial plexus compression are rarely those one would expect

to arise from simple pressure on either a nerve or a nerve root. Such a pressure on a normal mixed nerve is a painless affair even to the degree of producing complete numbness and paralysis. On the other hand, the brachial plexus being subjected to repeated or prolonged compression or stretching, is in such an abnormally sensitive state that it gives rise to pain and paraesthesias on local pressure and is itself tender. This state depends upon the production of a neuritis in which the important changes are in the nerve sheath (Russell 1956), and is exemplified in spondylitic lesions when irritation of nerve roots as in coughing produces pain, and in carpal tunnel syndrome when tapping of the median nerve gives rise to paraesthesias.

The mechanism of production of vascular symptoms has been for a long time a disputable subject. Coldness and cyanosis of the hand point to some interference with the blood flow through the artery. Stopford and Telford (1919) attributed these to pressure on sympathetic nerve fibres in the first thoracic root, causing arterial spasm with obliteration of the vasa vasorum and consequent nutritional changes in the subclavian artery wall with thrombosis and occlusion. However, it is difficult to see how recurrent pressure upon a nerve root, repeated over long period, can disturb sympathetic fibres and leave somatic fibres intact. According to clinical observations, vascular cases are symptomatically clearly distinct from nervous cases, and yet mixed cases would be expected to occur if the symptoms had a common nervous origin. Eden (1939) and others believed that the vascular changes in the arm were produced by trauma to the wall of subclavian artery giving rise to thrombosis and the throwing off of multiple emboli.

Numerous structures have been reported to compress or to stretch the neurovascular bundle at the thoracic outlet producing symptoms:—

Cervical rib and its equivalent

In reviewing a series of 540,413 new patients, Adson and Coffey (1927) found 303 cases in which cervical rib was diagnosed, representing an incidence of 0.056%. Symptoms of compression caused by this structure were present only in a minority of these patients. The cervical rib producing vascular symptoms is nearly always of the complete type articulating with the first thoracic rib by an enlarged extremity (Eden 1939). Frequently the articulation takes place with a bony boss on the first rib by means of a diarthrodial joint. The third part of the subclavian artery is pushed forwards and upwards by the splayed-out extremity of the abnormal rib, and the brachial plexus crosses the rib as a rule higher up. By way of contrast, the type of cervical rib which most commonly causes nerve complications is the short pointed type, often with a fibrous band passing to the first thoracic rib, over which the brachial plexus is sharply kinked. A definite narrowing may often be made out at the point of pressure.

Evidence is brought forward by Eden (1939) to support the hypothesis that the vascular disease of the arm is due to damage to the wall of the subclavian artery by intermittent compression between the clavicle and the cervical rib. As a result, dilatation of the artery often occurs with dense fibrosis around it and thrombosis on the intima. With continued trauma, blood clot is thrown off in the form of emboli which lodge in the vessels of the hand and the arm giving rise to progressive thrombosis and symptoms of vascular insufficiency.

The 'normal' first rib

Bramwell (1903) as quoted by Walshe, Jackson and Wyburn-Mason (1944) appears to have been the first to draw attention to the possibility that a normal first rib might exert pressure upon the first thoracic nerve root leading to a

uniradicular palsy. He referred to the notably sharp medial border of this rib as calculated to damage a nerve root stretched tightly across it. Stopford and Telford (1919) stressed the drooping of the shoulder girdle that accompanied this syndrome, stating that this poor posture as in paralysis of girdle muscles or unusual and prolonged physical activities, was the factor precipitating pressure effects by increasing the tension upon nerve roots and artery.

The scalenus anterior muscle

In 1905, Murphy first pointed out the scalenus anterior muscle was a factor in the production of symptoms arising from cervical rib. The latter, on carrying the brachial plexus and the subclavian artery forward, pressed these structures against this muscle. Adson and Coffey in 1927 reported a series of patient treated by simple section of this muscle with results as satisfactory as those obtained by the more extensive operation of removing the rib. Several years later, there were numerous reports in the literature of patients who had symptoms of cervical rib, but in whom this anomaly was not found. Ochsner, Gage and DeBaKey (1935) using the term 'scalenus anticus syndrome' attributed the cause to a well-developed, spastic and stiffened scalenus anterior muscle. Together with these authors, Naffziger and Grant (1938) and many others stated that symptoms could be relieved merely by the section of the muscle at its insertion into the first rib. However, Eaton (1946), Raaf (1955) and Falconer and Li (1962) pointed out that this operation alone often fails to relieve symptoms.

Costoclavicular compression

Eden (1939) first showed that compression of the neurovascular bundle could be caused by compression between the clavicle in front and a cervical rib or the first rib behind. Falconer and Weddell in 1943 reported two cases of costoclavicular compression of the subclavian vessels; one case was submitted to a resection of the first rib with subsequent relief. LeVay (1945) also reported

a similar case relieved by the same operation after a previous scalenotomy had failed. Further, Stammers (1950) pointed out that the wearing of an army pack by young recruits could produce gross discomfort in the arms because of pressure of clavicle against the subclavian vessels.

In spite of these reports, some doubt exists whether costoclavicular compression is a real entity. Thus, Telford and Mottershead (1947) said that it was impossible to press the clavicle directly backwards on the first rib in normal anatomy. Their findings were unfortunately based on dissections of 25 bodies which presumably were symptom-free in the upper limbs previously. They did not mention the costoclavicular relation at operation in patients with symptoms. Falconer and Li (1962) then presented 11 consecutive surgically treated cases in which the diagnosis of costoclavicular compression of the brachial plexus appeared to have been substantiated at operation. In the majority of cases, on backward retraction of the shoulder, it was found that the first rib would be approached by the clavicle so closely that the tip of the exploring finger placed between them was nipped.

Other structures

An abnormality of the attachment of the scalene muscles may give rise to neurovascular compression. Another agent is the abnormal posterior scapular artery arising from the third part of the subclavian artery passing outwards and backwards between the trunks of the brachial plexus so as to hold the lowest trunk against the subclavian artery over which it is stretched (Rogers 1949). The division of the abnormal artery has resulted in relief of symptoms.

Section of the scalenus minimus has frequently been reported to offer cure to the syndrome (Falconer and Weddell 1943; Lawson and McKenzie 1951).

SYMPTOMATOLOGY

Though nervous and vascular symptoms may be present in the same case, it is more common to find either of them

more dominating. The onset of symptoms in the hand usually takes the form of attacks of numbness and pallor in the fingers on exposure to cold. Typical Raynaud's phenomena may occur. Two main types of vascular cases can be distinguished. In the one there is a massive blockage of the main vessels of the forearm or the arm with severe pain and weakness of the limb but with the collateral circulation adequate to preserve the nutrition of the fingers. In the other type, the small vessels of the fingers and hand become progressively blocked, leading to Raynaud's attacks in the fingers. The affected fingers become cyanosed, slightly swollen, stiff and tender to touch. The pulp of the tips atrophies or a gangrene may supervene. Cramp-like pain in the muscle of the limb may come on after vigorous exercise and take several minutes to wear off after rest. In late cases the radial pulse may disappear.

In cases of nerve involvement, the pain takes the form of a lancinating or aching character shooting down the arm into the fingers principally on the ulnar border. It is provoked by carrying a heavy weight, and worsened by such movements that cause hyperabduction or backward retraction of the shoulder, such as polishing a window or working a switchboard. When the pain is slight, paraesthesias may take its place. The symptoms, although usually relieved by rest, may waken the patient from sleep and is eased by moving the limb. Sensory impairment is usually slight and is usually objective rather than subjective. Weakness of the hand grip with wasting of the intrinsic hand muscles may be present.

Various tests are useful in making the diagnosis. In costoclavicular compression, passively produced backward bracing of the shoulder will provoke or accentuate the pain within a few seconds to a minute, and digital pressure over the brachial plexus immediately above the middle third of the clavicle will similarly aggravate the pain. At the same time, the brachial plexus is usually tender at this point (Falconer and Li 1962).

