

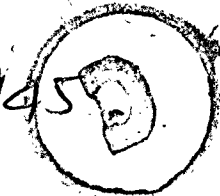
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MEDICO, SURGICAL SUBJECTIONS

VOL - XIV

NO - 10

OCT - 1945



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VOL. XIV

OCTOBER 1945

NO. 10

SULPHATHIAZOLE AND SULPHAGUANIDINE IN THE TREATMENT OF BACILLARY DYSENTERY.

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Chemotherapy of bacillary dysentery has been extensively tried in the past few years. It marks a distinct improvement over the hitherto prevalent methods of treatment. Treatment with salines and diet though found useful in the milder types of the disease, is not very satisfactory in the treatment of the acute and more severe forms. In the treatment of the acute and fulminating forms, serum therapy has been the mainstay so far. But serum therapy has obvious drawbacks. For serum therapy to be effective a knowledge of the causal organism is essential and this cannot be arrived at unless a bacteriological examination of the stools is done. Besides, there are no antisera for all the various strains of dysenteric bacteria. The most potent antiserum is against the Flexner strain; that against Shiga is much less potent while there is no antiserum for the Sonne strain. Polyvalent serum consisting of antiserum against Shiga and Flexner is universally used. Chemotherapy obviates this difficulty, since it can be used in all forms of bacillary dysentery. Cytological diagnosis is all that is necessary for therapeutic purposes.

All the known sulpha drugs have been tried with varying results in the treatment of bacillary dysentery. All are agreed that sulphapyridine, sulphaguanidine and sulphathiazole are effective in the treatment of Flexner and Shiga infections. Some doubt is expressed as to their efficacy in Sonne infections. But sulphaguanidine is heralded as the drug of choice in the treatment of bacillary dysenteries. Due to its low absorbability from the upper gut a high concentration of the drug is said to be brought to act on the colon—the site of infection in dysentery.

The present investigation has been undertaken to ascertain if (1) sulphaguanidine is superior to sulphathiazole as a therapeutic agent in bacillary dysentery, taking several points into consideration, (2) if so, is it due to its 'acclaimed' low absorbability from the gut, (3) if not, is absorption of the sulpha compound necessary for chemotherapeutic action.

The Investigation—A wide-spread epidemic of bacillary dysentery in the months of July and August (1944) in this area provided an opportunity for the study of the effects of a few available sulpha derivatives. A gauge of the extent of the dysenteric infection was provided by the student population in this institution, were no less than about eighty students out of an aggregate of about 355 (22%) fell victims. Their living was scattered throughout the town. The epidemic was accompanied by a fairly virulent cholera infection as well, which fact in a sense prevented an exhaustive bacteriological observation as to the predominant dysenteric organism. The two infections also caused some confusion in diagnosis, as cholera vibrio were isolated in some admittedly dysentery cases (whose stools macroscopically and microscopically answered to the picture of bacillary dysentery) while some cases that were admitted with clinical picture of cholera (rice-water stool, vomiting, dehydration, etc.) later turned out to be cases of bacillary dysentery. The acute cases with symptoms of dehydration were treated for cholera. The rest were treated for bacillary dysentery.

Dosage of the sulpha drugs used—Three of the sulpha compounds were available for study *i.e.*, a liberal amount of sulphathiazole, moderate amount of the plain sulphanilamide and a restricted amount of sulphaguanidine. The dosage of sulphathiazole was quite simple, *i.e.* one gram (or two tablets) four or three times a day (depending on the severity of the condition), on the first day, followed by one gram three times a day for the second day. In most cases the effect was appreciable even after the first day's treatment. The number of stools had decreased to one or two; in several instances there was absolute constipation for a day or two succeeding. Blood and mucus had disappeared and in those cases with temperature, it was brought down to normal. There was a great relief of discomfort and the general condition had considerably improved. Though all the cases were on liquid diet on the first day, the restriction in diet was raised on the 2nd or 3rd day. When the patient felt like returning to the normal solid diet, he was permitted to do so. With regards sulphanilamide the dose in these cases selected for the sulphanilamide treatment was one gram four times a day for three days. The effect was much slower and the symptoms were controlled with passage of normal stools, after three days in most cases. The abdominal discomfort cleared off much more gradually. As for sulphaguanidine, in no cases did we resort to the 'heroic' dosage advocated by other investigators like Smith (1944), Brewer (1943), Clay (1943), Fairley and Boyd (1942) and others. The grammes of sulphaguanidine four times a day for two days were tried in all our series. The effect was better than with sulphanilamide but clinically inferior to the sulphathiazole group. Sometimes sulphaguanidine had to be continued for two more days

at the rate of one gram three or four times a day to completely arrest all traces of blood and mucus in the stools and to reach the stage of general wellbeing by the patient.

Over fifty cases were treated with sulphathiazole and after a two day treatment, relapse was noticed in about seven cases (less than 14 per cent). No facts were available for the relapse or otherwise in the two dozen cases treated with either sulphaguanidine. The relapses in the case of sulphathiazole were all within a month of the treatment or discharge from the hospital. In none were toxic reactions noticed.

Bacteriology of the infection—Unfortunately, no elaborate study was possible in all the cases of dysentery treated in this series. In the few cases where the bacteriological observation was possible Flexner was the main infection. Previous experience in this institution for the past several years also revealed the fact that Flexner was the main infection in most cases of dysentery treated. The symptoms, macroscopic and cytological examination of the stools seemed to confirm this.

Sulphonamide absorption and their action in dysentery—Sulphaguanidine, discovered by Buttle in 1938 was put to use in the treatment of intestinal infections when its 'solubility yet poor absorption from the gastro intestinal tract' was emphasised by Marshall (1940). As the readily absorbed and excreted sulphonamides were used for urinary tract disinfection, the reverse attribute of poor or non-absorbability was to be availed for alimentary disinfection.

With ordinary sulphanilamide (solubility 1 in 100 in water) which is absorbed very rapidly, concentration in the blood reaches a maximum in 3 to 4 hours followed by a gradual reduction in concentration reaching almost nil in about 24 hours. A blood concentration of 10 mgm. per 100 c.c. is found to be necessary in very severe infections and this concentration is obtained by administering 1 gram per 20 pounds or 6 to 7 grams for an average adult of 9-10 stones. This initial dose is expected to be followed by a maintenance dose equal roughly to the rate of excretion, *i.e.*, 2 gram every four hours. It is suggested on experimental evidence that such a procedure by rendering the blood and tissue fluids unfavourable as media for the metabolism and growth of susceptible bacteria, prevents the invasion of the tissues by these organisms, reduces the toxic substances and thus assists the anti-bacterial mechanism of the body, leading ultimately to recovery. The above dosage is therefore claimed to be the ideal for severe infections particularly of the septicæmic or pyæmic type. But in the treatment of bacillary dysentery such a dosage was not found necessary. Sulphathiazole has a solubility of, in 2,500 in water. In absorption and excretion it resembles sulphanilamide. It is said that sulphapyridine whose solubility is 1 in 3,000 has a slower absorption, less complete and

more variable than that of sulphanilamide under the same conditions. As for sulphaguanidine, though it commenced its career in alimentary infections with an alleged 'non-absorbable premium' attached to it, subsequent events have tended to disprove the claim. Smith (1944) after a dose of 24 grams in 24 hours noticed a blood concentration of a surprisingly high figure of 10 to 14 mgm. per 100 c.c. He further observed that the blood concentration follows a pattern essentially similar to that of the daily dose of the drug. It has sometimes been observed strange as it looks, that large doses are less completely absorbed than small doses and that in a diseased individual the rate of absorption is slower than in health. The findings of Smith (*loc. cit.*) were all in cases of moderate severity of dysentery and with large doses. Hence the absorption of the three aforesaid sulpha drugs in the treatment of dysentery is established. It may be mentioned that severe toxic manifestations after sulphaguanidine given in dysentery was the indication that the drug was absorbed in decent amounts.

Discussion—Smith (1944) in his article on this subject has the following opening sentence "The treatment of dysentery with sulphaguanidine has not gained the measure of approval accredited to the use of the other sulphonamides in many other infections". Pauley (1942) is of the view that sulphapyridine has advantages over the more widely used sulphaguanidine. *Lancet* (1942) in one of its annotations said 'It is clear, however, that sulphaguanidine is a readily absorbed drug and one capable of giving rise to toxic symptoms and that adequate urinary output must be obtained to prevent the drug crystallising out.' For this very reason, it should have a limited use in dysentery and allied conditions as these conditions tend to a smaller output of urine and that in a concentrated form. Unless energetic measures are taken, sulphaguanidine is a potentially dangerous drug. Sulphasuxidine is alleged to be free from this danger. It was thought, that administering large doses of sulphaguanidine which was presumed to be poorly absorbed, a high concentration in the bowel will be ensured and that the high concentration would exert a bactericidal action throughout the gut. If this is conceded, experiment *in vitro* should confirm it and real chemotherapy in action will be in evidence to a very limited extent like the action of the anthelmintics. But sulphaguanidine has been admitted to be like the other sulpha compounds fairly freely absorbed. To assume that bigger doses are less absorbed and therefore to indulge in heroic doses is to court risks. Several investigators had recorded severe toxic reactions after large doses of sulphaguanidine. Smith has clearly shown that blood concentration of the drug runs parallel to the dosage. His highest blood level with sulphaguanidine was 14 mgm. per 100 c.c. after a dose of 20 grams or a little more, a day, a concentration never reached by sulphanilamide or sulphathiazole. Astin

Clay (1943) has shown that the concentration of the drug in faeces varied from a trace to as high as 10 gram per 100 c.c. Concentration in the faeces of sulphanilamide ranged from a trace to 0.84 gram per 100 c.c. the average being 0.3 to 0.4 gram per 100 c.c. Even cases that showed low concentration of the drug in faeces responded well to sulphaguanidine. In his series of cases blood concentration of sulphanilamide was less than sulphaguanidine, his dosage being 30 grams of sulphaguanidine on the first day and 6 grams on four subsequent days while with sulphanilamide it was 6 grams a day for four days.

Children in all seem to stand the sulphonamides better, even massive doses not producing toxic reactions as readily as in adults. With more evidence born of experience one feels that the administration of very high dosage of sulphaguanidine is courting risk. The manufacturers of sulphaguanidine advocate a dose of 0.1 gram per kg. body weight as the first dose followed by 0.05 gram per kilo as maintenance dose every four hours. Treatment is expected to be continued at this level until the number of stools has decreased to about five per day when the interval may be eight hourly.

This is to be continued for from 3 to 5 days. This amount to about 42 grams on the first day and in case the condition improved after 2 days treatment, about 24 grams for another 3 to 5 days. A seven day treatment would mean about 170 grams in all.

Our results with sulphathiazole of 4 grams a day for two days (very rarely three days) were satisfactory and one is constrained to the conclusion that it is a boon compared to the colossal sulphaguanidine dose. Clinically there were relapses in about 10 to 15 per cent of cases within a month. No rectal swabs were taken to confirm the result of cure. Subsequent dietary precautions were not strictly adhered to.

When the sulphathiazole effect was convincingly good, the plain sulphanilamide was tried. We administered 4 grams in four doses for two days, rarely followed by 3 grams a day for two more days. The result was satisfactory though not so dramatic as with sulphathiazole. The symptoms showed signs of arrest after the third day gradually. No absolute constipation was noticed in any in this series as with sulphathiazole.

With regard to toxic action, in none in our series was any alarming toxic manifestations in evidence. A few patient experienced with sulphathiazole a feeling of lassitude and general weakness. Even with sulphaguanidine, the dosage being low unlike those of Smith, Clay and Brewer (*loc cit.*) there was no evidence of toxic manifestation. The toxic effects observed by several workers like Smith and Marshall have already established the fact that sulphaguanidine is absorbed. Smith has definitely proved that blood concentration runs parallel to dose, the bigger the dose the more



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the absorption. If non-absorption is the main factor in the presumed use of sulphaguanidine in bacillary dysentery, a retention enema should do just as well, on the analogy of rectal medication with chiniofonum or yatren.

Hence the proved absorption of even sulphaguanidine not to speak of the others like sulphathiazole and sulphanilamide seems to suggest that absorption is necessary for chemotherapeutic action just as emetine circulating in the blood in high dilutions when injected, exerts its action on the amoeba in the colon or antimony administered in cases of intestinal schistosomiasis.

Conclusions—(1) Sulphathiazole in doses of 4 grams and 3 grams respectively on two consecutive days was found to be very effective in controlling bacillary dysentery of predominant Flexner type.

(2) Sulphaguanidine in doses of two grams four times a day for two days—a dosage much less than the one prescribed by the manufacturers—was also effective in controlling the same infection.

(3) Sulphaguanidine in massive doses of 0.1 gram to 0.2 gram per kilo in 24 hours and possibly even in smaller doses when in use for bacillary dysentery is evidently absorbed as reported by others.

