THE SURGICAL CLINICS OF SWITZERLAND.

BY

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THERE is no better stimulus for a surgeon than to see how others meet the problems of his art, so when a short time ago I was invited by Professor Gask to join a small party of surgeons in a visit to the surgical clinics of Switzerland I gladly accepted. The party consisted of the directors of the surgical units at St. Bartholomew's, University College, St. Mary's, and the London hospitals (Messrs. Gask, Choyce, Pannett, and Souttar), and Messrs. Girling Ball, Gordon-Taylor, Kenneth Martin, and Morland. We left London on February 28th, and were exactly ten days in Switzerland. During that time we visited Basle, Zürich, Berne, and Lausanne. We spent every available moment in the hospitals and laboratories of these places and in attending lectures and demonstrations given to the students.

I believe it was the first occasion on which a party of English surgeons had visited the Swiss clinics. Nothing could have been more cordial than our reception; we were given every facility for seeing the regular work of the hospitals, and where, as in Zürich, the vacation had begun, special demonstrations were arranged for us. In general we began the day with a lecture demonstration at 8 o'clock and only finished in the wards at a late hour in the afternoon. We saw much that was new and interesting. We believe that the ideas and information we have brought back with us will be of the greatest use in our work, and we hope that they may be of some interest to others.

Basle.

We arrived at Basle at 7.20 a.m. on Thursday, March 1st, and after breakfast made our way to the hospital, where we met Professor Hotz. He received us most cordially, and we found ourselves seated in the front row of his class of fifty students. The professor is a slight, alert man of medium height, 45 years of age, with a quiet incisive manner which rivets attention, whilst his unfailing sympathy with both his patients and his students marked a most attractive personality. After a few words of greeting to his visitors he proceeded with his regular morning demonstration.

A number of simple surgical cases followed one another into the theatre—a child with a dentigerous cyst, a woman with a sarcoma of the upper jaw, a child with an empyema which had discharged through a bronchus. Three students were called down to examine the cases, and the lecturer directed most of his questions and remarks to them. In the background were four assistants, in addition to the sister and the theatre attendant. For each case there had been provided every possible accessory in the way of photographs, radiographs and specimens, whilst the blackboard and epidiascope were in constant use. An hour later the students retired and the lecture room became an operating theatre. We saw two colloid goitres removed under local anaesthesia, with exquisite technique, practically no bleeding, and no pain. Several operations for appendicitis followed, but in these open ether was given by a nurse.

In the afternoon we visited the wards, where 150 beds are under the direct control of Professor Hotz. The cases were grouped according to diseases in small wards containing from three to ten beds—a most convenient arrangement, as thyroids and gastric cases, for example, could be studied and treated as separate groups. The surgical section included a full range of laboratories, x-ray and electro-therapeutic departments, as well as an out-patient department, all under the absolute control of the professor.

In the evening Professor Staelin, the head of the medical section, gave us an admirable demonstration on the treatment of chronic empyema in adults. It was illustrated by superb radiographs and charts, and a whole series of cases was provided for our inspection. It was a fine example of the class of work which can be produced with the help of a group of highly trained assistants, and it was an object lesson in the close co-operation which exists between the medical and surgical sections.

Next day we made an early start with a lecture at 8 a.m., and when I say that in the course of the day we fitted in five clinical demonstrations, watched two surgeons in their operating theatres, and visited the new Institute of Anatomy, I think it will be agreed that we did not waste our time. We were left with the impression of demonstrations superbly staged, of a great wealth of clinical material organized as is only possible when it is under the control of one head, and of apparatus and accommodation provided for teaching without any regard as to its cost.