The chief conditions with which the condition can be confused are the carpal

tunnel syndrome, and nerve root compression by prolapsed cervical intervertebral discs. The former is characterised by a predominantly nocturnal appearance of pain in the upper limb, chiefly in the median nerve territory, but often spreading throughout the whole limb. It occurs mostly in females at or near the menopause, but is often associated with slight weakness of the abductor pollicis. The two tests mentioned above are absent. Pain from prolapsed discs can usually be differentiated for it involves more often the radial side of the limb and follows more closely a nerve root compression pattern. Moreover, it is aggravated by coughing and sneezing, and is usually associated with positive signs either in the straight X-rays of the neck or in the myelogram.

MANAGEMENT

All patients require the fullest clinical examination of the motor, sensory, autonomic and vascular systems of the upper limb and the supraclavicular region. The character and the distribution of the pain and paraesthesias should be carefully noted including especially the position or the movement that precipitates the symptoms since costoclavicular compression occurs only in certain position of the upper limb. Digital pressure over the supraclavicular fossa is applied and backward bracing of the shoulder is performed to elicit the special signs described above. X-rays of the neck including films showing the intervertebral foramina should be taken.

The diagnosis of the causative agent can only be obvious when a well developed cervical rib is detected though abnormality in the form or the position of the first rib, a prominent C7 transverse process and asymmetry of the thoracic outlet as shown in the X-ray examination are suggestive. Venograms and retrograde angiograms of the vessels in the affected extremity in various positions may be of value. Scalenus anticus syndrome may be differentiated from costoclavicular compression by paralysing the muscle with a local analgesic. This has been practised by Falconer and

Weddell (1943). Notwithstanding these tests, the precise nature of the compressing agent may remain in doubt until exploration.

A prolonged period of conservative treatment and psychotherapy should be tried before operation is advised. A course of exercise to strengthen the elevators of the shoulder and to improve the posture of the neck, the upper part of the back and shoulders should be given. Operative treatment is indicated when the conservative method fails and when muscular wasting or vasomotor symptoms and signs are present.

For cervical ribs, Adson and Coffey (1927) have found that the result of scalenotomy alone is most satisfactory. Other workers (Eaton 1946, Raaf 1955, Falconer and Li 1962) have maintained that rib resection should also be done to obtain better results. In the absence of cervical ribs, to carry out scalenotomy alone and to look no further for the definite compressing agent is to invite failure. The surgeon should proceed with an open mind, and a thorough and careful exploration of the brachial plexus and the subclavian vessels should be carried out, and the neurovascular bundle completely freed from all compressing structures.

The operation is performed with the patient supine with a sandbag between the scapulae to facilitate subsequent manoeuvres. Either general or local anaesthesia can be used. The approach is similar to the anterior operation for cervical sympathectomy. An incision is made above the middle third of the clavicle extending medially if necessary. The clavicular head of the sternomastoid muscle and the posterior belly of the omohyoid muscle are divided. By careful dissection the scalenus anterior muscle, the third part of the subclavian artery, the brachial plexus and the first rib beneath are identified. The appearance of any bands or abnormal arteries should be sought and if seen they should be divided. This will usually be sufficient to relieve pressure on the brachial plexus, as can the removal of the cervical rib if present.

Even in the presence of an obvious agent giving rise to compression such as a scalenus minimus muscle, the surgeon should nevertheless test for a costoclavicular compression. To do so, he places the tip of his forefinger between the clavicle and the first rib, and then with the other hand displaces the ipsilateral shoulder backwards. By this manoeuvre, the clavicle will approach the first rib so closely that the tip of the exploring forefinger is nipped should costoclavicular compression be present. Once this mechanism is demonstrated, the removal of as much of the first rib as possible should be done. To do this, the scalenus anterior muscle is divided allowing the subclavian artery to be retracted anteriorly while the brachial plexus is retracted posteriorly. The rib can then be removed. Then when the bracing manoeuvre of the shoulder is repeated, it can be shown that the compression of the neurovascular bundle is relaxed.

Owing to the variety of the pathology, it is difficult to compare the results obtained by different authors using different operations. In the presence of the cervical rib, Adson and Coffey (1927) claimed to have 'gratifying' result on five reported cases with scalenotomy alone. However, as Eaton (1946) and many others have pointed out, this operation alone often fails to relieve symptoms at all and it is better to remove the cervical rib as well. For the thoracic outlet syndrome without a cervical rib or any other apparent compressing agents like bands or anomalous arteries, scalenotomy gives good results in less than half of the cases (Raaf 1955). When they are present, however, their excision usually gives excellent results.

Falconer and Li (1952) have emphasised that costoclavicular compression can often be demonstrated in the thoracic outlet syndrome. Unless special attention is taken in looking for it, it is frequently missed even at operation. They reported that with the resection of the first rib to relieve the compression, ten of their eleven cases were cured. They therefore advocated that at operation for this syndrome, the presence of the costoclavi-

cular compressing mechanism must be carefully sought after to ensure good results.

SUMMARY AND CONCLUSION

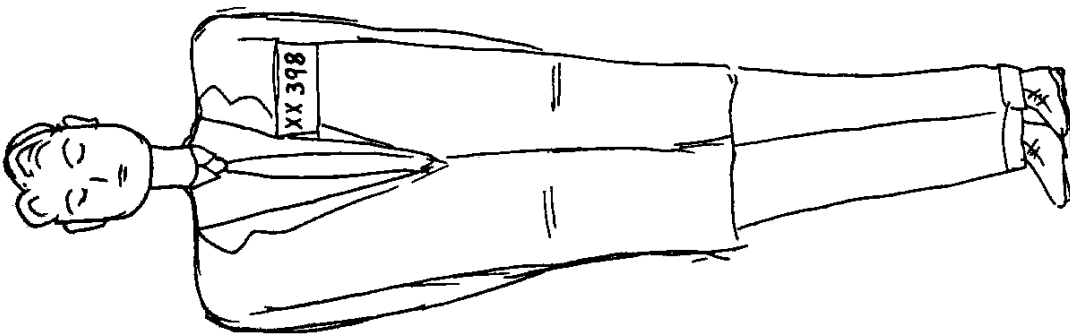
Various structures at the thoracic outlet may exert pressure on the neurovascular bundle giving rise to nervous and/or vascular disturbances in the upper limb. The causative agents, their mode of action and the symptomatology are discussed. The management should first be conservative. Exploration is justified if vasomotor change or motor involvement is present, and if conservative treatment has failed.

The principle of the operation should be a thorough exploration of the thoracic outlet, relieving the brachial plexus and the subclavian vessels from all compressing structure. It is emphasised that the manoeuvre of backward bracing of the shoulder should be performed on the operating table to ascertain whether a costoclavicular compressing mechanism is present.

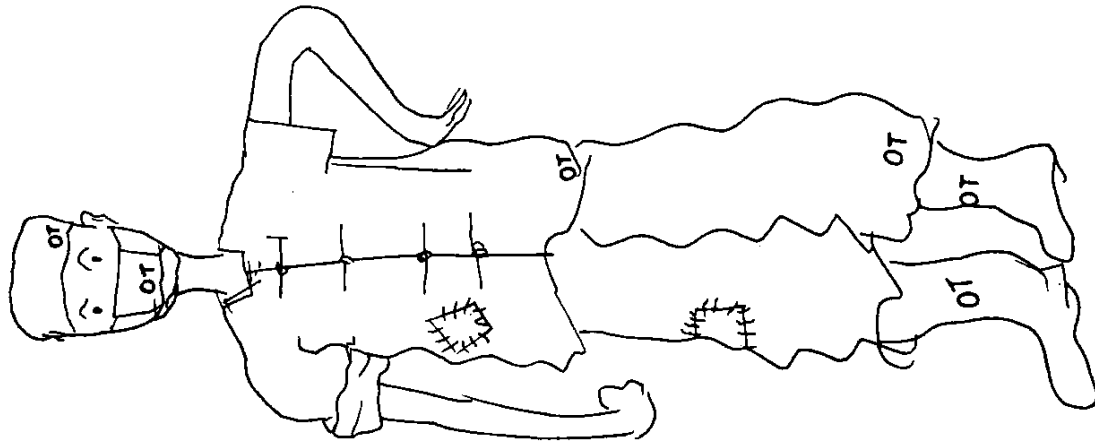
The procedure and the result of the resection of the first rib for costoclavicular compression are discussed.