(4) Toxic reactions after massive doses of sulphaguanidine reported by others adds further weight to the other evidence in favour of its absorption.

(5) Absorption seems to be necessary for the action of any sulpha compound in bacillary dysentery.

(Journal I. M. A. Aug. 1945).

MEDICAL EDUCATION*

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Bombay.

MEDICAL EDUCATION

Ladies & Gentlemen, At a gathering like this chiefly composed of the medical students I am sure you would not like me to talk too much on the medical politics of the country but would expect that I should express my views on the problem affecting the students. I will therefore confine myself to some aspects of medical education. It was felt for many years by the profession, the public and some of the high Government officials that there should be one uniform standard of medical education in India and that the medical schools should be brought to the level of the university standard. A meeting of representatives both of the Central and Provincial Governments, those of the Universities, some members of the profession and the heads of the medical institutions was held in 1938. They decided that the standard of education in the country should be raised to the University standards, if possible immediately otherwise gradually. The Medical Council of India supported this decision and laid down the minimum standard of education for the guidance of the authorities. Some provinces like Madras, implemented this recommendation immediately; others gradually. There are some who while they profess to agree with the decision of the representative meeting, take no action in the matter.

COLLEGE OF PHYSICIANS & SURGEONS, BOMBAY.

Bombay Province is one of them. The College of Physicians and Surgeons has been trying to gradually raise the standard of L.C.P.S. ever since 1928. It made another attempt after the representative meeting. Government promised to stop the admission of students to the medical schools for L.C.P.S. course from a certain fixed date but they never kept it and changed these dates from time to time. A deputation waited on the adviser to the Government and pressed its views on the necessity to raise the schools to the level of colleges. It became clear at this interview that the Government was not in favour of the change. The College which was only an examining body and which had no control and no executive powers over the administration of schools, had no other alternative but to continue with their policy of gradually bringing the course to the standard laid down by the Medical Council and increased the course feasible with the facilities available at the schools. The Bombay Government showed itself in its true colours. Flouting the opinions of the Medical Council of India, the College of Physicians and Surgeons, Bombay, took a most reactionary and

* Being an address to the 33rd Social Gathering, B.G. Medical School, Ahmedabad on 18-2-45.

retrograde step of instituting a second inferior qualification with a special board of management for it. The resentment against this action of the Government was so strong that it did not dare to bring it before the Bombay Medical Council for its recognition but exercised its special powers and ordered the Council to put the L.M.P. on the Schedule of recognised qualifications. The Bombay Medical Council is still keeping the execution of this order pending. It has very recently sent a resolution to the Medical Council of India recommending that admissions to the schools for qualifications lower than that laid down by that body should cease from June 1946. Bombay Government could not have succeeded in their design but for a section of our Licentiate friends which on the promises of the Government, supported the Government in perpetuating its policy. This was very unfortunate. Bengal is another major province whose Government remains adamant in continuing the inferior qualification. The arguments put forward by these Governments in favour of their policy have been that :—

(a) The poor students could not afford to undertake medical study if it was made more costly by raising the standard.

(b) The Government would have to spend more after the medical relief if they had to abolish the subordinate medical service which they will have to do if the licentiates class ceased to exist.

(c) The standard of remuneration for medical services rendered to the public by the medical practitioners with better education will be naturally raised and people might find it hard to meet the cost.

(d) That if there be one class—a graduate class—that class will not go to village for practice and the rural areas will suffer from lack of medical relief.

Ladies and gentlemen, how flimsy, untenable and ridiculous are these grounds on which some of the high mighty officials and advisers of the Government continue their policy. These arguments have been often refuted by the profession, the public and some of the members of the Government official committees. When smaller and financially weak provinces found no difficulty in converting their medical schools into colleges even during the war, I wondered why the Government of Bombay could not do so. We hope the present Surgeon-General with the Government of Bombay, signs of whose sympathy for the aspirations of the profession have been evident, would try his best to convert the two medical schools in the province into colleges very soon. It is very necessary, ladies and gentlemen, that we are united and look into actively and with vigilance, how our interests are being safeguarded by the Government and by those chosen to be our leader. The College of Physicians and Surgeons Bombay, much maligned by some members of the profession, has done a great deal to improve the lot of the L.C.P.S. class by making

a number of changes in the provisions of various examinations. An L.C.P.S. can go up for M.C.P.S. with less difficulties now than it used to be some time back. Those who had some standing and opportunities to gain better clinical knowledge were helped to go up for higher examinations by special concessions. A number of specialists qualifications have been instituted which have become quite popular and they have improved their status, considerations are made for the suitable candidates and provisions are relaxed for them. M.C.P.S. is recognised by the Medical Council of India. It has been now easier for them to go up for the university degree. All the difficulties of the L.C.P.S. will disappear as soon as the Government raised the medical schools into colleges. The College of Physicians and Surgeons will then cease to exist. It may continue as a post-graduate institution.

CHANGES NEEDED IN THE STUDY OF MEDICINE

This brings me to the question of what are the changes necessary in the system of medical education. I will touch a few of them only. The existing curriculum is very heavy. The grouping of subjects the spacing of examinations, the conduct of examinations and results thereof have been very unsatisfactory. Not only that but the system of teaching needs revisions.

SELECTION OF PROPER STUDENTS FOR MEDICINE

A change will have to be made in the method of selection of the students for admission to the study of medicine. At a meeting of the medical students held in Bombay to protest against the high percentage of failures in medical examinations, one of the many reasons pointed out by me was the admission to medicine of students who had no aptitude for the subject. The parents give no thought and make no effort to find out the aptitude of their children for a particular vocation, during the course of their school education, nor is the guidance given by the teachers to the children to think and find it out themselves. If a student with no natural liking enters a medical college, he is bound to suffer failures. I had an opportunity recently to interview a student applying for a stipend. This candidate had not passed any examination without attempting at it 3-4 times. He had already made some attempts at the final as well. To my question as to why he was so indifferent to his studies and inflicted a heavy financial burden on his parents, his reply was that he had no liking for medicine, but his parents wanted him to be a doctor. Could you blame an examiner if such a student failed?

SELECTION OF TEACHERS

As it is necessary to select students with aptitude for medicine so it is in the selection of teachers with aptitude and capacity to impart knowledge to others. The present system of selection of teachers is based on the academic and professional merits of the

applicants. These are certainly essential factors, but it has been found in a good few cases that people with distinguished academic career and brilliance in the practice of their speciality did not know the art of teaching and did not possess the capacity to impart knowledge to the students. They were failures as teachers. Nothing more could be desired if both brilliance in the subject and skill in teaching are found in a teacher; but I would not hesitate to recommend to sacrifice a little of brilliance in a teacher but not of the art of teaching. The future progress of medicine depends upon the foundation laid in the students. Such a foundation can be laid well by good teachers. Not only they should possess the art of teaching but the love for teaching and an intention to devote their time and energy for it. No one should be entrusted with responsibilities of teaching as a part of his compulsory duties of a post of specialist at a teaching hospital, unless he possesses qualities to be a teacher. It is equally important that one unsuited should not hold on to a post of a teacher to use it only to further his own ends; as such a tendency amongst our teachers in medical colleges and schools has worked detrimentally to the interest of the students and to advance in research in medical sciences. I was informed that in one of the teaching institutions of our province a couple of teachers were getting very popular and their clinics used to be crowded by the undergraduates and a number of post graduates applied to work with them while others were not so patronised. The authorities put restrictions on a number of post graduates to be attached to each teacher. This was possibly done with the best intentions that the post graduates would get enough clinical material if they were equitably distributed; but the proper course for the authorities was to find out why the post-graduates preferred certain teachers only. It was best for the authorities to leave a free choice to the post-graduate to select his own teacher. Such a free choice would benefit not only the post-graduate but would create healthy rivalry amongst the teachers to make their teaching more attractive. I would wish a free choice of teachers not only for the post-graduates but for an undergraduate and not from one institution, but from institutions throughout the country. In Germany all the universities were so linked and curriculum so arranged and the teachers were so recognised that an undergraduate could select a teacher for a particular subject at any university in the country and a certificate of his study from that teacher would be accepted by the university where he registered himself for his medical studies. As soon as he had fulfilled the conditions of studies and collected the necessary certificates he was entitled to appear for his examination. This system gave splendid opportunities to a student to learn his medicine thoroughly with the least expense of time and money. It created stimulus amongst the teachers who continually tried to excel

their colleagues and thus kept the standard of teaching and scientific research enviably high.

I would wish such an ideal was kept before us for our country when the plans were made for the reconstruction in the system of medical education. When such an ideal is reached there would not be crying over the high percentage of failures at the examinations, inefficient and irresponsible teachers, low standard of general practitioners and paucity of research in India.

FULL TIME TEACHERS

It has been suggested in some quarters that the teaching in medicine would improve if it was imparted by full time professors even in clinical subjects. I, for one, believed that if the clinical subjects were taught by teachers who were in private practice and were in touch with the people, with their habits and ways of living, knew their psychology and were acquainted with their economic conditions, met emergencies requiring them to take quick decisions, would prepare the students to be useful, practical and self-relying physicians. In spite of this, there is a necessity of having one unit in each clinical subject staffed with a full time professor who can devote his time in organising and co-ordinating the teaching, pay attention to the problems of research, collect statistics of the work done in the subject at the institution, guide the junior staff and look to the administration of the department. The usefulness of such a unit will be secured if it is staffed with a professor, a competent clinical assistant, a pathologist and a stenotypist, all working on full time basis. The unit must have easy approach to other laboratories and interallied departments of the hospital.

MEDIUM OF INSTRUCTION

The ideal of a free choice of a teacher leads me to the question of medium of instruction in the medical colleges, very enthusiastically and passionately debated to-day both by the educationist and politicians. A memorandum was presented to the Congress Government in this Province in 1939 by some teachers in medicine advocating that teaching in medicine should be in the students' mother tongue. In Bombay Province this should be done through Gujrati in Gujrat, Marathi in Maharashtra, Kanarese in Karnatak and in the city of Bombay in all the languages. Others advocated an adoption of one common language for teaching medicine throughout the country.

The advocates for the adoption of mother tongue put forward the following reasons:—

1. "The medium of education in medical colleges being English, the most desirable co-operation between the physician and the patient does not exist to the same extent as in other countries".
2. "It is for this reason that contribution to the advance of medical knowledge from the people of the country have been

relatively meagre and a large number of medical men fail to appreciate the essential differences between the scientific method which is taught to them in another tongue and scholastic speculation which they come across in writings of their own language".

3. "Education when it is imparted in the mother tongue leaves more lasting impressions in the minds of the individuals and stirs up mental processes which are more conducive to research and reasoned thinking".

I personally do not think that the first two complaints can have anything to do with the language adopted. The 3rd point certainly demands careful consideration. There are no differences of opinion on the necessity of adopting the mother tongue for instruction in primary and secondary schools; but if the provincial language is adopted for teaching medicine there is every chance of deterioration in the standard of education and of a set back in the advance of knowledge.

(a) There will be scarcity of text books in the various subjects and subjects in medicine are many. Medical science is advancing and text books need revision every few years. The scale of books in provincial languages being naturally very limited, it would be extremely costly to take out revised editions of the text books to be written on one subject by many authors.

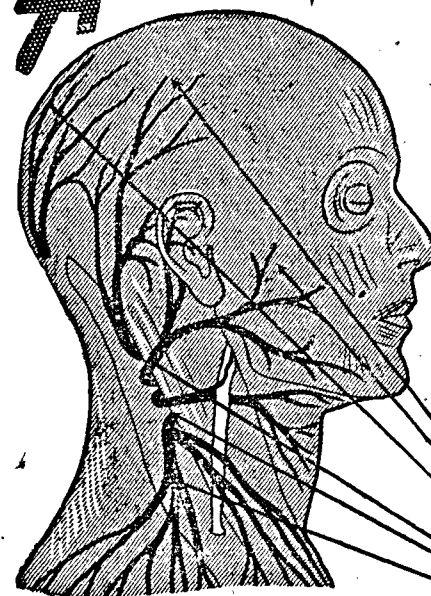
(b) Teachers and workers in the field of medicine will not be tempted to write their contributions in a provincial language for fear of its not being read and criticised by his colleagues in other parts in India and the outside world.

He would take it as waste of his labours and energy if his work could not be made known to people interested in the subject outside his province. Some of you might have felt an urge to publish your article in a foreign journal in preference to an Indian one in order to make your work known to a larger section of the interested people. One cannot expect a medical student, and doctors to learn over a dozen of provincial languages of India, and some foreign languages.

(c) There will not be easy exchange of students and teachers between various provinces with a result that each province will suffer from scarcity of eminent teachers and will have to remain satisfied with those of mediocre calibre. The students will have a limited field of gaining knowledge in medicine and its allied sciences.