For sheer technical perfection it would be impossible to surpass the demonstration given by Professor Hotz to a group of students just entering upon their surgical training. A case of tuberculous spondylitis with severe deformity was shown, and the results of such a deformity discussed from the point of view of anatomy and physiology in terms readily understood by his audience from their knowledge of these subjects alone. The demonstration was illustrated by superb specimens, both dry and bottled, and by diagrams, whilst cases of lumbar abscess and of paraplegia were brought in to illustrate complications. The preparation of such a demonstration must have involved a large amount of work both for the professor and his assistants, but it gave to the students a clear view of surgery as a reasoned science and a high standard for their own clinical study.

In the afternoon we visited the new Anatomical Institute recently erected and equipped by the Canton of Basle at a cost of £100,000. I have seen in England no school for the teaching of any subject that could in any way compare with it. An open position and fine architecture form a prelude to spacious dissecting rooms, research laboratories equipped with every modern appliance, and a lecture theatre which did everything but speak. As teachers ourselves under somewhat different conditions, we found it difficult to imagine what teaching must be like when the pressure of one button brings up a fresh blackboard or a new drawing, and another excludes daylight in a few seconds, where every possible dissection is ready to hand, and where one's voice is never drowned by the roar of traffic.

Near by we saw the foundations of the new maternity wing of the gynaecological clinic. It is to cost £200,000 and when completed will accommodate two-thirds of the women of Basle in confinement. What may not the future of Switzerland be when a small canton is prepared to provide such resources for the health of its children and the training of its medical men?

On Saturday we were privileged to witness a very remarkable demonstration. It is the custom on Saturday morning for the whole medical staff to meet in the lecture theatre of the pathological department. We found all the material from the operations and *post-mortem* examinations of the week neatly arranged on trays. Professor Roessle gave a rapid description of each case, occasionally referring to one of his audience for some clinical detail about his case.

Such a review by the medical and surgical staffs of their week's work must be a wonderful stimulus to efficiency. It supplied us with considerable food for reflection.

Zürich.

The head of the surgical clinic at Zürich is Professor Clairmont, a pupil of von Eiselsberg of Vienna. He is a man of 47, of dominating personality, and a fine exponent of the minute technique of the Vienna school. We met him in his operating theatre at 8 a.m. on Monday, March 5th, and saw a varied series of operations including Lericq's operation on the brachial artery for Raynaud's disease in a woman of 38, a thyroidectomy under paravertebral anaesthesia, a laminectomy under local anaesthesia, a nephrectomy for tuberculosis, and a cholecystectomy. Each operation was carried out with the most elaborate ritual and extreme minuteness of detail, occupying a very long time in abdominal work. The professor was surrounded by a large number of highly trained assistants, one or other of whom, as a rule, completed the final stages of the operation.

In the afternoon we were shown round the hospital. The patients were grouped in small wards, containing from four to ten beds, largely in accordance with disease. The

most elaborate care was taken in the examination of the cases and in the keeping of records. We saw special rooms equipped for basal metabolism, for continuous bath treatment, and for the making of plaster casts. In one room we were shown a most remarkable collection of models of diseased conditions—for example, carcinomatous ulcers of the breast and face, chronic ulcers of the stomach, and deformities. The specimens were so perfect as to be almost indistinguishable from the original conditions. They were made of wax by an artist who is retained entirely for this purpose, and who uses a process of his own invention. In addition, two artists devote the whole of their time to the drawings of specimens and cases. We saw superb records—photographic, water-colour, and pencil. A small library, well equipped with modern literature and journals, is provided solely for the use of the assistants.

The x-ray department entirely eclipsed anything we had ever seen. For diagnosis there was a large department with many sets of apparatus, all of the most modern type. The rapidity with which extensive examinations could be carried out was very remarkable, the actual time occupied in discovering, examining, and photographing a duodenal ulcer being less than four minutes. It is true that we obtain equally good photographs, but at the cost of enormously greater labour to the staff. The apparatus for treatment was installed nine months ago by Siemens and Halske. It is entirely in duplicate, and so enclosed that injury to the operator is impossible. The transformer has an output of 500,000 volts and is placed in a room beneath. By means of an ionic quantimeter the dosage at any depth in the tissues can be measured with mathematical accuracy. To compare it with any ordinary apparatus is to compare the latest Rolls-Royce with the cars that made the first journey to Brighton.