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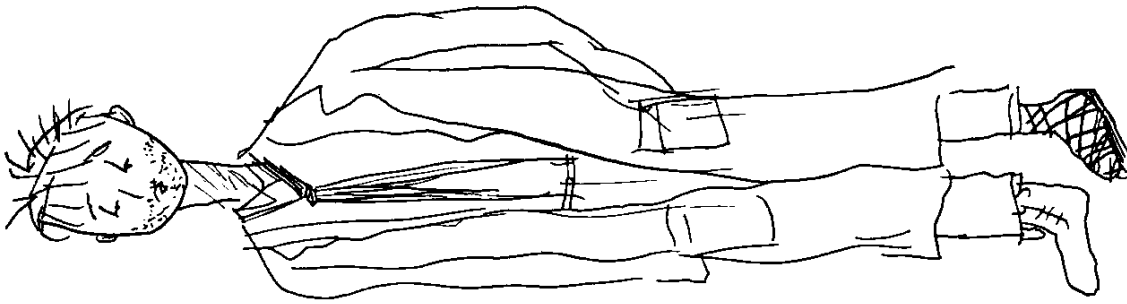
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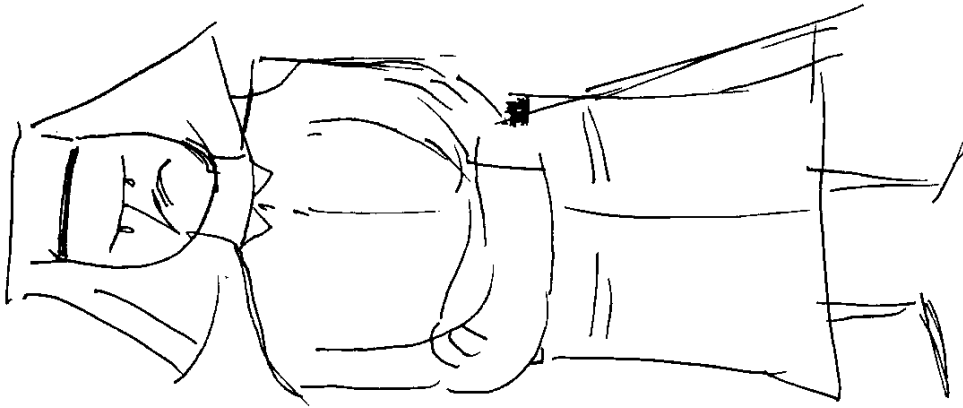
Who says I am —



Who says I look like —



Who says . . . z z z z



Who says you are

Not

THE LOWEST ANIMAL.

A LETTER FROM ENGLAND

Last summer, A. G. Knight of Sheffield University Medical School and I spent three months as students at the University of Hong Kong. We were able to do so because of Scholarships awarded by the Nuffield Foundation, which has, as one of its objects "the advancement of health and the prevention and relief of sickness . . . in particular . . . by medical research and teaching . . .", it was in the context of the latter that we found ourselves in Hong Kong. The first students to take part in the scheme went to Ibadan in 1960, and following this a considerable extension of the programme was planned for 1962-3. All medical schools in the United Kingdom, except one with a similar scheme financed elsewhere, have agreed to participate, and allow senior students to go abroad as part of their training. Until recently it was only possible for an undergraduate to get medical experience abroad by personal enterprise; but now, apart from the Nuffield scheme, a number of exchanges with Universities particularly in the United States, have been started. With the Scholarships in being and tried out, we can begin to assess their value: spending time abroad when final examinations loom ahead can be worrying; but, in retrospect, there are no great disadvantages. To be introduced to a completely different spectrum of disease is indeed stimulating and gives meaning to textbook accounts which have been dull in the past. On a less academic plane, living a quite different student existence is a worthwhile experience. An exchange system would give the scheme another important dimension, and we can only hope that this will come about.

We were to have been medical ward clerks for the whole three months; this, however, being clearly impossible in the true sense of the word 'clerk' because of

the language barrier. A programme was mapped out for us, enabling us to attend ward rounds at the Queen Mary Hospital and clinics at Sai Ying Pun Jockey Club Polyclinic, while setting aside time for the special subjects of public health, tuberculosis, fevers, and mental illness. We found this very satisfactory, although it is by no means certain that the same pattern will be repeated; it is only to be expected that in the early days of these Scholarships, there will be adjustments in their composition.

The picture of Hong Kong, as conjured up by the travelogues, did not do it justice. Living at St. John's College was, at least as far as the setting went, with its magnificent sunsets, rather like staying in a hotel. Chinese food was virtually a closed book before this visit and threatened to remain so; but, largely due to the "entertainment committee" (unofficial) at St. John's, we did discover the delights of Chinese (and Indonesian) cooking. The beer perhaps was not in the 3,000 year old tradition. We even learnt the Chinese for a few of the delicacies in St. John's, and during a German invasion, took part in three way translations. We "explored" Hong Kong as much as time allowed; the number of beaches was a surprise. In London we are blessed with an abundance of places of entertainment, although living there, we often make little use of the fact; many people devote weekends and holidays to "getting away from it all". To travel far from Hong Kong is almost an impossibility without very ample resources, but we were surprised to find how many people seldom visited the New Territories, or Macao, which has taken on something of the aura of the Casbah. We had an enjoyable week at Castle Peak and went for several day trips including one by floating clinic, which cruised to

some remote parts along a beautiful coastline, to us reminiscent of parts of Western Scotland. We were, or rather, one of us was, quite unable to appreciate the scenery on one nautical expedition, a launch picnic, in rather choppy seas. Chinese music was another unknown quantity before our trip, but after seeing "The Dream of the Red Chamber" we were convinced that the theme music would get into the "hit parade" at home — with some suitable modification. The typhoon was an experience we had not bargained for, at least in the form of "Wanda". Pandemonium was let loose at St. John's for a while, but even there things settled down, and one and all joined in sweeping the flood, not always with beneficial results. It took us a long time to get used to the climate: to arrive from a rather cold early summer at home, to a heat wave, a record one even for Hong Kong, was contrast indeed. We eventually evolved a routine which took us into the blissfully air-conditioned University Library, with its added attraction of last weeks' "Times", to cool off for an hour or two.

To give a vivid picture of medical student life in the United Kingdom would be difficult. There is no single picture, every medical school is unique, and one's own conception changes. "Medics" were, and still are in some quarters, traditionally regarded as among the less academic University students. Times have changed, and there is now a system of education, a product of the "Welfare State", which is only interested in academic achievement as grounds for awarding grants. A grant is not a Scholarship, but is automatically provided when certain higher school examinations are passed. Its value is determined by parental income, and the majority of students at Univer-

sity receive financial assistance. Not to say that academic and sporting ability are incompatible, and individual medical schools have their own criteria for entry, which obviously favour the "all round" student. But if it comes to a choice the potentially academic scholar is preferred. Within Guy's there is a college atmosphere which is fostered by the localization of nearly all the many parts of the hospital, the medical school, and the students' club and union, in one place. Although a part of the University of London, we are rather secular, and rarely meet students of other faculties, which may or may not be considered a grave disadvantage. Pre-2nd M.B. students get something of the atmosphere of a hospital before they ever tread the wards. In spite of changes which reflect the changing pattern of education in Britain as a whole, we are a traditional institution in many ways. In Sheffield they have a different system, and in Scotland yet again different; the London medical schools themselves differ considerably. In other words, prepare to be confused if you visit Britain.

Writing this now with a bitterly cold north-east wind eddying the occasional snow flake, Hong Kong of summer 1962 seems a little remote, but is nevertheless a very pleasant memory. The only regret is, that without the intervention of a fairy godmother, another visit is impossible, at least for the time being.

We would like to express our thanks to Professor McFadzean and his staff for their kind help during our stay, and to those fellow students with whom we had the great pleasure of being associated.

J. A. CHILD.

Guy's Hospital, London.

And who can tell if a fairy godmother would not intervene Tony?! — *Eds.*

WHAT'S YOUR DIAGNOSIS?