(d) It will be disastrous if the enthusiasm extends to translating the scientific terminology in provincial languages. If we want to remain abreast with the world in the progress in medicine, it is imperative we adopted an international terminology and incorporated in it Indian terminology commonly used and understood throughout the country. This will make it easy for our students and teachers to make use of books and journals written by others.

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(c) By adopting a provincial language for higher education we will remain in a water tight compartment and instead of developing as a nation, we will be increasing the provincialism in every walk of life. Whatever an idealist may say, one cannot close one's eyes and ignore the facts and run away from actual results. Reservation of admissions to the medical study, allotments of scholarships and appointments in services on communal basis have been one of the important causes of high percentage of failure in examinations and increase of inefficient personnel in the services. Add to this, teaching medicine through a provincial language and invite further deterioration in the standard of education and inefficiency in medical relief.

If the ideal I placed before you a little while ago is to be reached some day, the medicine should be such as would be universally understood throughout India. I believe Hindusthani is the only language best suited for the purpose. After all it cannot be taken as a foreign language to the people of any province except perhaps the South. If Hindusthani is taught from secondary schools in the way English is taught today, in a very short time we will be able to adopt it for instruction in colleges. It will not only be a nation building but most economical and enriching the literature. Expert ments at Hyderabad and other smaller countries in Europe have not been at all encouraging. One cannot close one's eyes to the world changes going around us. English is becoming more and more the language of international communication of thought and action. It will be necessary for every student of medicine to be so acquainted with English as to enable him to understand the contributions to medicine from other countries and to communicate his to the colleagues in the world. What we really want is the increase of Regional Universities with a common medium of instruction rather than those based on provincial and sub-provincial languages.

CURRICULUM

Ladies and gentlemen, I have already taxed your patience but you will excuse me if I bore you a little longer on one or two more points. The existing curriculum has been certainly very heavy. The grouping of subjects and the spacing of examinations inflict tremendous strain on the student. The curriculum should be based on the needs and conditions of the country. It should be at the same time such as to make a candidate a good general practitioner. A lot of unnecessary details in the study of pre-clinical subjects can be cut out and time saved for acquiring clinical knowledge. During his study of clinical subjects, tendency to impart him specialised knowledge in various subjects both major and minor, knowledge which he will have no opportunity to put into practice should be eliminated. Medical science has made great strides in its advance. A student should be generally acquainted with its various aspect

and should have knowledge of their basic principles but he should not be burdened with the obsolete theories and intricacies of the technique of operations, laboratory methods and working of elaborate diagnostic processes and appliances—unnecessary time and energy of students should not be wasted in giving him knowledge of disease he would rarely see in the country. He should be trained to be self reliant in his practice, to use his eyes and ears, well develop his observations and his clinical acumen. He should be trained to bring to bear on his diagnosis and treatment, the psychology of his patient, his environments and habits and look to the body and mind as a whole before coming to conclusions. He should be taught the bedside manners and how to approach his patient with sympathy, care and confidence. Love should be created in him to keep notes of his cases and compare them at leisure so that when he enters practice he will continue it. The examinations and grouping of subjects for them should be so arranged as to inflict as little strain on his mind and body and cause as little dislocation in study as possible.

INDIGENOUS SYSTEM

There is an important problem of how to develop the study of indigenous system of medicine, Ayurvedic and Unani, and how to utilise the same. However much I would like to speak on this and other important problems, time does not permit me to do so; but this much can be said that the system adopted by the Government of Bombay is merely waste of money and energy and leads to creation of half baked Ayurvedic and Unani doctors who are likely to be inferior type of allopaths and thus discredit the old and valuable systems.

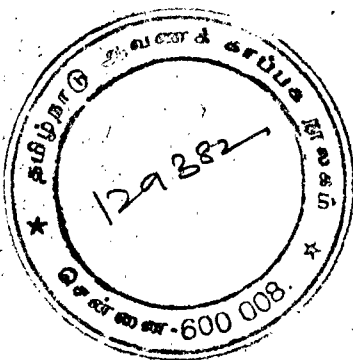
GENERAL ATMOSPHERE

Ladies and Gentlemen, Since the war took a turn in favour of the allies, various countries began to think of post-war reconstruction in the matter of social security of the people. Government of India has also taken up this question. It has appointed a committee under the chairmanship of Sir Joseph Bhore to prepare plans for reconstructions in the public health services, medical relief and medical educations. Plans for health insurance for industrial workers are being prepared by Prof. Adarkar. Experts from foreign lands were and are being invited to tender advice to this committee. When these plans of the Government Committees are ready and accepted by the Government, it will be the medical profession who will be called upon to work them. It is not known yet, in what manner the profession will be asked to undertake to work those plans, what responsibilities will be thrown on it and in what manner our interests will be safeguarded. In the past Government and the public have taken advantage of the secluded life the profession has led, and have exploited it. The struggle for existence is getting increasingly hard and the profession cannot exist only on noble

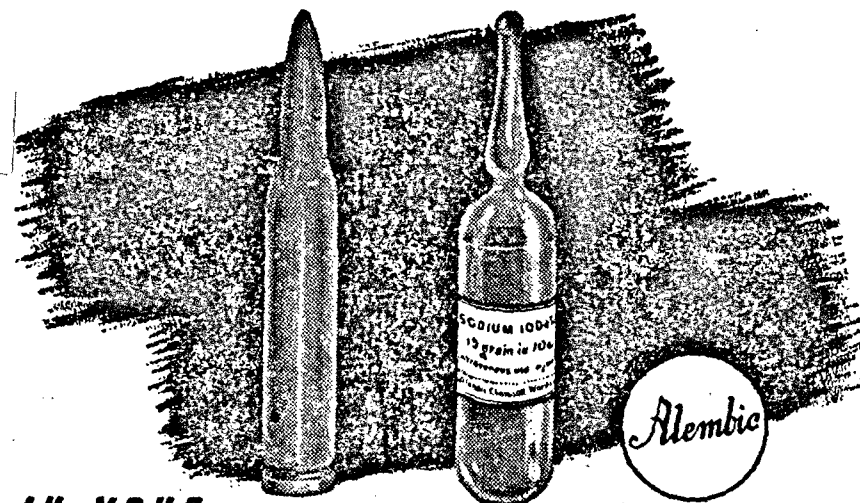
traditions and high ideals. However much we wish to keep the banner of "Service to Humanity" flying high, the economic strain on the profession is bound to break its morale some day. My appeal to the members of the profession and to the students, who will be very soon colleagues in the profession, is to keep themselves abreast with the developments in the country and remain vigilant and active in safeguarding their interests. It is only an organised body, working as your representative, who can keep the profession prepared to meet the situation as may arise and fight effectually to safeguard your interests—be you in service or in independent practice. It is upto you to lend your support to such an organisation.

Medical student is a part and parcel of the medical profession. He has to remain acquainted with the current and future problems of health and sickness in the country and be alive to the responsibilities, he will be called upon to shoulder when he joins the rank in the profession. I believe it will be very helpful to the students, if the Indian Medical Association, so changed its constitution as to enable to take the medical students under its fold from the time he registered himself for medical studies and devoted a few pages of its journal for the benefit of the students. I am sure the students will appreciate such a step of the Indian Medical Association.

Before I finish I would like to address a few words of advice to my future colleagues. Keep your physically fit by proper attention to your diet, exercise and habits; Medical career is a hard life both as a student and as a practitioner. Allow no prejudice of caste, creed, religion and class to hamper development of your character and ideal in life so that when you enter the profession you can serve the people well and be worthy members of the profession. Devote as much time as you can at the bedside of your patients. Try and learn to diagnose and treat common ailments. You will hardly ever be asked to remove a cataract or do a gastrojejunostomy or to perform a pneumothorax while you are in general practice, but you cannot be excused if you fail to diagnose trachoma, amoebic from bacillary dysentery or to diagnose a case of an acute abdomen with your clinical knowledge and experience gained at bed side. Laboratory and other diagnostic aids are important but they can be helpful when your clinical knowledge is sound.



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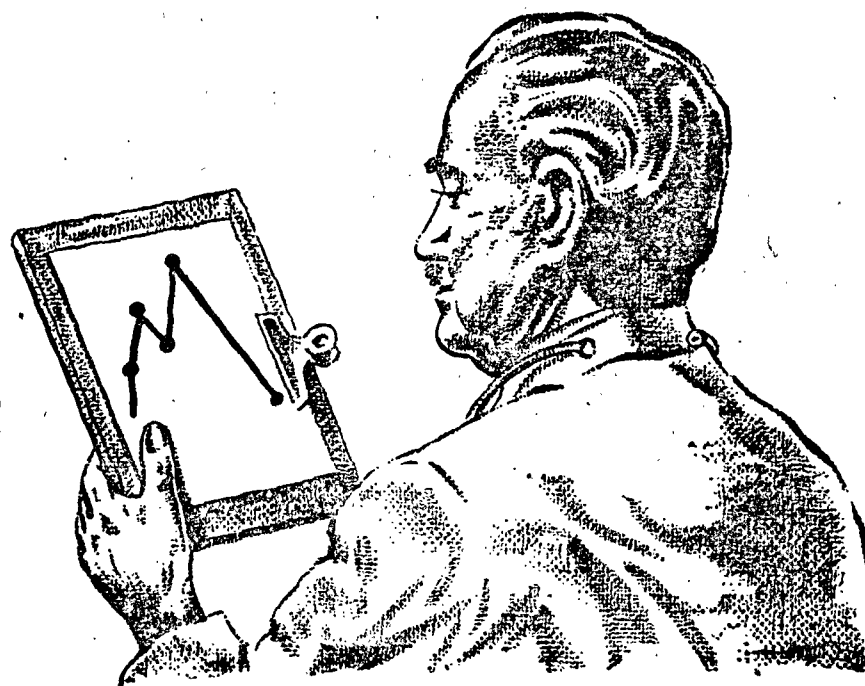
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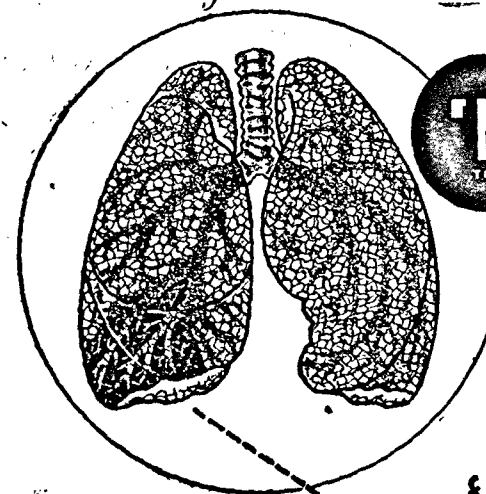
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Vol. XIV.

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MEDICO-SURGICAL SUGGESTIONS

(Established 1932.)

VOL. XIV

NOVEMBER 1945

NO. 11

SCABIES

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Scabies is one of the common diseases of the skin. It is generally known as "the itch" being an intensely itchy disease. It is a disease of families, communities, and groups where there is intimate contact among the members. Although scabies exists at all times, it develops into an epidemic whenever there is a war, famine, or large scale immigration. This historic fact is again brought into prominence in this World War. It prevailed in an epidemic form during the last Great War of 1914-18, putting out of action a large number of men in active service. A slight increase was reported in the incidence of scabies just before the present hostilities began and it became a formidable epidemic after 1939 when campaigns were started. At present, the disease is very much in the public eye in India as the evacuees from Burma are said to be badly infected with scabies and that they have been instrumental in disseminating the infection far and wide. But a closer study has revealed that a good proportion of these unfortunate, ill clad, unhygienic, famished people are suffering from coccal dermatitis. The conditions favourable for the rapid spread of scabies are the commingling of large bodies of people and their living together in large numbers in restricted areas. Hence it is frequently seen in soldiers in barracks and camps and in evacuation, concentration and famine camps. Another fruitful source of infection is the indiscriminate use and mix up of bedding, clothing, blankets, etc. Fire watchers using communal blankets run some risk of getting the infection. It is important to remember that intimate and prolonged contact is necessary for the transmission of this disease. As this condition is ideally present in venereal contact, scabies is still considered by some to be a venereal disease. However, it should not be forgotten that a scabietic burrow is at times a portal of entry for the *Treponema pallidum*.