Berne.

Professor de Quervain is a short, thick-set man of 50. He came from Basle to Berne in 1918, following Kocher, who had raised the surgical clinic of Berne to the premier position in Switzerland. Nothing could be greater than the contrast between Berne and the clinics we had just seen. The neat dexterity of Hotz, the irresistible driving force of Clairmont, were replaced by a slow technique and an entire absence of any regard for external appearances. But though the technique looked slow the operations did not occupy an excessive time and the condition of the patients next day was extraordinarily good. We saw two operations for goitre, one for appendicitis, and a resection of the stomach for carcinoma in a man of 59. In each case local anaesthesia was employed, assisted in the stomach case by splanchnic anaesthesia, and in the end by a general anaesthetic.

The Berne clinic differs from the others in that it only controls 100 of the surgical beds of the hospital (600 beds in all). Drs. Arnt and Wildbolz were in charge of the other surgical beds, and were evidently regarded by Professor de Quervain as equal colleagues. To the clinic are attached its own laboratories for clinical and pathological examinations, x-rays and microphotography, a large amount of the routine work being carried out by a sister. As might be expected in the home of thyroid surgery, great stress is laid on the investigation of basal metabolism, and a room was set aside for this purpose. The professor also told us of a series of experiments he is conducting on the effect of thyroid secretion on rats. They are placed under a bell jar and the air aspirated. The normal rat vomits when the pressure reaches 300 mm. of mercury. Rats fed on thyroid, or the blood of patients with exophthalmic goitre, react at 500 mm.; but rats given blood from cretins reach a pressure as low as 250 mm. before reaction occurs. The method is being used practically for testing the strength of thyroid preparations.

De Quervain left upon us the impression of a powerful brain devoted not so much to the technique of surgery as to its larger problems; the problem which at present absorbs him is endemic goitre and the cretinism which accompanies it. The Swiss goitres are of the colloid type; adenomata are uncommon, and Graves's disease is very rare. The contrast with English cases is very remarkable, since with

us enlargement of the thyroid is so frequently accompanied by excess of secretion, whilst in Switzerland the reverse is the case. An interesting attempt to control the disease is the addition to commercial salt of a small proportion of potassium iodide. In this form, or in chocolate tablets, iodine prophylaxis is now being tried in Switzerland on a large scale amongst the school children.

To spend a day in Berne is to realize how grave is the problem for the Swiss nation. A large proportion of the women seen in the street and many of the men have goitres. The two porters who carried our bags to the station were half cretins. A large proportion of the population is of the slow, phlegmatic, hypothyroid type, and big institutions have to be provided for cretins and mongols, unable to care for themselves. Yet even this has its compensations, for, as de Quervain pointed out to us, the Swiss were too phlegmatic to worry about the war. A thyroid secretion has apparently proved an expensive luxury to the other nations of Europe.

Lausanne.

We met Professor Roux in his lecture theatre at 8 a.m. on Friday, March 9th. He is a man of 66, with curly white hair and gleaming eyes. His energy is amazing, and from the minute when he began to lecture at 8 o'clock till he finished operating at 1.30 p.m. he never ceased to talk or to be the driving power of the whole clinic.

He starts every morning with a lecture demonstration at 8 o'clock (in summer it is sometimes 6), at which every student must be present. Cases followed one another into the lecture room to be demonstrated by Roux with a wealth of reminiscence and an incisive and apposite wit which I have rarely heard equalled. Two students were called down to examine each case, and for a nervous beginner it must have been a somewhat terrifying experience. We ourselves shared the students' anxiety, for more than once the professor turned to us and asked us in rapid French the views we held in England on some subject. Fortunately he did not press his questions too far, or I am afraid our French, at least, would have been unequal to the occasion. Always courteous, never disturbed by any mischance, we realized that in him there lived a great personality, stimulating all with whom he came into contact, adored by his colleagues and students, and almost worshipped in Lausanne.