The Editors are grateful to:

Prof. C. Elaine Field and Dr. B. H. R. Hill for allowing them to study the patient.
Dr. the Hon. D. J. M. McKenzie for permission to publish the case and
The Pathology Department for the photographs.

K. W. W. M/8.

Informal:

Mother.

C/C

Recurrent blisters over the body since birth.

Present Illness:

Normal full time spontaneous delivery.

A blister was noticed over the left wrist a few hours after birth which soon ruptured leaving a raw area. Since then the child has been having blisters all over the body including the tongue and buccal mucosa. The blisters may be as big as an orange.

The child had normal fingers and toes at birth; the mother wrapped them up in bandages whenever the blisters appeared. This resulted in fusion of the toes at 3½ years and progressive atrophy of the fingers.

Family History:

Both parents alive and well with no history of blisters.
No history of blisters in the grandparents' generation.

Siblings:

1. male 29 normal
2. male 26 normal
3. male died of measles at 2½ years.
4. male died at 15 days.
5. female 21 normal
6. female 18 normal
7. female 16 normal
9. male 8 the patient
8. female 11 normal
10. female died of blisters at 15 days.

Physical Examinations:

General:

General condition good.

Afebrile.

Not in pain.

Not dyspnoeic.

No lymphadenopathy.

Normal stature.

Skin Lesions:

Lesions generalised, more extensive in limbs consisting of blister formation, scarring and atrophy, pigmentary changes and scabs.

A large bulla with clear fluid in the right axilla.

Fingers atrophic and ensheathed in epidermis.

Toes similarly ensheathed but toes are of normal length and capable of movement.

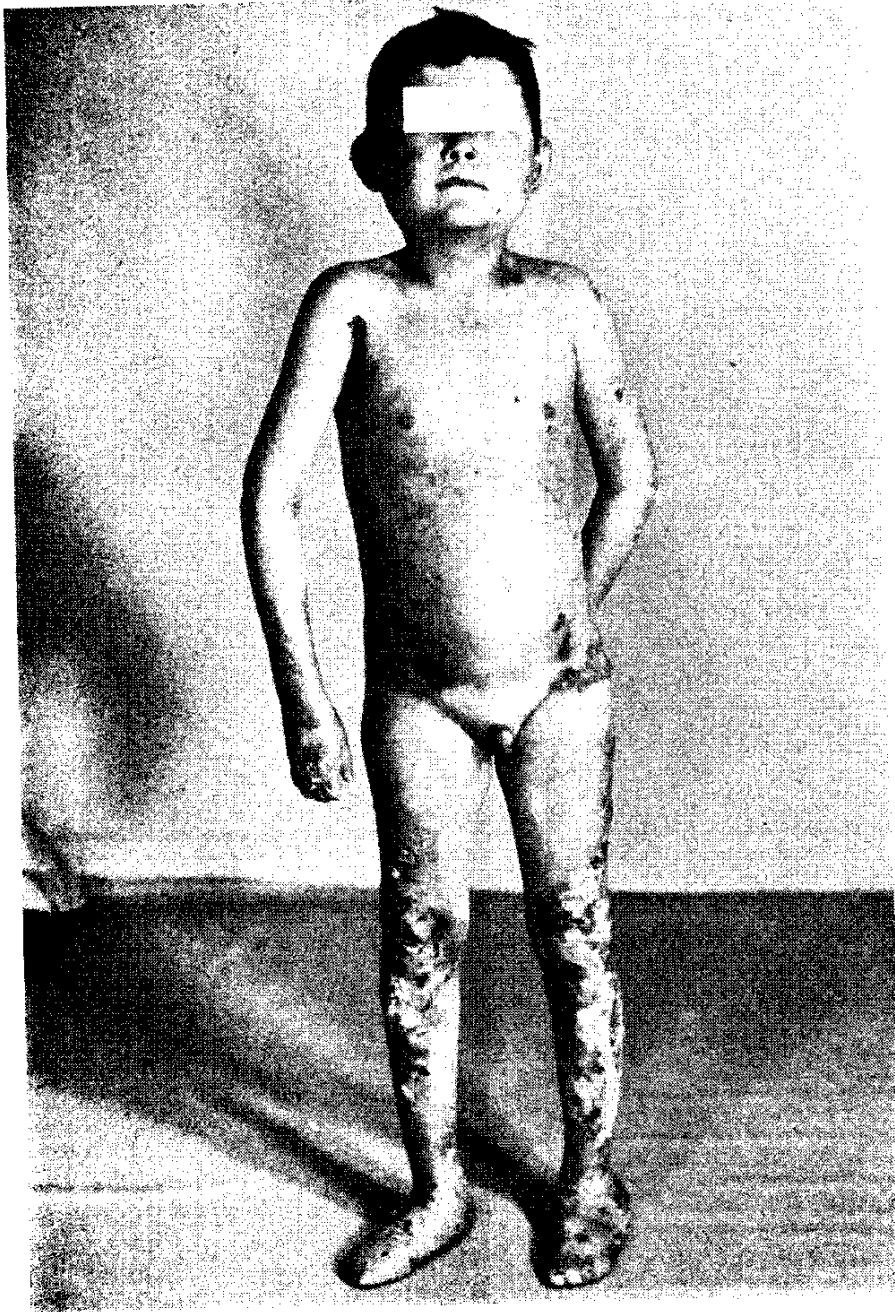
No nails seen.

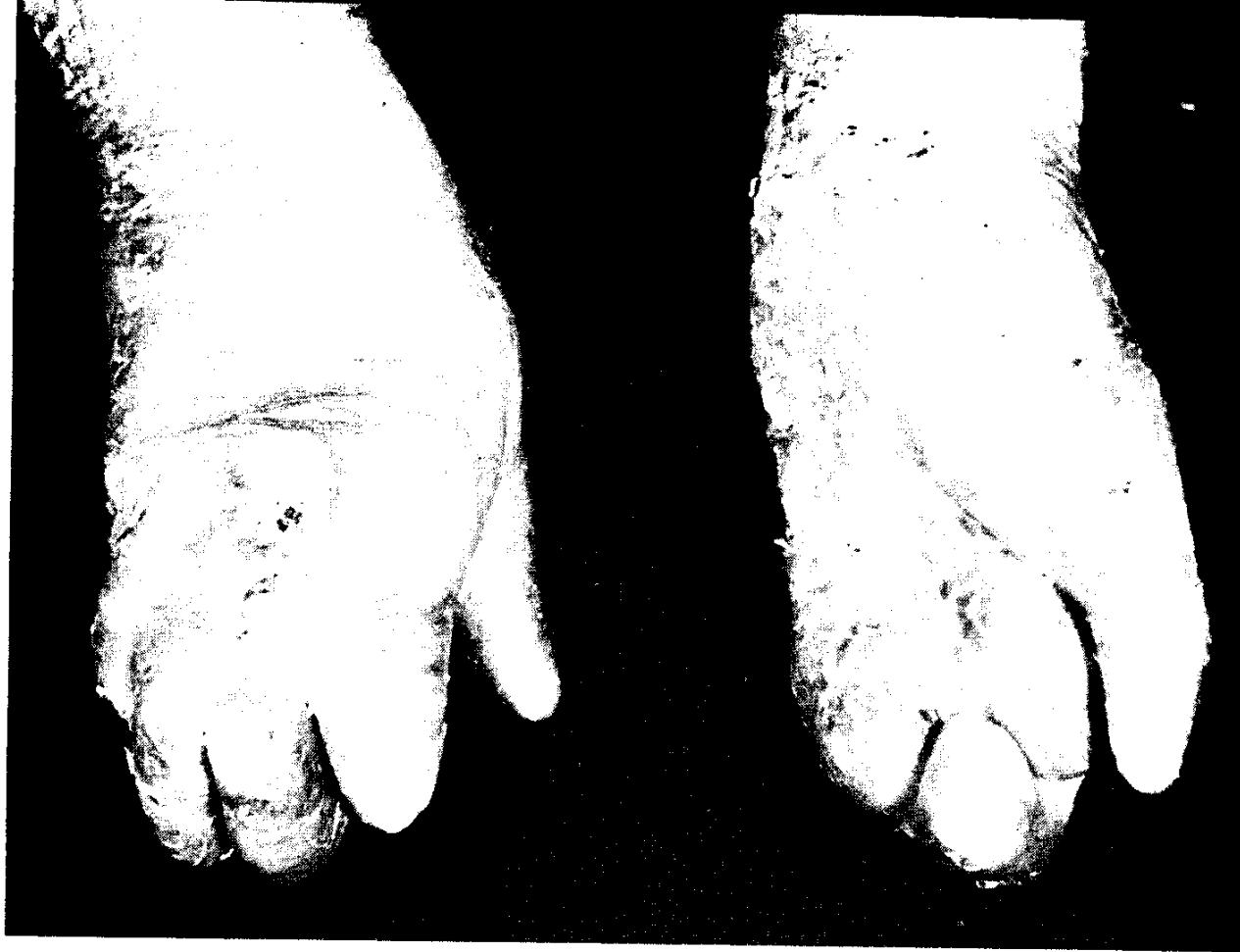
Gastrointestinal system:

Mouth cannot be opened wide.