HISTORY

Scabies is an ancient disease. Celsus "fully considered 'scabies' which covered a multitude of eruptions." It was very prevalent all over the world till recently. When Hebra (1816-80) took over his clinic in Vienna, scabies was the most prevalent

disease. Statistics show that out of an annual total of 2,723 cases that attended the clinic, 2,197 were cases of scabies. Radcliffe-Crocker (1905) mentioned it to be an extremely common disease in England among the poor, more common in Scotland and very common in the continent. In the United States of America, its incidence, according to Pusey (1925), has been on the increase and "it is one of the common disease in public practice in winter." Reference to the mite are seen in very early mediæval European and Arabian literature: Avenzoar (1113-62) of Cordova, the greatest of Mohamadan physicians in Spain, described the itch mite and almost described its role in the production of scabies. Guy de Chauliac (1300-68), physician to three Popes at Avignon, was the first to point out definitely the contagious character of scabies." Ambroise Pare (1510-90) described the mite. In his famous letter to Redi in 1697, Bonomo gave a very good description of scabies. This letter not only tells how he demonstrated the mite, but shows the prevalence of scabies among the poor. He says that having observed how poor women picked out on the point of a pin little 'blisters of water' from the 'scabby skins' of their children who had the itch, and cracked them 'like fleas upon their nails', and how 'scabby slaves in the Bagno at Leghorn' often did the same thing for each other, he 'quickly found an itchy person and asking him where he felt the greatest . . . itching, he pointed to a great many little pustules not yet scabbed over', from one of which Bonomo took out a very small white globule and "observing this with a microscope, I found it to be a very minute living creature in shape resembling a tortoise" Ernest Bazin (1807-78), one of the famous dermatologists of the St. Louis Hospital, Paris, made a thorough study of scabies and showed that the acarus remained scattered all over the body. He also introduced effective methods of treatment which revolutionised the treatment of scabies in hospitals.

DEFINITION

Scabies is a contagious disorder of the skin caused by an animal parasite, *Acarus scabies* or *Sarcoptes hominis*, and characterised by the formation of borrows, tunnels, cuniculi or galleries on the superficial layers of the epidermis with intense itching which is worse during the early part of the night.

ÆTIOLOGY

The disease is caused by an animal parasite, *Acarus scabiei* or *Sarcoptes hominis*, belonging to the class of Arachnida and of the Order of Acarina. It has a universal distribution. The itch mite is round or oval in shape and is just visible to the naked eye as a minute speck. A fully developed ovigerous adult female measures 400 by 300 microns or 0.4 to 0.3 mm. The adult male is smaller than the ovigerous female being only one-half to two-thirds the size of the latter. The adult male prowls about on the surface of the

skin and dies after copulation. The itch mite has a round body with no head and 4 pairs of legs. The mouth parts are at the anterior end and the anus at the posterior end. In the female the two anterior pairs of legs end in suckers or ambulacra and the two posterior pairs in bristles. The male has suckers in all the legs except in the third pair. On the back, besides striæ and bristles there are sharp spines directed backwards. The acarus is not a blood sucking insect; it lives on surface epithelium and skin secretion.

As in practically all the animal parasites, the female alone takes part in the ætiology role in diseases, either as producers or transmitters. The male has no part or lot in the production or transmission of the disease. It lives only for the propagation of the species. When an impregnated adult female is placed on the surface of the skin it takes about an hour for it to dig into the epidermis. It tilts itself on the posterior bristly legs and bores an oblique, zigzag tunnel through the superficial layers of the epidermis, but never goes beyond the granular layer. In the stratum Malpighii, at the inner end of the channel and just below where the acarus is lying, a small vesicle develops. The burrow is filled with the excreta and ova of the acarus in different stages of development. The ova are oval in shape and measure 150 by 100 microns (0.14 by 0.10 mm.). They are placed in the tunnel with their longitudinal axes transversely. As it burrows the female acarus lays her eggs one or two every day, in all about 20 to 50 eggs by the time it reaches the end of her journey. About the middle of the ventral aspect there is a slit through which the eggs are laid. The female acarus lives at the blind end of the tunnel for about two or three weeks and dies. The ova hatch in about 4 or 5 days and the six legged tiny larvæ reach the surface of the skin either as the result of the normal keratinisation or by their boring through the thin roof of the tunnel. The larva moults twice before it becomes an adult. By the first moult the hexapod larva becomes an octopod nymph. The nymph resembles an adult but has no sexual organs. It is estimated that only about 10 per cent of the ova reach the adult stage. The female acarus lives on the whole about two to three months making a burrow of 2 to 20 mm. long. The life history of the acarus from the egg to the ovigerous female is about 10 to 14 days.

Various species of acari, morphologically indistinguishable from the human species, are found in horse, sheep, goat, dog, pig, fowl, camel and other animals.

Mode of infection.—The disease is transmitted from individual to individual by intimate, prolonged, nocturnal contact with an infected person. The disease is not contracted by touching or shaking hands with an infected person as the acarus moves slowly. It is

usually uontacted while sleeping in the same bed with an infected person or rarely from infested bedding, clothing and blankets. But the investigations of Mellanby and others show that the risk of infection from such latter sources is negligible. Scabies is frequently of venereal origin as the conditions are ideal for prolonged intimate undressed contact with an infected person on bed in the night. The disease also spreads by the intimate contact of family life and by crowding together in lodging houses, barracks, camps, etc., with limited space. Over-crowding, unhygienic surroundings, and want of cleanliness are other important contributory factors in the dissemination of this human pest. The disease is also transmitted by what are known as "scabies carriers". These carriers harbour *Acarus scabiei* on their body without experiencing itching. Persons in the early stage of the disease before the development of signs or symptoms but with enough acari on them are also dangerous to the society. These two sets of people come in intimate contact in social life and are thus able to broadcast the disease. It is more commonly seen among the poor and the careless, but scabies is not at all a poor man's disease. Like other verminous diseases it is more common in winter due to closer herding. It occurs at all times of life, though more common in childhood and early adult life. It affects both the sexes equally in children, but in adults males preponderate. But at present in Britain "among young adults females appear to be twice as commonly affected as males" (Mellanby, 1943). This is partly due to their looking after the children and partly to the sharing of beds. There is no immunity reaction in the host. On the other hand relapses and re-infections are the rule.

Incubation period.—The incubation period is about two to three weeks. It may extend up to two months as a decent mite population must grow before the disease manifests itself.

SIGNS AND SYMPTOMS

Constitutional symptoms are unknown in scabies. The only symptom complained of is itching which has given the disease its name. It is very intense and worse in the early part of the night when the patient gets warm in bed. There may be little or no itching during the day as the habits of the acarus are nocturnal. The itching is due to the burrowing of the skin by the female acarus. This induces scratching and in this act a good number of them are killed and some are conveyed under the finger nails to different parts of the body. The young mites also prowl about and reach different parts of the body before getting impregnated.

The characteristic scabietic lesion is the burrow, cuniculus, tunnel or gallery. It is a narrow sinuous or zigzag channel which is more or less horizontal to the surface of the skin. It is filled with faeces and ova in different stages of development with the

female acarus at the opposite end which is indicated by a whitish or yellowish shiny point. The burrows may be dark coloured in dirty persons and can be easily detected. In clean individuals they are lighter and difficult to make out. In infants and children they are long and well developed. During the last war, it was observed that the hands of soldiers were comparatively free from burrows. The tunnel made by the mite is too narrow for it to turn round and come out. It cannot also retrace its steps as the dorsal spines came in the way. So the unfortunate female acarus has to perish in the grave dug by herself. These tracks are about 2 to 20 mm. in length.

When the disease is fully developed a multiplicity of lesions are met with. The number and extent of the lesions vary within wide limits. Galleries or burrows of varying length and colour, vesicles of different sizes situated near the burrows, inflammatory papules, pustules and crusted lesions in various stages of evolution, excoriations, scratch marks, patches of dermatitis and possibly pigmented areas are all seen. A red follicular rash is also present as a result of the young mites hanging on to the hairs. Allergic manifestations from sensitisation to the protein of the acarus may also occur.

Sites of predilection.—The acarus selects moist, smooth and thin areas of skin for easy burrowing. The sites therefore to look for the burrows and the acari are the dorsal aspect of the webs and opposing surfaces of the fingers and toes, the ulnar aspect of the hands, the anterior aspect of the wrists, the inner aspect of the elbows, the anterior axillary folds, and the lower abdomen particularly encircling the umbilicus in both the sexes, the lower buttocks and genitalia in men and the nipples and areolæ in women. In infants' palms and soles also are involved. Other parts of the skin also are affected but the face and scalp always escape, except in the case of infants in arms in whom these areas also may be affected by close contact with the mother's chest when she is a victim. The majority of the lesions are seen between the shoulders and knees. The areas of involvement are those most accessible to the hands, giving a clue that the mites are mostly transported under the finger nails. Scabietic lesions have a predilection for parts exposed to friction such as shoulders, waists, outer aspect of thighs and ischial tuberosities particularly in shoe-makers and tailors who sit at work constantly in one position.

MacCormack (1944) describes three clinical types of scabies, according to the type and distribution of the lesions; uncomplicated or straight scabies, scabies uncomplicated by pyoderma and scabies complicated by eczema or dermatitis.

Uncomplicated (straight) scabies.—In this type three kinds of lesions are present: the scratched or follicular papule of which

most of the eruptions are composed; vesicles; and burrows. The scratched papules are collected and grouped about the anterior axillary folds, and over the abdomen in a circle centred by the umbilicus. The pin-head vesicles and the burrows are mostly on the hands and wrists, especially on the webs of the fingers. Ankles and feet are sometimes similarly involved. By contrast, the back is relatively free, and the face is not affected, except rarely in infants.

Scabies complicated by pyoderma.—In this, impetiginous sores form especially on the lower buttocks, elbows and knees. Indeed, a grouped impetigo on the lower buttock can have only one interpretation and its paramount importance as an aid to diagnosis cannot be too strongly emphasised.

Scabies complicated by eczema or dermatitis.—A potentially eczematous subject is able to develop slight or extensive eczema or dermatitis from the irritation caused by the parasite, that is independently of any external application whatsoever. In these cases the eruption is liable to be most marked over friction areas—the shoulders, the outer thighs and the waist—giving a hint of underlying parasitic disease.

COMPLICATIONS

Besides the skin complications already mentioned—pyoderma and eczema or dermatitis—albuminuria is a frequent complication. Sleeplessness, mental worry and the resultant cachexia are others. Eosinophilia is common and in some cases leucocytosis also is seen. A treatment nephritis and dermatitis may also develop.

DIAGNOSIS

The presence of burrows and the demonstration of the mite or its ova under the microscope are proof positive of scabies. But these are more easily said than done. It is difficult to demonstrate them in cases complicated by pyoderma or eczema. Mellanby (1943) after examining nearly 900 adult male patients came to the conclusion that the average parasite rate (adult females) in each patient was 11·3; though the number varied from 1 to 511 in some cases. It will not be far wrong to diagnose a case of scabies by the multiform nature of the lesions and their distribution especially at the sites of election, intense itching which is worse in the early part of the night and the absence of lesions in the face and scalp except in the case of children. Lesions on the penis and scrotum in the adult male, grouped impetigo on the lower buttocks (Mac Carmack), pustular eruptions on the hands (R. Crocker) are also important from a diagnostic point of view.

DIFFERENTIAL DIAGNOSIS

Industrial dermatitis.—Both scabies and trade dermatitis affect hands. But the burrows multiform nature of the lesions and their sites of election, nocturnal itching and the existence of more than

one case in the family are all in favour of scabies. Trade dermatitis affects exposed parts including the face which is exempt in scabies.

Cheiropompholyx.—Sago grain vesicles on the hands and wrists are the only lesions in this. They are deeply seated, more palpable than visible, more numerous and more difficult to rupture than the scabietic vesicle. Further the itching disappears on bursting.

Secondary syphilis.—The syphilitic rash is generalised, hard, indurated and coppery with no itching. Other signs of secondary syphilis and the positive complement fixation or precipitation test will be helpful.

Lichen urticatus.—This is a disease of children and the lesions are red papules and situated more on the outer aspect of the limbs. There are no burrows nor is the disease contagious.

Pediculosis corporis.—The lesions are practically confined to the trunk and proximal ends of the extremities though the bulk of the lesions are on the upper buttocks and the back which are relatively free in scabies. No lesions are seen on the hands and wrists and no burrows. Pediculi can be seen in the seams of underclothing.

PROGNOSIS

Prognosis is good if properly treated. It is a curable disease even after it is present for long periods. But there is no tendency for spontaneous disappearance of the disease. Mellanby (1943) thinks that by constant scratching the patient may eventually get rid of the parasites and get cured.

TREATMENT

The aims of treatment are the destruction of the parasites and their ova: the relief of itching; the management of the cutaneous lesions and disinfection of all the articles of bedding, clothing, blankets, etc.