The last case was that of a woman in bed with a large pelvic tumour. Having discussed for half an hour every possible diagnosis, Roux wakened up the woman, who had fallen asleep, and asked if she would mind if he made a little incision to see what the tumour really was. As she raised no objection an anaesthetist was called in, the lecture room was rapidly converted into an operating theatre and the patient transferred to a table. A generous incision revealed an enormous mass of carcinoma, apparently arising from the right ovary, and certainly involving everything in the neighbourhood. Nothing daunted, the professor proceeded to separate it from its surroundings with amazing speed and dexterity. He was soon standing ankle deep in swabs and debris, for everything found its way to the floor, but the tumour came out with very little damage to the patient, who was swept away into an adjoining room to have her abdomen closed by an assistant. The floor was swept up with a large besom, and in a breathless stream cases followed one another through the theatre, amongst which I at least noted two goitres, two appendix cases, and a very extensive gastrectomy. When half-past one arrived we were all in a state of collapse, but the professor seemed as fresh as ever. For five and a half hours he had never ceased for one minute to talk and to demonstrate.

Several motors were waiting for us at the doors of the hospital, and we were driven off by Professor Roux to a magnificent lunch. It was my fortune to sit beside the professor, and though he now looked old and tired, he continued to pour out reminiscences, whilst I gathered together all the French I could muster to stimulate him. He spoke of the difficulties of his early boyhood, and of the life of a poor Swiss peasant. He reminded us how Swiss chalets are all built on the side of a hill to face the south, and he told me that it is the custom for the father and mother to live and work in the sunny front room, whilst

the children live as best they can in the cold, dark, airless room facing the hill behind. But, said he, on a cold night they could always sleep with the cows, and many a night he had gone to sleep nestling against his father's cattle.

It seemed to me the finishing touch to a great personality. When the surgeons of to-day were boys at school Roux was one of the giants of surgery—a man whose name will live beside those of Lister and Paget, who to-day is the idol of his country, and yet could speak naturally and simply of his humble boyhood as a happy reminiscence. Professor Roux is a prince among surgeons, but it is not only as a surgeon that he will live in my memory.

SOME IMPRESSIONS.

From our short visit we gathered certain impressions which it may be well to summarize.

1. Teaching.

In all the clinics we visited the teaching of the students centred entirely round organized demonstrations in the lecture theatre. In this respect it differs fundamentally from the methods we adopt in this country. In bedside teaching given to small groups of students by individual members of the staff, our students have an opportunity to which the Continental system affords no parallel. We, on the other hand, can give our students nothing comparable to the demonstrations we have seen abroad. We were all agreed as to the value of such demonstrations, prepared by highly trained assistants and perfectly staged with all the resources of the modern lecture theatre. As a stimulus and as a standard, both for the student and the teacher, they are of real value, and in my opinion no educational system can be considered satisfactory in which they do not take a prominent place.

2. The Staff.

At each clinic the professor held a unique position, his assistants being essentially subordinates. Such a system lends itself to a co-ordination impossible for ourselves. On the other hand, the system depends for its success absolutely upon the personality of one man, whilst it greatly limits the opportunities and destroys the initiative of everyone else. If each of our firms had attached to it a paid assistant we should in a large measure obtain the advantages we saw of help for the teachers and training for the younger men without the disadvantages of centralization. The head of each clinic was given full opportunities for private practice. In Basle a private section was run by the hospital for the professor, definitely as a recompense for his services. In Zürich he was accommodated in a fine institution controlled by the Red Cross Society.

3. The Hospitals.

The hospitals belong to the town or canton. So far as we could gather they do not depend on voluntary support. A charge of about 6 francs (5s.) a day is made for each patient, but the whole or greater part is defrayed by a national insurance, to which the whole of the working classes contribute. The fees of the students are for the most part paid from national sources, and the cantons and towns vote large sums for new buildings and equipment, both clinical and educational.