Carious deformed teeth. (pointing lingually.)

(Solution on Page 62)







* * *

The trouble with doctors is not that they don't know enough, but that they don't see enough.

SIR DOMINIC J. CORRIGAN, 1853.

* * *

There is the story of the examiner who was a bully. He became quite impatient with an Indian candidate and bawled at him: "Answer me, yes or no. Has this patient got mitral stenosis?" The gentleman from the East edged up to him until he was quite close and gave the answer in a whisper — "Perhaps."

As the Examiner sees it *Lancet*, 1947.

* * *

THE DISCOVERY OF INSULIN

WHAT

is an incurable disease?

IT is one that the doctors don't know anything about. The disease has no objection to being cured at all. — Charles F. Kettering.

Up to forty years ago, diabetes mellitus was treated solely with the Guelpa-Allen under-nutrition diet which was essentially a slow starvation scheme. The bodies simply burned down their own tissues to supply the energy necessary for everyday life expenditure, in a process of auto-cannibalism.

Today, with the help of insulin, there is no need for diabetics to succumb to diabetic coma, unless they are handled by incompetent doctors.

Fred Banting was sitting beside his desk this night in October, 1920, preparing his notes on the pancreas for the next day's lecture, when an idea suddenly struck across his mind.

"Earlier on, Minkowski cut out the pancreas from dogs and induced the development of diabetes mellitus."

"Diabetes mellitus is not produced by tying off the duct of the pancreas alone."

"Opie discovered that the Islets of Langerhans looked sick in diabetics at autopsy."

"Moses Baron found that in cases of gallstones that blocked the pancreatic duct, autopsy showed that the acini were degenerated, but the islet cells were spared. What's more, such patients showed no signs of diabetes before death!"

Taken together, did they not ring a bell? Oh, yes! Banting quickly picked up a pencil and wrote down: "Tie off pancreatic duct of dogs. Wait 6-8 weeks for degeneration. Remove residue and extract."

At that time, Banting was a young surgeon, academically still unrecognised, and worked only as a part-time demonstrator in the Western Ontario Medical School. So, the next day, he went to see Professor Macleod, of the Department of Physiology, in the Medical School of the University of Toronto; and asked for a grant of "Ten dogs and an assistant for eight weeks." But, why should the pancreas be the site of production of a hormone? Mightn't the organ act by eliminating from the blood some toxins that prevented the body from utilising glucose? and so on. These were the questions that stood in the way of Banting's proposal. Fortunately, Macleod consented.

In May, 1921 Banting was finally able to start his pioneering experiments. His laboratory was no more than a miserable room in the Medical Building. His work was unpaid and he had to sell his office furniture and instruments to keep him alive. And who was the assistant? He was a medical student, just 21, by the name of Charles Best.

Banting and Best began by tying off the pancreatic ducts of ten dogs. Seven weeks later, they reopened the abdomens of the dogs, expecting to find de-generated acini in the pancreas. But, alas! to their amazement, the pancreas was perfectly normal-looking. What had happened was that the duct had been tied too tightly, resulting in gangrene followed by regeneration of a new duct round the old one. Yet only one week was left!

Most luckily, however, Macleod had left for Europe and Banting was therefore allowed to continue with his experiment. He exposed the pancreas of the dogs once more, this time tying the pancreatic duct in two to three places. A few weeks later a saline extract of the degenerated pancreas was made. This was next injected into a dying diabetic dog. Then there came the miracle. Right after the injection, the blood sugar level of the diabetic dog dropped and the dog was re-vitalised. Banting jumped up with great joy. He began to dance about like mad. Was that not proof that pancreas does secrete an anti-diabetic hormone? And Banting called it "isletin".

But, how many healthy dogs had to be sacrificed just to obtain enough of the vital extract to keep one diabetic dog living—for only a short time? Of course, this was not practical. Not, indeed!

Now, it had been discovered that the pancreas of newborn babies were rich in islet cells and yet the acini were only poorly developed. Banting therefore shifted his attention to the pancreas of embryo calves, about three to four months old, and began to make saline extracts from them. Injection into diabetic dogs showed that these could prolong the lives of diabetic dogs just as good as the extracts obtained previously. The existence of "isletin" had been proved beyond doubt.

Next, Banting found that potent extracts of the hormone could be obtained alternatively from full-sized cattle pancreas by using acidified alcohol instead of saline as the extractive. Acidified alcohol is able to check the action of digestive pancreatic enzymes and at the

same time dissolve out "isletin". Clinical application of the hormone to human diabetics was now not too far distant.

Macleod then went to work on this "isletin" and called it instead "insulin", by which name the hormone is known to us today.

Later, authorities at Connaught Laboratories supplied Banting and Best with the necessary equipments to discover a

way to produce toxin-free extracts of insulin on a large scale. This resulted eventually in the production of powerful insulin preparations in May, 1922.

Besides penicillin, what other remedy could be as dramatic as this one, that renders an at-one-time "incurable" disease so very readily accessible to treatment?

SUCK.



*KELLOIDS

"Looks like we should stop arousing these medical students' social relationship with our patients for a while."

THE LIGHTER SIDE OF MEDICINE

Happy Family

The Orthopaedics' Department is a big happy family when "Daddy" and "My Son" are around.

(Editor's note:

My Son is the Italian version of 馬醫生, and Daddy is the endearing term for Dr. Brodetti.)

It Happened in S.Y.P. O.P.D.

It was past 5.00 p.m. at the medical O.P.D. when the student brought in the last patient for presentation. No sooner had the patient sat down when the whole class burst into laughter—the patient brought in was the one they had just finished discussing. The student then realised he had brought in the wrong patient, and embarrassingly offered the following explanation:

"There are only two male patients outside, both are fat and both wear spectacles. The one I brought in was sitting nearest to the door."

(Believe it or not, this student had just spent one hour in intensive examination of the patient.)

* * *

M.R.C.P.: "Mr. A, B, and C, why were you absent from O.P.D. last week?"

A : "I had to play football for my Hall team."

B : "I had to watch the game."

C : "I had to think about the game at home."

* * *

M.R.C.P. to a 斯文 — looking patient:

「入來醫院住一住，好嗎？
不過有點屈枳囉！」

Patient promptly replied:

「唔好客氣！」

A Joke?

A musician was telling a joke about a music examiner, who, tired by a whole day's examination, asked the last Diploma candidate, "How would you explain to the piano the inside of your pupil?" Everyone laughed except an Anatomy student, who solemnly said, "Why not?"

Quotable Quote

"University education may be defined as the process whereby the lecturer's notes are transferred to the students' without passing through the minds of both!"

The Surgeon Couldn't Help It!

There was a sudden power failure during one of the hospital's operation days, and all the air conditioners in the O.T. ceased functioning. This caused a drop of one surgeon's sweat to fall on a patient's wound. The event was duly recorded in the operation notes of the patient.