The treatment of scabies is entirely by the external application of an efficient parasiticide in order to destroy the acari and their ova followed by appropriate external application for the relief of itching and the cure of the secondary lesions. In the selection and use of a sarcopticide it should be remembered that both over and under treatment are equally bad. The medicament should not be applied either too strong or too weak. Various drugs have been used for the treatment of scabies from time to time but the most effective and also time-honoured, traditional and classical drug is sulphur. Sulphur itself has been used in different forms, in different combinations and in different strengths, but the most efficient, the least dangerous and the easiest to manage even by unskilled hands is the *ten per cent sulphur ointment*. After investigating a variety of sarcoptocides including different preparations of sulphur, Dr. Kenneth Mellanby and associates (1942) came to the conclusion that the good old ten per cent sulphur ointment still deserved the pride

of place. Here a word of caution seems to be necessary. In dermatological practice, the naming of a drug or the writing of a prescription by itself is only of secondary importance. It is the method of application in its minute detail that counts for the success or failure of the treatment. And the treatment of scabies is an outstanding example proving this rule.

There is some controversy regarding the desirability of giving a preliminary cleansing bath before the application of any external remedy. The older dermatologists have all insisted on a thorough scrub and bath in hot water with soap and brush. The recent investigations of Mellanby *et al* (1942) have shown that "even without bathing and scrubbing, very few mites survive and two applications of the ointment have cured 100 per cent of the cases." But they also admit "that the efficacy of the treatment is slightly enhanced by bathing and scrubbing, although the difference between the results (per cent killed) from the two types of treatment is not statistically significant. However a cleansing bath will be wholesome to the patient and at the same time the medicament will penetrate the skin better.

Another important fact that has emerged from this investigation is "that a very high proportion of the mites were killed by one application of the ten per cent sulphur ointment and two applications gave 100 per cent cures. But the standard treatment recommended by the Ministry of Public Health in the United Kingdom consists of three daily applications. The old practice was 5 or 6 successive applications at intervals of 12 hours.

The treatment of scabies with ten per cent sulphur ointment is as follows:

1. A thorough bath and scrub is given with warm water and soap, preferably soft soap. The patient should remain in the bath for 20 to 30 minutes, using the brush now and then to lay open the burrows. A rough cloth or wood wool may well serve the purpose, as scrubbing with a nail brush is too harsh and painful. The sites of predilection should receive special attention. Cut the finger and toe nails short.

2. The patient then dries himself and while still warm rubs ten per cent sulphur ointment from neck to toes, paying particular attention to the sites of election. The ointment should not be applied to the face and scalp. He then puts on some old clothing which should not be changed for the duration of the treatment. The patient should always keep some ointment with him to be used when itching occurs any where. Fresh ointment should be rubbed every day for two more days. During these three days the patient neither bathes nor changes his clothes. The quantity of ointment required for one application is about three ounces and so the complete treatment requires 8 to 10 ounces for each patient.

3. On the fourth morning the patient takes a warm bath with soap and dons clean clothes. He will be found now cured of scabies.

The itching becomes less even after the first day of treatment, as most of the acari would by this time be killed. But some itching may continue for a few days more even after the complete course of treatment. For this a cream (zinc cream) or a lotion (calamine lotion) containing acid carbolic 2-5 m., ichthyol 5-10 grs., or tar 5 m to the ounce is helpful. Over treatment, under treatment and improper treatment should be avoided. Sulphur ointment has gained some notoriety by over treatment as it produces sulphur dermatitis with severe itching. Sometimes this itching is mistaken for the itching caused by the itch mite and so more ointment is applied which naturally aggravates the condition. For sulphur dermatitis, liniment calamine is an excellent remedy. At the same time the importance of thorough treatment cannot be over emphasised. Even if one ovigerous live mite is left, a recurrence of the disease is likely. It may take several weeks before the recurrence manifests itself as time must elapse before a reasonably large mite population could grow up again. It was estimated that a pair of itch mites is able to produce 1,500,000 descendants in three months. The experiments of Mellanby and co-workers (1942) prove that "the medicaments which kill these (mites) are also reasonably effective against their egg." In cases of complicated scabies, it is advisable to treat the secondary infection first and scabies later. For the former we have found painting the affected areas with two per cent aqueous brilliant green which dries up the lesions in two or three days. It is much easier and more successful to treat the scabies afterwards.

Other points to remember in the treatment of scabies are:—

1. All contacts must be examined and those found infected must receive treatment immediately.

2. All cases in the same family or group must be treated simultaneously to prevent reinfection. Some of the recurrences are the result of failure to observe this rule.

3. All bedding, clothing, blankets, gloves, socks, stockings, bedroom slippers, wrist watch straps, wrist straps, strings of identity discs, etc., in fact anything which was in actual contact with the patient's skin, must be disinfected before they are used again. In tropical countries those articles that cannot be boiled, or where steam sterilisation is not available, may be sterilised by exposure to the sun for a couple of days. Mellanby (1943) considers that the risk of reinfection from not sterilising the bedding and clothing is practically nil though the general opinion is in favour of sterilisation if facilities are easily obtainable.

4. Children should be treated with weak sulphur ointment, 3-5 per cent.

Other preparations that have been in use are :—

Sulphur vanishing cream—It is a pleasant preparation to use with the added advantage that it does not soil the clothes. Ten per cent of sulphur in the cream is as good as the same strength of the ointment. (Mellanby, 1942).

Ehlers-Marcussen's ointment—This is a specially prepared sulphur ointment by a special process and marketed with the proprietary name of "Kathiolan". It is very much used in the British Navy. Till 1932, this was the treatment adopted in Copenhagen and is also known as the Danish treatment. This has to be used just like the ten per cent sulphur ointment, but one day's treatment cures scabies. Mellanby's investigation also testifies to 100 per cent cure with one day treatment. But the chances of developing sulphur dermatitis are more marked.

Flowers of sulphur—Sherwell suggested the rubbing of washed sulphur after the bath and scrub for which half a teaspoonful is required. An equal amount has to be dusted on the sheets also. Mellanby and associates (1942) dusted flowers of sulphur over the patients and in their sheets confining them to bed. They found it to be ineffective as only a few mites were killed at the end of 24 hours and even after three days of treatment one-third of them were still found alive. There is a great danger of developing sulphur dermatitis.

Sodium thiosulphate and hydrochloric acid—It has been thought that nascent sulphur would be more effective in destroying the acarus. With this object, the patient is first painted from neck to toes with a 40 per cent solution of sodium thiosulphate—the hypo of the photographer—which is allowed to dry. Fifteen minutes later, a 4 per cent hydrochloric acid is applied over the same area. One hour after this, the applications are repeated. A second treatment is given the next day and the patient takes his bath the third day. Cure is said to follow this. Sulphur so released is considered to be more harmful to the sarcoptes than the ordinary sulphur. Mellanby and co-workers remark that patients so treated had their body covered with a yellow powder, i.e., sulphur is deposited in rather coarse granules. Their investigation showed that one application of the treatment was "hardly more effective than dusting with flowers of sulphur, and even after three applications a substantial proportion of the parasites remained alive." Further, this method of treatment is troublesome to employ, the results are unsatisfactory and it may lend itself to zealous overtreatment.

Sulphur lather tablets (Sulphomil)—The conclusions of Mellanby and associates are "even after 3 daily applications, a substantial proportion (about 50 per cent) of the parasites were still alive". Thus they are comparatively of little use.

Colloidal sulphur—The external application of colloidal sulphur was recommended by Heden who found that one application effected a cure.

Fumigation with sulphur—This method was tried during the last Great War when large number of patients had to be treated in a short time. Chlorine gas was also used for the same purpose.

Sulphur by mouth—Mellanby in 1941 reported that sulphur taken internally had no effect on acarus. It was again investigated by administering 10 g. daily for 10 days and it was found that "the parasites appear to be entirely unharmed at the end of the period, and fresh mites could be induced to burrow normally".

Other preparations containing sulphur—Sulphur in different proportions and combinations have been used from time to time for the treatment of scabies. Some of them are given below. Pusey used, in preference to other methods, an ointment containing sulphur precipitate, balsam of peru, creta preparata, and green soap each 20 to 40 grams and vaseline one ounce.

Wilkinson's salve is made of creta preparata 10 parts, sulphur sublimate 15 parts, ol. rusci 15 parts, saponis mollies 30 parts, and aders 30 parts. Helmerich's pomade consists of sulphur sublimate 10 parts, distilled water 5 parts, almond oil 5 parts, potassium carbonate 5 parts, and yellow petrolatum 60 parts.

Oppenheim and Smith (1943) recommend the following prescription for the "Treatment of Scabies in War Time". Precipitated sulphur 25 parts, potassium carbonate 10 parts, and yellow petrolatum 125 parts. This quick method was successfully used in treating over 60,000 persons in Germany during the years 1918-22. The patient rubs his body for 15 minutes with green soap and wood wool when he is put into a warm bath of 30°C and rubbed again with green soap and wood wool or brush for half an hour. After drying, the above ointment which is a modification of the old Hardy which again is a modification of the older Helmerich ointment, is smeared with particular care over the areas of burrows. After two hours the patient gets a shower bath with common soap. After drying, his entire body, except head and neck, which was smeared with sulphur ointment, is now smeared with zinc paste (30 g. each of zinc oxide and purified talc and 60 g. yellow petrolatum). The whole treatment thus takes only 3 hours. Even children can be treated by this method but the time of application of green soap is shortened to 5 or 10 minutes and that of the ointment to a quarter to half an hour.

Dimethyl-diphenylene disulphide (dimethylthianthrene)—This is a Bayer's product marked under the trade name of "Mitigal". In their investigation Mellanby *et al* (1942) found that "It does not seem to produce any dermatitis or discomfort, and kills 100 per cent sarcoptes after one application." The substance is costly and is not available at present.

Derris root preparations—This is one of the drugs investigated by Mellanby and co-workers. They remark that "derris is notorious for causing dermatitis in man, and unless it has substantial advantages in the treatment of scabies its use is not one which recommends itself." They tried *Derris root lotion* which is a suspension of derris root in water (4 ounces of root in one gallon of water with a small quantity of soap flakes). The results were unsatisfactory as "even after three days 21 per cent of the mites survived and about 50 per cent of the patients still harboured living sarcoptes."

Rotenone emulsion—A 2 per cent emulsion of rotenone called "Sarevan" was tried. Usually rotenone is used 1 in 16,000 as animal dips in veterinary practice. The derris root lotion mentioned above was 1 in 1,000 and Sarevan was 1 in 50. Notwithstanding, they did not find it "outstandingly successful." Four applications gave satisfactory cure, "but some of them developed an intractable scrotal dermatitis". They found this method also "much less effective than sulphur ointment".

Benzyl benzoate—This is not a new drug newly introduced for the treatment of scabies. It is one of the chief constituents of Balsam of Peru which is used by itself or in combination with sulphur or betanaphthol from early days. Benzyl benzoate as such was used by Sachs and Juhusburg so early as 1900. MacCormack mentions that this drug has been in use for the last 50 years and was recommended by both Radcliff Crocker and Malcolm Morris. According to Kissmeyer, it was first tried by Ludwig Neilson with success in 1912. Kissmeyer himself popularised it by substituting it in the place of the time-honoured sulphur ointment in the Kommune Hospital at Copenhagen from 1933 onwards. He used it as a lotion consisting of equal parts of soft soap, isopropyl alcohol and benzyl benzoate. According to him "The whole treatment takes less than an hour, and is an ambulatory one." The patient first anoints the whole body with soft soap, then soaks himself in a warm bath of 100°F also rubbing while in the bath. After coming out of the bath and while still wet, the lotion is painted with a brush for 5 minutes over the entire body with the exception of the face and scalp. He then rests a while to get the lotion dried. A second coating is given for another 5 minutes. The body is then gently dried by a towel and the patient puts on the same clothes. After 24 hours a second bath is taken and clean clothes are worn. From 1933-37 Kissmeyer had treated some 8,000 cases and in his hands "it has proved to be an ideal, effective and cheap method giving rise to no serious post-therapeutic dermatitis."

Then investigations of Mellanby *et al* (1942) also lend support to the findings of Kissmeyer. But they think that in unskilled hands without proper supervision, benzyl benzoate lotion may be applied carelessly as to miss some of the burrows resulting in relapse.