Every hospital we visited was equipped with first-class operating theatres, and with clinical theatres (usually many) far superior to anything of the kind we had ever seen. I have seen nothing in England to compare with the anatomical department just opened, or with the maternity department in course of erection at Basle.

It is most improbable that at the present day such equipment can be provided in England from private sources, and it was our unanimous opinion that our only hope of raising the equipment of our training schools to the level of Switzerland lies in the support of our hospitals by the State. The Swiss have recognized the health of their nation and the care of their sick as primary national duties, not to be left to the vagaries of private enterprise. And they have realized that a highly trained medical service is as valuable an asset as a nation can possess. I hope that we may soon be given an inspired glimpse into the obvious, and follow their example.

THE SPAHLINGER TREATMENT.

We published three weeks ago (May 12th, p. 830) an article giving a general review of the position with regard to the method of the treatment of tuberculosis at which M. Henri Spahlinger has been at work for the last ten or twelve years. Reference was there made to the complete and partial serums and the complete and partial vaccines that M. Spahlinger had produced and had placed at the disposal of certain physicians, although material has not been made generally available.

It will be of interest to give some further particulars about the various products which, as has already been implied, can be classified under two headings, namely: (1) vaccines; (2) anti-serums. A great majority of the cases of tuberculosis treated are given vaccines. Serum is only used in rapidly progressive cases, or in special emergencies.

The Vaccines.

These products are essentially similar to the tuberculins, the use of which from time to time has been advocated. M. Spahlinger has modified and elaborated the methods for the preparation of tuberculin or vaccine, and claims to have obtained products which are more effective than other preparations. Tubercle bacilli are treated by various processes and four vaccines are made. The complete course of vaccine treatment consists of successive courses of injections of each of these four vaccines.

Preparation of the Serum.

What is called the complete anti-serum is made by mixing a large number of (partial) anti-serums, each obtained from a horse which has been subjected to some particular course of injections. The serum of each horse which is added to the mixture is called a partial anti-serum. The partial anti-serums are of different kinds; some are obtained by injecting tubercle bacilli or products of tubercle bacilli into horses, some by injecting other varieties of bacteria which are found associated with the tubercle bacilli in cases of mixed infections. The former group is further divided into bacteriolytic serums and antitoxic serums. The antitoxic serums are prepared by injecting products which are called toxins. These products are obtained from tubercle bacilli by somewhat elaborate methods.

The methods imply nothing new in principle and are essentially those which have been tried sometimes with and sometimes without success in other bacterial diseases.

It is sought (1) to produce active immunity against the tubercle bacillus and its toxins in the patient by the injection of a vaccine, and (2) to make an anti-serum which has antitoxic and bacteriolytic properties and to use this anti-serum to confer passive immunity on a human being.

These are the general principles which have inspired every worker from the times of Pasteur and Behring. The only novelties relate to the technical details and exact methods of preparation of the substances which make up the vaccine and of the various products which are used to inoculate the horses. The exact methods employed are secrets; at any rate the full details which would be needed by anybody who wished to work at the method have not been published. As regards the vaccine, an attempt is made to produce an active immunity by the injection of a series of substances obtained from tubercle bacilli. We do not know of any published experimental data which show that animals inoculated with these vaccines develop immunity against the tubercle bacillus. There remains the evidence to be derived from clinical observations on cases treated with these vaccines. On this point it is not yet possible to form an opinion; it is notoriously difficult to obtain satisfactory evidence unless a very large number of cases are treated and observed under strict experimental conditions, which are difficult to maintain in the ordinary course of medical work.

Effects of the Anti-serums.

It is claimed that the mixture of serums, which is called complete serum, contains both bacteriolytic and antitoxic serums. Antitoxic serums are prepared by injecting horses with preparations which are called ecto-toxins and endo-toxins. We have not seen any published experiments which