"Modern" Gardening

A gardener with thyrotoxicosis was treated with radioactive iodine. He was told that the drug was very expensive, and that a small cup would work better than an operation. While in hospital, he was instructed to urinate into a special container, and was told that this had to be done because his urine contained some excreted radioactive iodine. On discharge, he still marvelled at this wonderful drug, and thought it a great waste to let all his urine wash out to sea. So, to the horrors of his employer, he collected his urine in a big bottle (thinking it still contained a lot of the drug) and used it to water every vegetable, fruit tree and flower plant he could lay his hands on. He claims it produces amazingly good results, the principle being: "since it is good enough for me, it must be good enough for the plants!"

M.G.

MEDICAL SOCIETY

ANNUAL REPORT 1961-2

The Medical Society has passed another year of success. It was a year in which not only the usual functions were successfully carried on, but new and creative features were added, for example, the many performances by the Medical Band, the making of lockers at Queen Mary Hospital, the Medical Outing with nurses, etc., etc. These achievements were in a great part the result of the full hearted support of our active members.

The following is a brief account of some of the year's events:

Social Functions

1. Barbecue: The first function of the session, took place on 30th Nov., 1961, at the Lily Pond. Besides the delightful food and warm fire, the highlight of the evening was the magnificent performance by the newly formed Medical Band, with Dr. Franklin Li at the piano. This was further enlivened by performances from individual talents present that night.
2. The "Med" Afternoon: This was the first function of this kind in the history of the Society. It was held on 10th Feb., 1962. In spite of the foggy weather and rain that morning, over 60 members and 15 nurses from Queen Mary and Tsan Yuk Hospital turned up and had a brisk afternoon at Tai O Mon. This may serve as a beginning for further functions of this kind to promote better professional relationship.
3. The Annual Ball: The Annual Ball held on 8th June, 1962, at the Paramount Nightclub was a great success. A hundred couples enjoyed the warm atmosphere and the "melodious" music by the Q.M.H. Combo, which was composed of doctors of Queen Mary Hospital and some students. We were greatly honoured by the presence of six professors, two of whom were very high spirited and did the twist. The first prize of the raffle, a return air trip to Singapore, went to Mrs.

McFadzean. In spite of the fact that we sold the tickets at a loss of \$8.00 a couple, we managed to make a net profit of about a thousand dollars from advertisement charges for the Programme, and the sale of raffles. From this profit, we were able to make the lockers and to set aside a sum of \$500 for the Elixir Bursary Fund.

4. The Medical Night: The other highlight of the year was the "Med Nite" held on 18th Oct., 1962, at Lady Ho Tung Hall with the kind permission of the Warden and the Committee of the Hall. The hall was crowded with about 200 members, many of whom had come particularly to hear the 9 membered Medical Band. All the performances by the various classes were magnificent and highly original. The evening ended reluctantly. Mrs. Hsieh kindly distributed the souvenirs and prizes.

Academic and Cultural Aspects

1. Film Shows: These were held frequently; we had a total of eight shows. The films were all of academic interest, both clinical and pre-clinical. On some occasions, there were introductory talks by some members of the staff. The attendance had been so enthusiastic that we had to shift our "Theatre" from the Physiology to the Chemistry Lecture Theatre. We wish to express our thanks here to those pharmaceutical firms which kindly lent us the films.
2. Christmas Gifts for Sick Children: On Christmas Eve, our Santa Claus (who did not require a pillow to be one) visited the paediatrics wards of Queen Mary Hospital and the Sandy Bay Convalescent Home. It was really heartening to see the poor sick children smile as we gave them toys and apples as well as an atmosphere of good cheer.
3. Farewell Party to Dr. Chew Wei: This was held on 2nd March, 1962,

when Dr. Chew Wei left the University for private practice. As a token of our thanks for his guidance both as a teacher and the President of the Society, we presented him a set of desk pens on which were engraved our good wishes.

4. Party for New Clinical Students: A Tea Party was held in conjunction with the W.U.S. on 2nd April, 1962, for the second year students who had just passed their 1st M.B. examinations. The party fulfilled its aim of congratulating these students and introducing them to the life of the clinical years through a short talk by the Chairman.
5. The Presidential Address: On 10th April, 1962, Dr. A. C. L. Hsieh delivered his Presidential Address in the Chemistry Lecture Theatre. The subject of the talk, "Weightlessness", was light, but carried weight when delivered by Dr. Hsieh. His choice of a subject on space physiology may imply that our Society is always keeping up with the age.
6. Freshmen Information Service: As usual, a Freshmen Information Stand was put up during the week for freshmen registration, with the aim of giving advice and help to freshmen whenever we can. The Service ended with a guided Preclinical tour in which the freshmen were lead around the preclinical buildings.
7. Printing of Past Examination Papers: The Examination papers were reprinted with new additions of the most recent examinations and sold to members at 20 cents per degree examinations.

Others

1. A Stall in the Golden Jubilee Bazaar: This was put up in support of the Students' Union function. The game stall, genuinely medical, consisted of a blowing contest using a spirometer, and a game of locating a clock under a drawer with a stethoscope. From the latter game, we discovered quite a number of talents. We felt that many of them should have entered

the Medical Faculty, for they certainly would have no difficulty in detecting the softest murmur.

2. Lockers: We have materialized our plan of putting up lockers at Queen Mary Hospital; 39 new lockers can now be seen along the corridor leading to the Medicine Lecture Theatre, and are available to members who are doing ward clerkships in Queen Mary Hospital at an annual rent of \$3.00 to cover the maintenance and part of the investment.
3. The Medical Band: One of the most remarkable successes of the year was the establishment of the Medical Band, in which our Chairman made the most noise (for he is the drummer). Besides entertaining our members at the Barbecue and the Medical Night, the Band has given performances at several Union functions, during the Musical Night, and at the Y.W.C.A. It drew an enthusiastic audience on every occasion.
4. New Post: As a reaction to the suggestion of the former Chairman and to facilitate the smooth running of the Society, a Social Convenor was added to the Committee an Extraordinary General Meeting on 12th Dec., 1962.
5. New Designs: New designs were made for pennants and Christmas Cards. Both appeared to be more appealing than the old designs.

Elixir

Under the guidance of Dr. David Todd and the hard work of the Editors, the Elixir has been successful in respect of contents as well as the fund raised. A competition for the best contribution was held, and a prize of \$100 given, with the result that we got many more contributions from students. With the recent contribution of \$500 from the Society and other donations, the assets of the Elixir Fund now amount to about \$15,000. However, in order to increase the amount and number of Bursaries, we are still in need of more generous donations.

Sports

Volley Ball Championship.

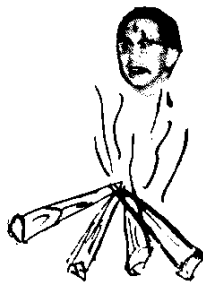
MAD. (*Oops! Sorry wrong spelling*) B.B.C. (*Oops, sorry again — its cold*)

ITS



MED.

B.B.Q.



Where are the girls?



The girls have come!



Who says we don't mix



Pretty obvious



The bright young ones



Eyes on the food, Laddie?

* * *

Never Say Die:

An old lady who was looking forward to the near approach of her hundredth birthday had the misfortune to have a fall in her house, and to bruise—but only slightly—her face on the carpet. The family sent off at once for the family doctor, who was greeted by the old lady asking, “Doctor, shall I be disfigured for life.”