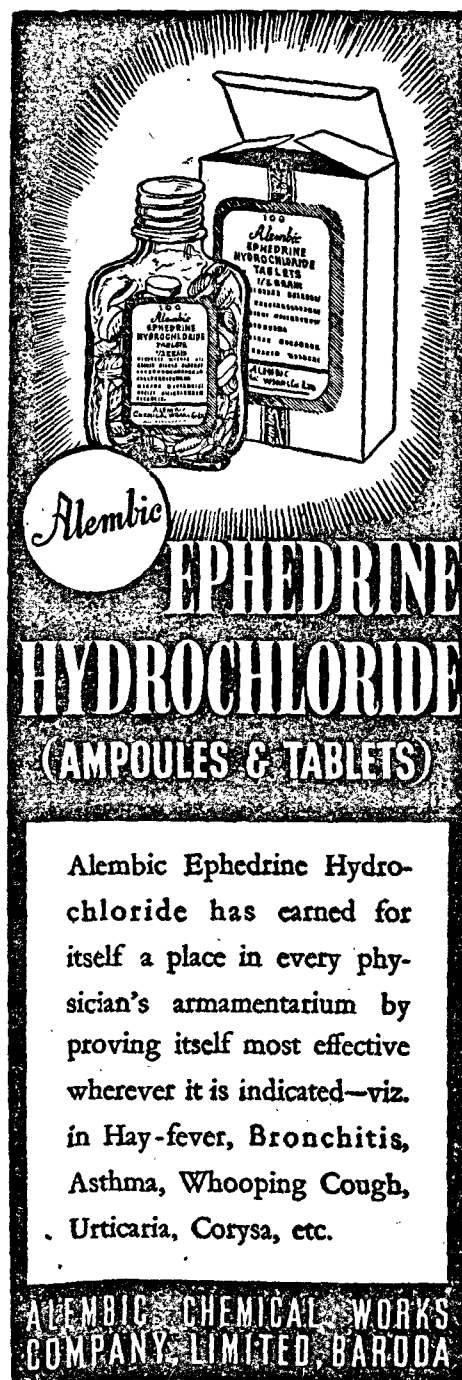
They tried benzyl benzoate in different strengths from 5 to 20 per cent as a lotion with spirit and with spirit and soft soap and as a watery emulsion. They consider a 220 per cent emulsion to be completely satisfactory. The National War Formulary gives the composition of the emulsion as benzyl benzoate 25 per cent, lanette wax S.X. 2 per cent, and water to 100. The treatment consists of a preliminary bath and drying followed by the application of the emulsion with an ordinary flat paint brush 2 inches wide. This should be done carefully and systematically so that the entire body from neck to the soles are thoroughly painted. The body is then allowed to dry which takes about 5 to 10 minutes. The patient then puts on his dress and the treatment is over. A single application would suffice usually but in some cases a second application may be necessary when it should be carried out the next day or within 4 or 5 days of the first treatment. This treatment gives 100 per cent cures. In MacCormack's special scabies clinic where benzyl benzoate is exclusively used, a recurrence rate of just over two per cent has been observed, probably from failure to treat the whole family in some cases. At the Poolsbrook Treatment Centre, Graham (1943) treated about 1,000 cases of scabies and came to the conclusion that one treatment with benzyl benzoate would cure over 99 per cent of cases of scabies if efficiently applied. Disinfection of clothing and bedding is unnecessary according to him.

Lethane.—This is an organic thiocyanate and is an effective parasiticide for lice. A two per cent solution appear to kill only about two-thirds of the mites after one application. A ten per cent solution causes considerable discomfort to the patient but is less efficient than benzyl benzoate or sulphur ointment, (Mellanby *et al*, 1942).

Betanaphthol.—The drug is used from olden days as a substitute for sulphur or in combination with it or balsam of Peru. It is useful particularly in children and in those with a delicate skin. It is less irritating but has an unpleasant smell. Kaposi's original prescription was made up of betanaphthol 15 parts, creta preparata 15 parts, saponis 50 parts and adipis 100 parts. Mellanby *et al* (1942) found it even as a 10 per cent ointment less satisfactory than benzyl benzoate. The possibility of poisoning by the drug should be remembered.

Pyrethrum.—The tests do not suggest that pyrethrum extracts are particularly valuable against human scabies. (Mellanby *et al*, 1942).

Balsam of Peru.—This is another useful substitute for sulphur. As stated above it is used either alone or in combination with sulphur and/or betanaphthol as an ointment. It may be painted on pure or diluted with equal parts of spirit, glycerine or olive oil. It is expensive and is liable to cause nephritis.



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(*Journal I.M.A. Sept. 1945.*)

Medical News & Notes.

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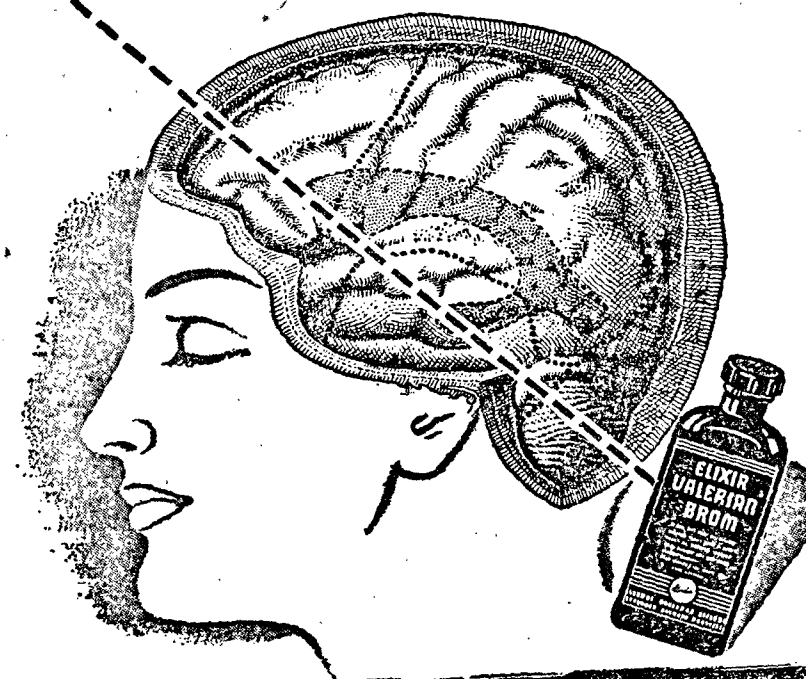
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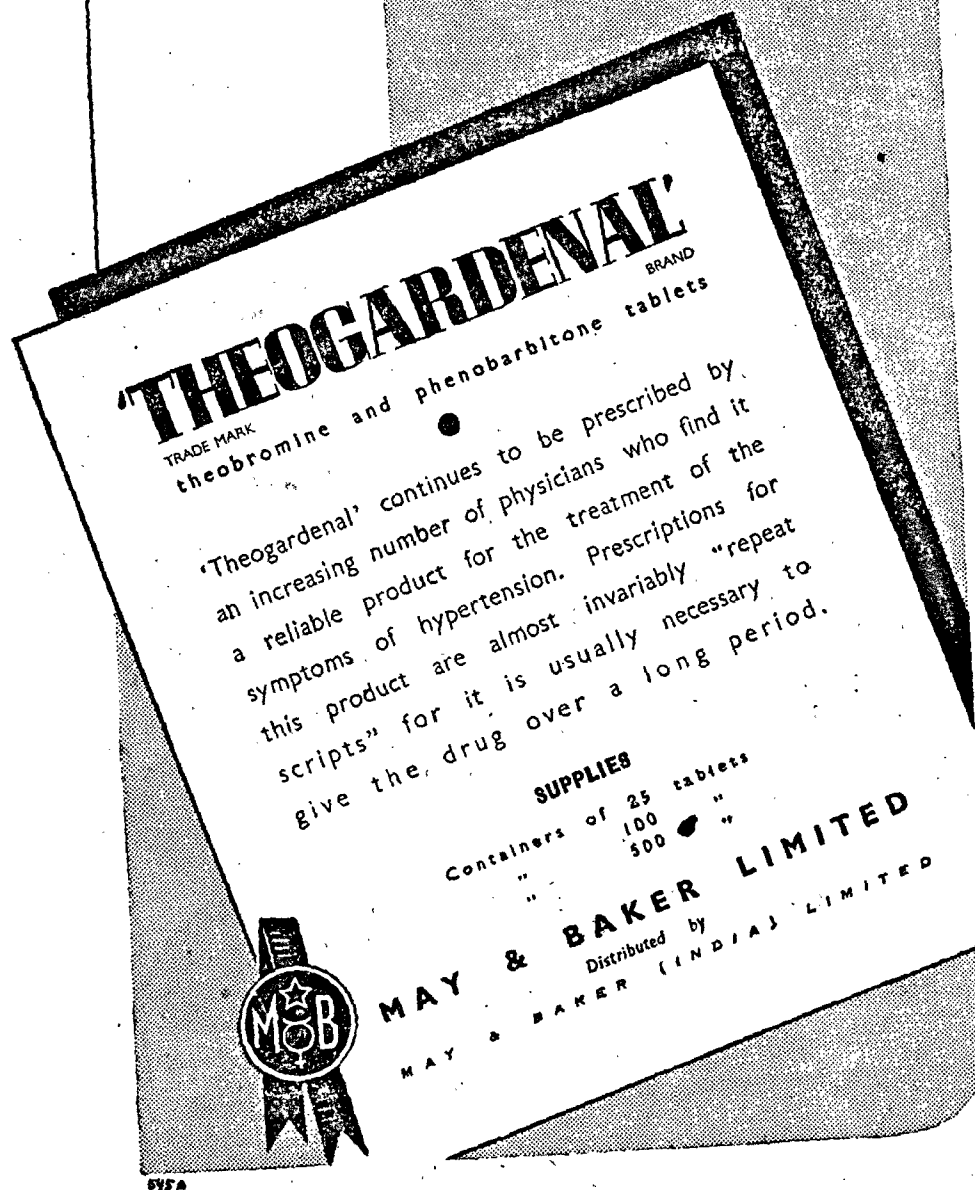
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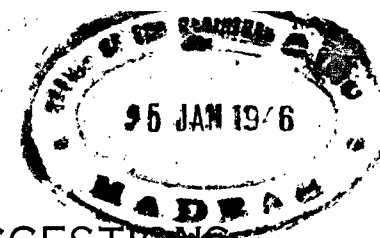
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VOL. XIV

DECEMBER 1945 3885

NO. 12

TONSILLECTOMY—ITS USE AND ABUSE IN CHILDREN*

M. V. SANT, M.S. (BOM.)

Hon. Surgeon, Bai Jerbai Wadia Hospital for Children, Parel, Bombay.

The operation of tonsillectomy is unique in surgery in that it is one of the most extensively performed operations and yet there is so much misconception and ignorance about it. It is estimated that it forms about one third of the total number of operations performed under general anaesthesia in U.S.A. and about 2,00,000 tonsillectomies are done every year in England. In India although reliable statistics are not available, there is no reason to disbelieve that our number will compare favourably with these two countries.

Every day both the physician and the alert layman are getting increasingly cognizant of the importance of tonsils. This can be clearly seen from the records of one biggest children hospitals in India where only 74 tonsillectomies were done in 1932, while that number mounted up to about 350 in 1943, inspite of the fact that many children have gone to the villages on account of the war conditions. The school clinics have been rendering a valuable service by regular periodical examination of the children attending the municipal schools and by having them attended to in time. But there is still a fairly large number of schools run by private or semi-private institutions where there is no medical examination of the children at all. Personally I feel that every child between the ages of 3 and 10 attending any school, must undergo a thorough medical examination, at least once a year, and this should be the responsibility of the State. It is only in this way that we can lay our finger in time on the incrimination tonsils and adenoids and take any action, if necessary to prevent the life-long damage and derive the maximum benefit by a timely operation. There have been views both for and against the removal of tonsils at this age, but I think that with the experience we have gained in the last generation there should be no difference of opinion in condemning to guillotine a tonsil that has been proved guilty of poisoning its master and convicted as such by a competent judge.

If any one doubts the benefits derived in last 20 years from tonsil operations, I would suggest a visit to any primary school and

* Read at 7th Maharashtra and Karnataka Provincial Medical Conference, Sholapur, December, 1944.

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observe the vast changes that have been visible in girls and boys of the present day, and then one cannot but appreciate the truth of the words of that great master, Dan Mackenzie, when he says—"I remember the generation of children before tonsils and adenoide were known. I remember the discharging ears and deafness. I remember the dirty noses and the thick excoriated upper lips. I remember the scrofulous glands in the neck. I remember the vacant stupid faces. I remember the weeping pus. My companions I have seen dying in the middle age of heart diseases contracted in childhood after tonsillitis. Then I turn and look at the young boys and girls of to-day, clean, healthy and stout, and I see this transformation of a race through the influence of a simple operation." When I look back on my own school days I fully appreciate the difference between the children of to-day and my own school friends even in a short span of 15 years.

After having said this much for the operation of tonsillectomy I cannot but feel that the pendulum is swinging rather too much to the other extreme. I have no doubt that quite a large number of children are recommended and submitted for tonsillectomy on inadequate grounds and without proper examination. A visit to an out-patient department of a children hospital will convince you of this. Practically every alternate child comes for removal of tonsils—may be on the advice of the family doctor, a school medical officer or an over-anxious parent. It is very amusing to hear a child coming from the slums of Bombay, when asked about his complaint, telling you only in one word 'tonsils'. They are ever so much convinced about their tonsils that if you tell them otherwise they will refuse to believe you and if you decline to operate they will go to some one else and have their tonsils removed. I remember more than half a dozen such cases where the parents had been kind enough to come and tell me that they got their children's tonsils removed when I had refused to do so, obviously with an underlying suggestion that I would do well to know my job better. I would not blame these people so much as I would the surgeon who operated upon them. It is no wonder then that to-day more tonsils are massacred than is really necessary. In private practice the considerations are many and varied. In hospital practice the junior staff is waiting for 'chances'. A time has come now, when we should pause a little and take stock of the situation.

The first question that crops up in our mind is; "What is the function of the tonsils? Does it serve any useful purpose or is it only a vestigial structure?" Various functions have been attributed to it from time to time, but nothing definite has been proved so far. It is no doubt an organ belonging to the hæmopoietic system supplying the blood with lymphoid cells. But considering the other lymphatic tissue, in the body the part played by the tonsils must be

negligible. An endocrine function was suggested on many occasions but it has never been substantiated. Nor, do tonsils furnish any secretion that can be regarded as protective against infection to the upper respiratory tract. As opposed to this a view is expressed by Griffiths that tonsils form a part of the defence mechanism of the body by absorbing small number of organisms and so establishing immunity by gradual dosage. The maximum enlargement of the tonsils according to Fergusson and Deacon occurs between the ages of 5 and 7. This is a critical period in the child's life in the sense that there is a great change in its oral cavity and general development. It is at this age that the child encounters 'herd infection' from a large school herd which is quite different from the small family herd to which a child has already become immune. Then are we not doing great harm to a child by removing his tonsils, just at the time when he needs them most, only because they appear to have been enlarged? This enlargement may, for all we know, be a purely physiological one. Are we not blasting the very defence that nature has erected? However, until this problem referred to is solved we must keep our minds open on this subject and adopt an extremely conservative attitude, while ablating an organ from the body about whose function we are so ignorant. It is often observed clinically, when tonsils are removed early, that there is a compensatory hypertrophy of the other lymphatic tissue in the throat. Certainly nature cannot be so foolish as to exhibit so much extravagance unless some useful purpose is to be served. Therefore, in the light of the present knowledge we can sum up the whole question of the function as follows:—While the normal tonsil is not essential for the maintenance of life, it certainly plays an important role in the welfare of the individual at least in early childhood.

Having considered the functions let us now consider briefly the indications that are usually put forth for the removal of tonsils. They can be considered under the following heads:—

(1) Nasal obstruction—mouth breathing and difficulty of deglutition; (2) upper respiratory infections—tonsillitis, sore throat and common cold; (3) cervical adenitis; (4) ear complications; (5) lower respiratory infections—laryngitis, tracheitis, bronchitis, pneumonia and tuberculosis; (6) scarlet fever, diphtheria and other diseases; (7) malnutrition and anorexia; (8) rheumatism, chorea and heart diseases and (9) mental deficiency and retarded intelligence.

Nasal obstruction—Nasal obstruction is more often due to hypertrophied adenoids than to enlarged tonsils. Mouth breathing and difficulty in deglutition form the main symptoms and when they are due to enlarged tonsils and adenoids they form a definite positive indication for an operation. But before the tonsils and adenoids are held responsible other defects in the nose must be eliminated. If neglected, nasal obstruction due to adenoids will give rise to a train

of symptoms such as an open mouth, stupid expression, protruding tongue, narrow high arched palate, crowded teeth, and narrow alæ nasi. There is constant running of mucous discharge from the nose. The mental and physical development is retarded. The speech is defective and the ears are usually affected. Unless the condition is immediately relieved it will give rise to permanent changes in the nasopharynx and a typical adenoid facies will develop. If the operation is delayed too long, it has been found that even after the operation there is very little improvement in the symptoms, which persist as before, because the child became accustomed to them. If there is difficulty of deglutition due to enlarged tonsils they must be immediately removed irrespective of the age of the child but it must be remembered that we are thereby rendering the child more liable to infections of the larynx and the respiratory tract. I will discuss this later on.

Upper respiratory diseases—Tonsillitis forms the most common plea for removal of tonsils. More than 90 per cent. of the patients that come for tonsils to the hospital, come for this complaint and countless tonsils are indiscriminately sacrificed without proper investigation and full realisation of the benefits which are derived thereby. It is obvious that if there were no tonsils there would be no tonsillitis and removal of tonsils is by far the surest way of preventing recurrence of tonsillitis. But are we justified in removing the tonsil only because it has been infected once or twice? Has it lost all its usefulness to the host? Do we treat other infected lymphatic glands in the body likewise? Then why this treatment for the tonsils in particular? In early stages it is possible to restore the tonsils to their normal condition by conservative treatment and one must remember that as the child grows in age the frequency of attacks gets less and less and it may be possible by careful treatment to postpone the operation till the child is about 10 or 12 years old. But without a moment's thought these children are needlessly submitted for an operation. It has been proved that the children whose tonsils are removed are subsequently found to be more prone to sore throats and other respiratory diseases of the lower passages, namely bronchitis, tracheitis and pneumonia, than those who have not been operated. This is but natural because the infection which would have met with its first check upwards now travels down with ease due to the breakdown of the first line of defence (*i.e.*, the tonsil). I do not by any means suggest that infected tonsils should not be removed. If necessary they must be removed but before they are condemned they must be thoroughly investigated. Personally I have found the following as a good working rule. If the patient has had three or more attacks of tonsillitis within a year and if the condition of the tonsils does not improve after a conservative line of treatment for 15 days, the tonsils must be removed

I will discuss the question of focal sepsis later. As regards sore throats and colds it has been found that although these conditions do show improvement for a short time after the operation, later on these children are much worse off than those whose tonsils have not been removed and their condition is made worse than what it was before. In selected cases good results have been obtained but it was definitely proved in these cases that the tonsils were the culprits. But let it be remembered that indiscriminate massacre of the tonsils for these conditions not only does not improve the malady but on the contrary makes it infinitely worse. It must also be borne in mind that these conditions are not solely due to infected tonsils but that the patient's environments, habits, hygiene and diet also play an important role in their causation and unless attention is directed to these facts tonsillectomy alone will not be of much use.

Cervical adenitis.—Tonsils are supposed to be the portals of entry for infection of the cervical group of glands but one must realise that the nasal sinuses, scalp, face, teeth and other lymphatic tissue also drain in these glands. It is not possible to cure adenitis by removal of tonsils alone. Before tonsils are removed it must be decided how far these other factors are responsible for the enlargement of glands. Many a time tuberculous infection is said to be transferred from the infected tonsils to the glands, but it has been observed that not more than 4 per cent of the tonsils are found to be infected with tubercle bacilli when associated with cervical adenitis. Like other places in the body this is a local manifestation of a general disease and many a time other foci are found to be existing simultaneously in the body along with the glands. Therefore unless the adenitis is secondary to the tonsillar infection it is not likely to be benefited by removal of tonsils.

Ear complications.—It has been commonly supposed that tonsils are solely responsible for the chronic discharge from the ears, mastoiditis, etc. But one forgets that otitis is a local manifestation of a general disease, such as typhoid, measles etc.; Rickets is another condition which is responsible for quite a large number of discharging ears. If tonsils were solely responsible for the ear discharges then we ought to find otitis more common with so many children moving about with bad throats. It is more the general condition of the child that is responsible for the otitis than the septic throat and in all probability the tonsils are affected simultaneously with the ears by the same causative factor. Therefore unless the general condition of the child is improved little is to be gained by a wholesale tonsillectomy. In the early days I used to remove tonsils rather freely for this condition and I found very few children relieved of their ear discharge if no attention was paid to

their general condition. Nowadays I have adopted a more conservative attitude with more attention to the general health and tonsillectomy is resorted to only in selected cases. So far I have not repented. My experiences being limited I can make no definite statement on this point.

Scarlet fever and diphtheria—It has been definitely found that children do well and are generally benefited by removal of tonsils so far as these conditions are concerned, especially the diphtheria carriers; so whenever this condition is definitely ascertained there should be no hesitation in removing the tonsils.

Malnutrition and anorexia—In deciding whether or not the child is keeping up to the proper development for his age one has got to consider many factors, viz., heredity, environments, diet, hygiene etc. It is most unfair to blame the tonsils alone for this. If the parents are of a small and delicate stature we cannot expect the child to be an athlete. Besides, one cannot go by the rule of thumb and compare every child with the standards laid down in the tables of average weights and heights. One must take an all round view and judge every child as a special case on individual merits. The best criterion for this is to maintain a regular record of the child. If it is found that a child that has been growing and gaining regularly all along, become suddenly arrested in growth in a few months or in a year, then only we can say that the development is interfered with. We must then investigate the cause of it. After having eliminated other factors if the tonsils are found to be septic there should be no hesitation in removing them. In selected cases good results have been obtained. Similarly it is seldom true that the tonsils are responsible for loss of appetite. The best thing to find out if the child has really lost his appetite is to separate the child from the parents and to keep it in the company of other children. Many a time anorexia has been cured by this simple measure. If after a careful examination the tonsils are found to be infected and are known to be poisoning the system by their toxins they may be removed but it is estimated that less than 50 per cent of the children show any improvement after the operation.

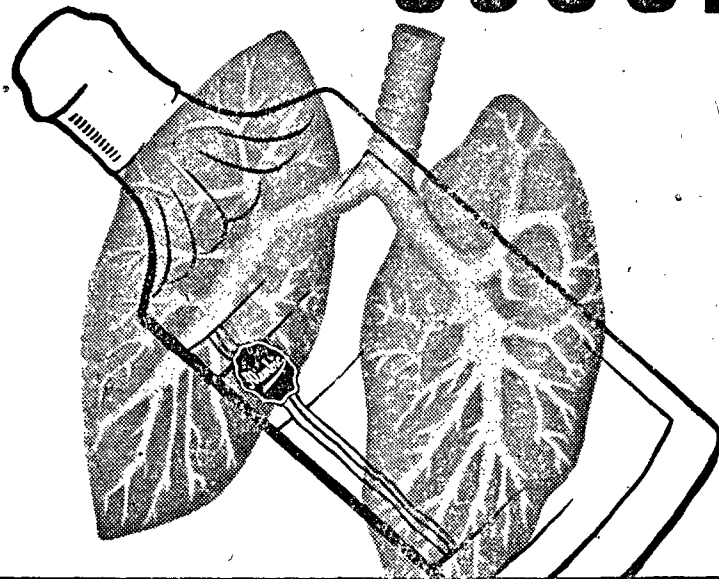
Mental deficiency and retarded intelligence—Here also hereditary influence plays a great role. There is no evidence to enable one to say that presence of tonsils and adenoids retards the mental development and intelligence of the child. I quite admit that an exuberant growth of adenoid vegetations or excessively hypertrophied tonsils will interfere with the normal process of respiration and give rise to general ill health and the train of symptoms mentioned above, and it will indirectly interfere with the concentration power of the child. One should not hesitate to remove tonsils and adenoids under such circumstances, but one must bear in mind that one cannot make a normal child out of a sub-normal one nor a superior

out of one who showed average intelligence just only by tonsillectomy. Very often doctors and parents press for this operation with such an expectation and it is no wonder then that they are disappointed. Where a child is finding it difficult to carry on the school work efficiently and where examination shows tonsils and adenoids to be definitely septic their removal is advisable. Such children frequently find it less difficult to keep up to their school work after the operation.

Rheumatism, chorea and heart disease—I have deliberately kept this subject last. When we come to think about these conditions, we are confronted by that very much vexed problem of focal sepsis about which so much is written and so little is definitely known. It may at once be stated that chorea is not at all improved by an operation on the tonsils and that it at all it is made worse. Very often the operation is recommended with a view to avoid these complications but statistics of Kaiser extending over a period of 10 years show that the development of rheumatic carditis in tonsillectomized children is 1.1 per cent while that in controlled is 1.3 per cent i.e. difference of only 0.2 per cent. So obviously it does not much matter whether the child's tonsils are removed or not. But the fear of heart disease has taken such a firm grip over the minds of both the medical men and the general public that one seldom finds a week passing without coming across a case in which the removal of the tonsils of a child is urged on these indications. Certain things although they do not appeal to reason find acceptance even among rational persons simply because they have been universally mentioned and one cannot gather sufficient courage to go against them. When we come to consider the question of rheumatism we are no better. One cannot guarantee absolute cure by operation nor does an operation serve as a prophylactic measure. At present the evidence at hand does not justify universal adoption of tonsillectomy for rheumatism, although it is found that children subjected to repeated attacks of sore throat have, after undergoing an operation for tonsillectomy, less chance of getting rheumatism than those whose tonsils are not removed. But this number is comparatively very small to justify wholesale tonsillectomy. Once the rheumatic infection has manifested itself tonsillectomy does not safeguard a child against recurrent attacks nor against the development of carditis. In spite of this practically in every rheumatic child the removal of tonsils is insisted upon. We do not know the causative agent of rheumatism nor its etiology. It is equally difficult on inspection to decide whether the tonsils are infected or not. Ragged tonsils, enlarged tonsils, expression of pus from the crypts, and cultivation of bacteria do not necessarily indicate inflammation. Bacteria can always be found on mucous membranes and Kaiser has

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estimated that 40 per cent of the normal children harbour streptococci in their throat without any symptoms whatsoever. The cheesy material found in the crypts is no more pus than that it is a liquid composed of cell detritus, desquamated epithelium, leucocytes and bacteria. It is not always the result of inflammation and is no more septic than the cheesy material scraped from other less accessible sites in the gastrointestinal tract. It is just as unreasonable to consider that the tonsils are infected, because they yield positive culture, as to say that the colon which is swarming with bacteria is infected. Even when pus is detected it cannot be definitely said that this pus is the cause of rheumatism. If the pus in the tonsils is capable of mischief, what about the pus in other places in the body like lung, abscess, bronchiectatic cavities, osteomyelitis etc. I am afraid this question is very intricate and it is more for the physician to decide in this matter whether the tonsils should be removed or not. The removal of tonsils for rheumatism should be considered with due regard to the following points.