* * *

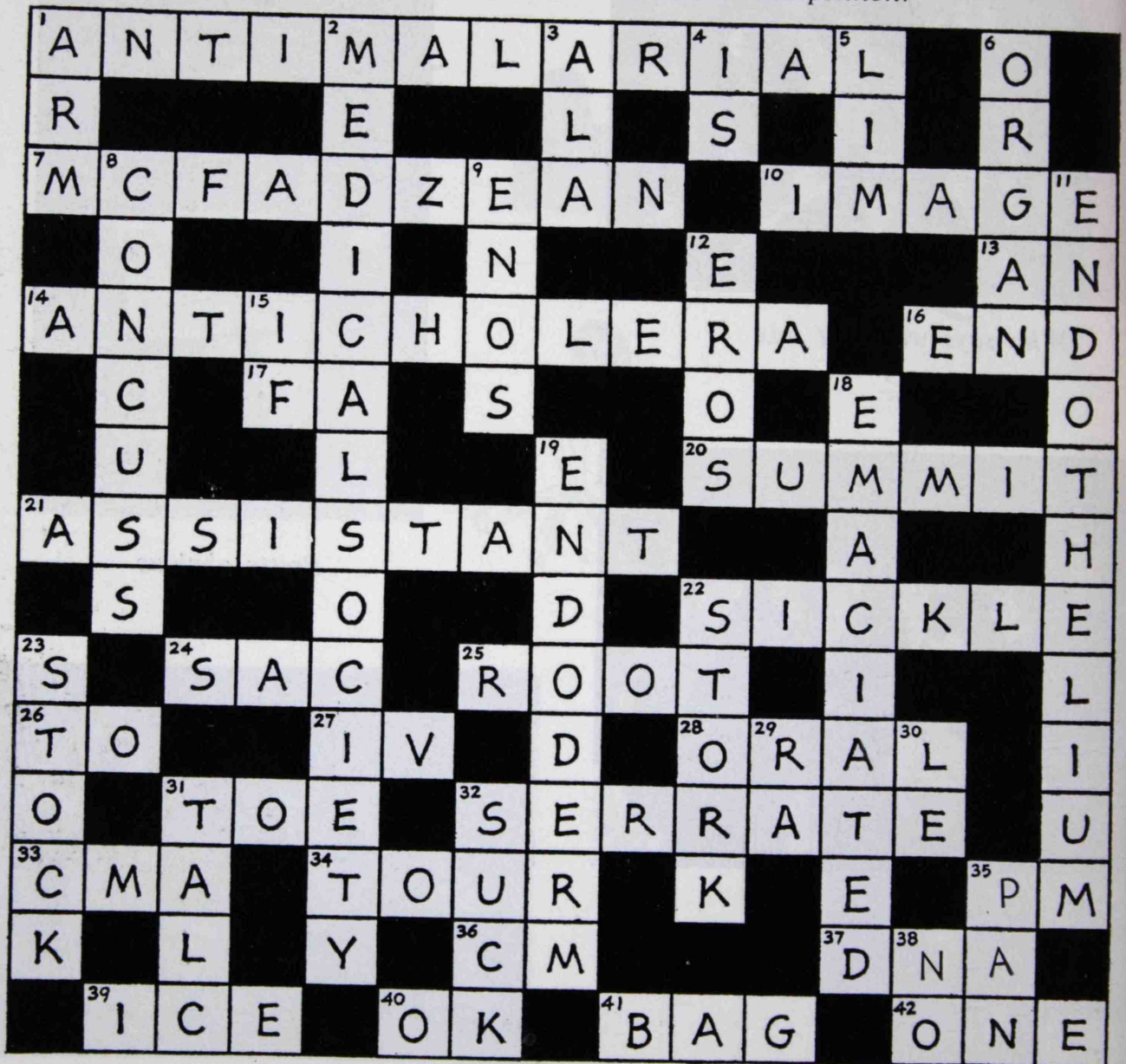
Physicians of all men are most happy: whatever good success they have the world proclaimeth, and what faults they commit the earth covereth.

FRANCIS QUARLES.

* * *

The first and only prize of H.K.\$50.00 has been divided between Mr. Richard Wong and Mr. Daniel Wong, who submitted the first correctly completed crossword at the same time.

Solution to *ELIXIR Vol. 1. 1962. Crossword Puzzle Competition:*



Solution to What's your Diagnosis?

Diagnosis:

Epidermolysis Bullosa Dystrophica.

This is an example of a hereditary bullous skin disorder. It is of unknown aetiology and is transmitted as a simple recessive trait. There are two forms of hereditary bullous skin disorder:

Congenital 1: Simple and benign.

Congenital 2: Dystrophic.

The latter form may be followed by Secondary Skin carcinoma, and death in childhood from the primary condition may also occur.

h:
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FAL
tment
trichomonas
vaginialis
infections
in females
and
males



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METRONIDAZOLE

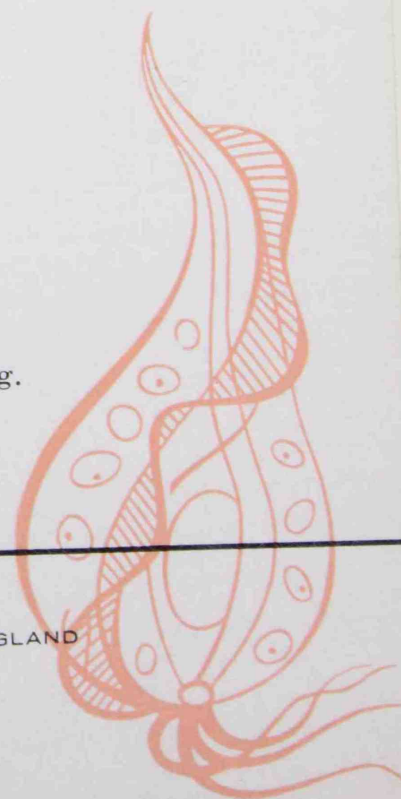
One tablet three times a day for seven days - twenty-one tablets - is a complete course of treatment for trichomoniasis. Prescriber unit pack of 21 tablets of 200 mg.

Detailed information is available on request



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NEWS FROM THE GAZETTE

15th September, 1962

PERSONALIA

Ho Hung Chiu, M.B., B.S. (Hong Kong) (1940), and part-time Lecturer in Radiology, has been elected a Fellow of the Royal College of Physicians of London.

Dr. A. C. L. Hsieh, Senior Lecturer in Physiology, will attend the International Symposium on Temperature Acclimation in Leiden, Holland, during September 5-7, 1962.

Professor A. R. Hodgson, Professor of Orthopædic Surgery, has been invited to attend the American Academy of Orthopædic Surgeons meeting from January 20 to 25, 1963 at Miami as guest speaker and to conduct an instructional course at the meeting.

COUNCIL

Mr. P. S. Siu: \$20,000 for laboratory apparatus for the development of a Renal Laboratory for the Department of Surgery.

Rotary Club of Hong Kong Island West: \$15,000 for a Travenol twin-coil artificial kidney and accessories for the Department of Surgery.

Mr. Lo Yuk Tong, J.P.: \$50,000 for the endowment of lectureships within the Faculty of Medicine.

SENATE

Professor W. E. Adams, D.Sc., Ph.D., M.Sc., M.B., Ch.B., B.Med.Sc., F.R.S.M.Z., F.A.Z., F.R.A.C.S., Professor of Anatomy (including Histology) at the University of Otago, to be external examiner for the degree examinations in Anatomy for three years from 1963.

Faculty of Medicine

Ho Fook and Chan Kai Ming Prize: (Miss) Chan Mo Wah (St. John's College) and Anita Li Ming Cheng (Duchess of Kent Hall).

Anderson Gold Medal, C. P. Fong Medal in Medicine, and Gordon King Prize in Obstetrics and Gynæcology: (Miss) Chan Mo Wah (St. John's College)

Digby Memorial Gold Medal in Surgery: Anita Li Ming Cheng (Duchess of Kent Hall)

C. P. Fong Medal in Pathology: Shiu Che Keung (St. John's College)

Ho Kam Tong Prize in Public Health: Chan Pak Ho (Ricci Hall)

FACULTY OF MEDICINE

Appointments

Professor Teng Pin Hui, O.B.E., M.B., B.S. (Hong Kong), D.P.H. (London), to be Professor of Preventive Medicine for a further year from July 1, 1962.

Ferdinand Fok Po-Tun, M.B., B.S. (Hong Kong), M.D. (Freiberg), M.R.C.P. (London and Edinburgh), D.T.M. & H. (England) to be Assistant Lecturer in Medicine from July, 1, 1962.

Honorary Lecturers and Research Fellow

T. F. O'Toole, M.D., of the University of Washington at Seattle, to be Honorary Lecturer in Orthopædic Surgery for one year from the date of his arrival in Hong Kong.

J. M. Anderson, M.B., Ch.B., Ch.M., F.R.C.S., of the Cancer International Research Corporation of Rye, New York, to be Honorary Lecturer in Surgery for one year from the date of his arrival in Hong Kong.