- (1) The theory of focal infection is not proved.
- (2) The infecting agent is not known.
- (3) The large number of children whose tonsils are infected and not removed are no worse than those whose tonsils are removed by operation.
- (4) Even after removal many patients do not improve and continue to suffer as before.
- (5) The benefits likely to be derived must be weighed with the hazards of the operation.
- (6) Many so called infections heal after a general systematic treatment, attention to diet and hygiene.

All these factors are to be considered before a child is submitted to an operation.

Finally, a word or two about septic tonsils. There seems to be a popular belief that an enlarged tonsil must be a septic one. So many cases are referred to the surgeon for enlargement of tonsils. I have mentioned above that mere enlargement is more often physiological than inflammatory and it is important to bear in mind that a small buried, dull looking tonsil causes more mischief than a large hypertrophied and congested one. I cannot believe that one can diagnose a septic tonsil in a moment just by a glance at the child's throat. It has got to be considered along with other systemic signs and symptoms and the opinion has got to be offered after the due assessment of all the factors concerned.

In the end, I would like to say a few words regarding the manner in which these operation are undertaken. Everywhere we find that a child is brought to an outpatient department, cursorily examined, usually by a junior intern, and fixed up for an operation on the following day. I have always felt that his task ought to rest

with the senior members of the staff. We have just now seen the various factors that one has got to consider before submitting a child to the operation, and I think a junior inexperienced intern cannot do sufficient justice to these cases. It is very easy to operate but difficult to decide upon an operation.

Both in the hospital and private institutions these children are admitted for the operation in the morning and discharged the same day after a few hours detention in the ward. This is most unfair to the patient. Most of our hospital type patients are living under very deplorable and unhygienic conditions in their houses and a newly operated child has got more risks at home than in a hospital. I would therefore urge that these children should be admitted at least a day before and kept in the hospital for 48 hours after the operation. No operation should be undertaken unless the child has received preoperative treatment at least for a week. In every case urine examination and coagulation time of the blood must be done. I have no time to go into the details but I would like to stress one more point. We must remember that this is probably the first incident of its kind in the child's life. So we must avoid every kind of roughness that is likely to leave permanent impression on the child's mind. It is seldom realised what psychic trauma is caused to the child by rough handling. We should be delicate and gentle to the child and with little persuasion we will get perfect co-operation from him which is not a small asset. The child should not be told that the operation will not hurt him. He will very soon find out that he has been deceived and once he loses faith in us, he will refuse to co-operate with us and will not listen to anything we tell him.

I am aware that I have left many points untouched. The subject is very wide indeed and too much can never be said on it. I have placed before you a few thoughts that have been uppermost in my mind. They should be taken for whatever they are worth.

Extracts.

TREATMENT OF NEUROSYPHILIS WITH PENICILLIN

BY DOUGLAS GOLDMAN, M.D.

The author treated 18 cases of dementia paralytica with penicillin. These were typical cases, with clinical serological and spinal fluid manifestations. These cases were treated on two lines:—

(1) Penicillin by a combination of intrathecal and intramuscular injection.

(2) Penicillin by intramuscular injection and artificial fever.

(1) The routine treatment for the first group was:—

For six days the patients received intrathecal penicillin on the first two days 10,000 units each day, and on the subsequent four days 20,000 units each day. The intraspinal injection was made as follows. The penicillin contained in the vial (100,000 units) was dissolved in 20 cc. of normal saline in the vial. Then 2 or 4 cc. of this solution was drawn in to a 20 cc. syringe. After the spinal puncture was made and a specimen of spinal fluid for examination was obtained, the syringe was attached to the spinal needle and spinal fluid was drawn slowly to the 20 cc. mark on the syringe. The syringe was then detached and the spinal and penicillin solution thoroughly mixed. Then the mixed penicillin and spinal fluid was reinjected slowly, approximately five minutes being taken for the injection. The procedure was repeated daily. During the same period the patient received intramuscular injections of penicillin into the gluteal muscle, 20,000—25,000 units being injected every four hours. A total of 900,000 units of penicillin including the intraspinal injection, was given with the first course. One month after this another series of intramuscular injections alone was given totalling 100,000 units, so that the patients received a total of 1,900,000 units altogether. Spinal fluid examinations were made daily during the period of intraspinal injections, one week later and then at the end of 30, 60, 90 days to determine changes in the spinal fluid.

(2) The second group of 7 cases received intramuscular injections of penicillin and artificial fever. Diathermy induction current and an insulating blanket was used for fever. A total of approximately thirty hours of fever was given to each patient. This consisted of 3 sessions of 2½—3 hours at 105°F or over each week for a period of 4 weeks. After the third or fourth fever treatment penicillin 20,000—25,000 units every 4 hours to a total of 1,000,000 units was given. After one month 1,000,000 units was injected in a similar manner without further fever treatment.

Untoward effects. These were not serious. Intrathecal penicillin gave rise to fever in 8 out of 10 cases which returned to normal

before the treatment was completed. Pleocytosis in the spinal fluid was observed in almost every instance.

RESULTS.

All the patients were in advanced stage of the disease out of 11 cases in the first group 2 patients were practically moribund and they died. Definite clinical improvement occurred in all of the patients. The results in the patients treated with fever and penicillin were practically similar to those in the patients treated with the combination of intraspinal and intramuscular penicillin.

The Dorsalis, 4 such cases were treated with intrathecal penicillin only. The method of administration was the same as that used for the dementia cases. Six daily injections were made with a total of 100,000 units of penicillin. Two patients suffered from tabetic crises and showed immediate improvement. Two were ataxic cases, the period of observation on the ataxic patients is considered too brief to make any conclusion, yet one showed definite improvement.

The Journal of American Medical Association 26 May 1945 (274—276).

CONTROL OF INFECTION IN RECENT WOUNDS BY SURGERY AND CHEMOTHERAPY

BY F. H. BENTLEY, F.R.C.S., Et Al.

War wounds are treated by a two-stage operation. At the first operation, at a casualty clearing station, contaminated and grossly damaged tissues are removed, free drainage is provided. At the base hospital several days later the wound is examined and sutured if possible.

The main object of the first operation is the control of infection and adequate surgery at the first operation is of paramount importance. Later on chemotherapy is used. Sulfanilamide powder alone gave a rate of 57 per cent as infected while penicillin-sulfanilamide powder as 26 per cent (Thomson 1944).

The authors review the study of 706 wounds. The infecting organism was staphylococcus aureus in 94 per cent of cases and streptococcus hemolyticus in 6 per cent of cases. The value of various forms of treatment in control of infection was that incidence of infection was —

With Operation only, without bacteriostatic.	49 per cent.
Operation and sulfanilamide powder.	43 „
Operation and "Miscellaneous" chemotherapy.	40 „
Operation and penicillin-sulfathiazole powder.	25 „

Thus operation alone did not appreciably reduce the incidence of infection compared with the infection rate before operation, and the introduction of sulfanilamide into the wound produced little

further improvement. The use of penicillin sulfathiazole powder caused a significant reduction in infection rate to one-half of the pre-operation figure.

SEPTIC WOUNDS.

The results of operation alone on septic wounds was that incidence of infection was 23 per cent, with sulfanilamide powder 11.0 per cent and with penicillin-sulfathiazole 7 per cent.

The infection was more frequent in wounds which were redressed 42 per cent as compared with 25 per cent in undisturbed wound. So it is always good to seal off the wound with an occlusive dressing at the end of operation.

There was a lower incidence of infection in wounds that had been operated upon in under 12 hours compared with those that had been treated between 12—24 hours.

EFFECT OF SULFANILAMIDE BY MOUTH.

Nearly all the wounded men received 2.5 g. of a sulfonamide at the advanced dressing station. 127 men had received 7.5 g. or more. The incidence of infection and that of septic wounds in these patients were the same as in the general series.

RELATION BETWEEN INFECTION AND RESULTS OF SUTURE.

The presence of pyogenic organisms in the wound at the time suture was performed had an adverse influence on the result obtained. Of wounds uninfected with these organisms 80—85 per cent obtained first class union, whether appearing clean or dirty; where as wounds that were infected, even if appearing clean, showed a lower rate of success. Strains of staphylococci resistant to parenteral penicillin therapy yield to local penicillin therapy as high concentration is obtained in this way.

The British Medical Journal, April 7, 1945.

Medical News & Notes.

THE DR. SIR BHALACHANDRA KRISHNA KT., MEMORIAL GOLD MEDAL OF THE BOMBAY MEDICAL UNION—1945

At a meeting of the Subscribers of Sir Bhalachandra Krishna Kt., Memorial Fund held on 11th July 1924 the following resolution was adopted:—

"That from the funds collected to perpetuate the memory of the late Dr. Sir Bhalachandra Krishna Kt., a Memorial Prize Medal be founded to be awarded every year on the anniversary of his death to a member of the Medical Profession* who submits a thesis or delivers a lecture on any medical subject before a Meeting of the Medical Profession to be held under the auspices of the Bombay Medical Union, preference to be given to one who submits any original or research work especially with reference to Indigenous Medicine on Western lines."

In consonance with the above resolution, members of the profession are invited to submit a thesis or a paper by the 30th April, 1946 to the undersigned for submission to a Selection Committee for making the above award.

The Thesis should be designated by a motto instead of the Writer's name and should be accompanied by a sealed cover containing the name of the writer and his Post-office address. The name of the Prize, the year of competition, the subject of the thesis and the writer's motto should be superscribed on the cover.

The thesis or paper shall have to be read by the prizeman on the day of the award at a meeting of the profession to be held in accordance with the above resolution.

Blavatsky Lodge Building,
French Bridge, Chowpatty,
Bombay, 31st October 1945.

Rustom Jal Vakil,
George Coelho,
Jt. Hon. Secretaries,
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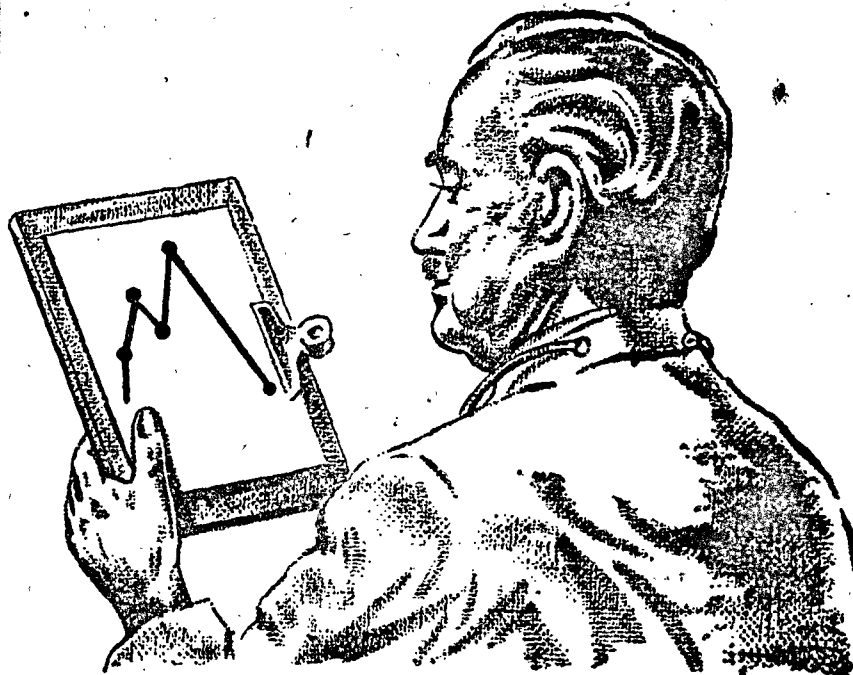
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