J. Koo, M.B., M.S., Ph.D., to be Honorary Research Fellow in the Departments of Chemistry and Physiology during his visit to Hong Kong.

Leave of absence

Tso Shiu Chiu, Assistant Lecturer in Medicine, unpaid leave for one year from August 27, 1962 to take up a Sino-British Fellowship at the University of Edinburgh.

Lai Kai Sum, Assistant Lecturer in Medicine, a further extension of unpaid leave to October 31, 1963.

PUBLICATIONS

DEPARTMENT OF ANATOMY

H. C. Liu: "The Comparative Structure of the Ureter", *American Journal of Anatomy* Vol. III, No. 1 (1952).

DEPARTMENT OF PATHOLOGY

C. T. Huang and R. Kirk: "Human sparganosis in Hong Kong", *Journal of Tropical Medicine and Hygiene* Vol. 65, p. 135, (June 1962).

20th December, 1962

PERSONALIA

Professor A. R. Hodgson, Professor of Orthopædic Surgery, was invited to be visiting Professor of the National University of Mexico in October 1962 and delivered a paper before the Academia Nacional de Medicina in Mexico.

Professor R. Kirk, Professor of Pathology, attended the UNESCO Conference in Parasitology held in Singapore from November 4 to 10, 1962.

Dr. Rosie T. T. Young, Lecturer in Medicine, has been awarded a Smith and Nephew Fellowship, to study Carbohydrate Metabolism at Cambridge University.

(Miss) Chung Ho Kee, Assistant Lecturer in Obstetrics and Gynæcology, has been awarded a Commonwealth Scholarship for one year tenable at the Institute of Obstetrics and Gynæcology and University College Hospital.

PUBLICATIONS

DEPARTMENT OF ANATOMY

H. C. Liu and R. B. Maneely: "Some cutaneous nerve endings in the soft-shelled turtle of South China", *Journal of Comparative Neurology* Vol. 119, No. 3 (1962).

DEPARTMENT OF BIOCHEMISTRY

C. H. Lee Peng and E. O'F. Walsh: "Effects of morphine on uptake of glucose and synthesis of glycogen in muscle of normal and chronically morphinised rats", *Nature* Vol. 196, pp. 171-172 (1962).

DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY

D. P. C. Chan: "Postmenopausal bleeding", *The Bulletin of the Hong Kong Chinese Medical Association* Vol. 13, No. 1, p. 85 (July 1962).

DEPARTMENT OF PATHOLOGY

S. P. Chak, T. O. T. Ts'o, and P. S. Kan: "A papillary adenocarcinoma of the vagina in an infant", *Journal of Obstetrics and Gynæcology of the British Commonwealth* Vol. 59, pp. 652-654 (August 1962).

DEPARTMENT OF PHYSIOLOGY

C. C. Liang: "Studies on experimental thiamine deficiency. 3 glyoxylic acid, citric acid and tissue metabolism", *Biochemical Journal* Vol. 85, pp. 38-43 (1962).

CONTRIBUTIONS TO THE ELIXIR BURSARY FUND

Since our last issue went to press we have received the following donations to our Fund:

Dr. Bee Hoat Teck	- - - -	\$20.00
Dr. Grimmo A. E. P.	- - - -	\$ 3.00
Dr. Ho Hung Chiu	- - - -	\$ 8.00
Dr. Lim Tit Mooi	- - - -	\$10.00
Dr. Van de Linde P. A. M.	- - - -	\$18.00
Dr. Wilson M. E.	- - - -	\$ 3.00

Latest



On behalf of its readers, the *Elixir*

Editorial Board congratulates

Dr. H. H. Teng,

Professor of Preventive and Social
Medicine, on his appointment to the post
of Director of Medical and Health
Services.

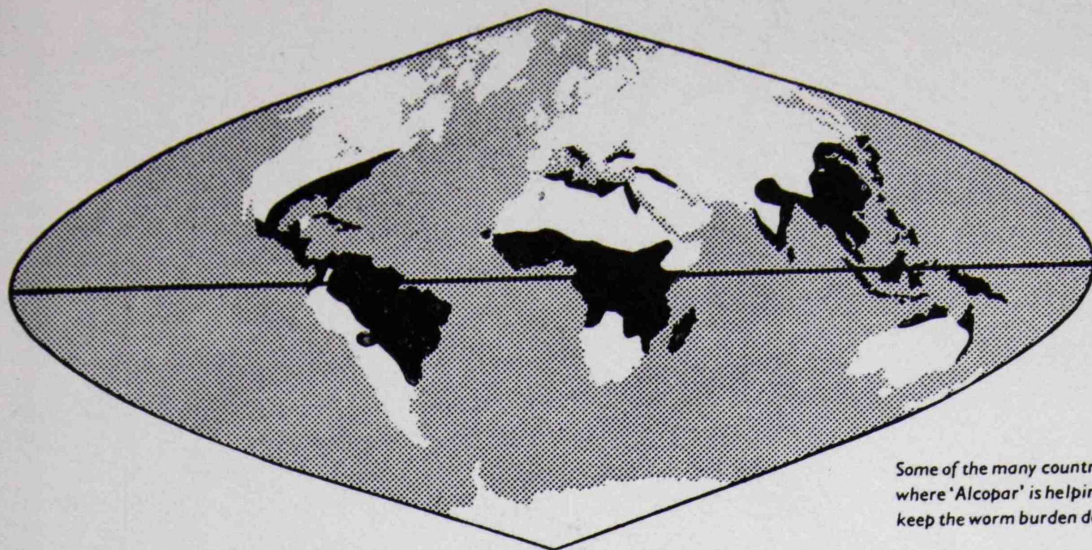
The registration of this event is of
particular significance to *Elixir* and its
readers because Prof. Teng is a graduate
of our Medical School.

10th April, 1963

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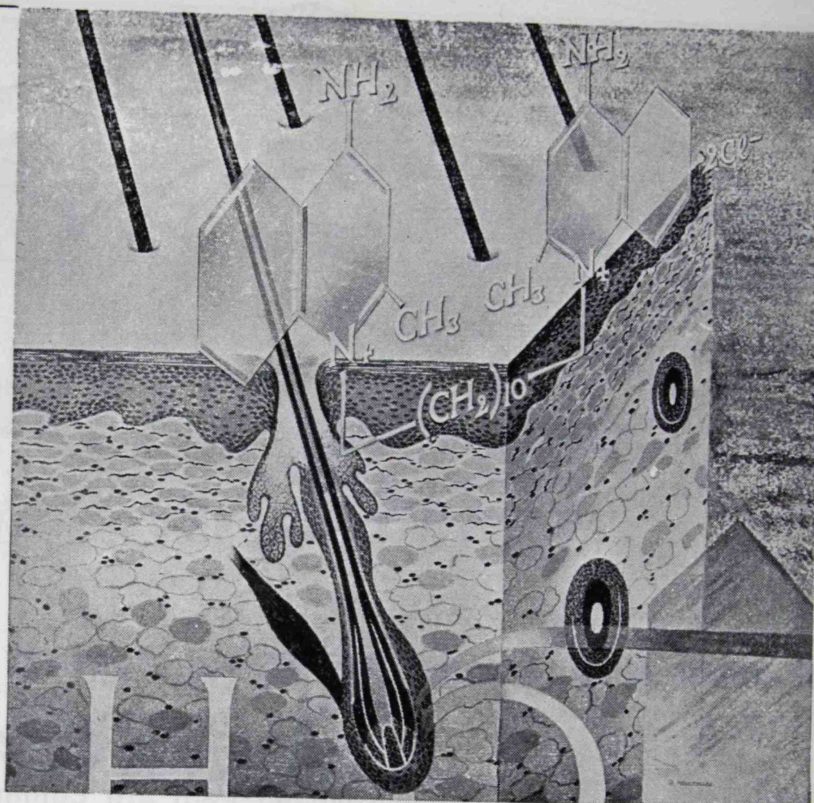
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Unpleasant to take.
Causes gastric upset.

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Small easily taken tablets.
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