A NOTE ON SURGERY IN MOSCOW

BY

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Much has been written on medical organization in the Soviet Union. The more specialized field of surgery has possibly not received the attention which it deserves. Perhaps an account of what I saw during a recent visit may prove of interest to others.

The Sklifassovski Hospital, or Institute of Emergencies has 450 beds—200 devoted to general and surgical emergencies and 250 to traumatic surgery. This institute receives emergency cases from all Moscow. Since the population of Moscow has grown to four and a half millions as compared with one and a half millions seventeen years ago, this number of beds is quite inadequate, and a further 350 are being added. Hospital extension is constantly being made all over the Soviet Union, and in this respect Moscow is no exception. Like emergency hospitals everywhere else the Sklifassovski is always full and wards are crowded. Pressure on beds is eased by the early transfer of suitable cases to convalescent homes, and by drafting minor cases to other hospitals. In this connexion the homes for incurable cases, of which I shall have more to say, are useful for taking in patients who are likely to be invalided for a long period—bad spinal injuries, fractured pelvis, severe burns, and so on.

Abdominal Surgery

The institute, which is under the direction of Professor Yudin, is a hive of activity. Two operating theatres are busy night and day. Professor Yudin was on holiday, but I had the privilege of watching the work of Dr. Arapov, one of his first assistants. He told me that it was not uncommon for four or five partial gastrectomies to be performed in the course of a single night, since the practice is to treat perforated gastric and duodenal ulcers by gastrectomy within nine hours of their rupture. The mortality rate, I was told, for all cases of partial gastrectomy is 5 per cent.

Dr. Arapov uses the Billroth I method, and for anaesthesia does a regional field block, infiltrating the under-surface of the peritoneum with 1/2 per cent. novocain. Gently pulling on the greater curvature, he infiltrates the lesser omentum with about 20 to 30 c.cm., and the gastrocolic omentum in the angle between pylorus and duodenum with a similar amount of the same solution, which seemed a rapid and simple procedure. Vichnevsky, of the Institute for Blood Transfusion, has perfected a method of local anaesthesia for abdominal work which amounts to massive infiltration of the mesenteries with dilute solution, the fluid gravitating into the retro-peritoneal tissues, a method of which I heard several Russian surgeons speak with enthusiasm.

Storage of Blood for Transfusion

It is at the Sklifassovski that the method of procuring blood for transfusion popularized by Professor Yudin is in use. Within six hours of death from suicide or by

street accidents, or from angina, blood is drawn off, typed, subjected to the Wassermann test, collected in jars, and preserved in ice chests. Post-mortems on the cadavers exclude the presence of disease, which might render the blood unsuitable for transfusion. The special merit of this method lies in the fact that the blood cannot clot, thus obviating the use of citrate. As is well known, a few hours after death blood liquefies through fermentative processes, and provided it is kept in cold storage it will remain unclotted. Such blood is not kept for longer than six or seven days, and since one cadaver yields about three to four pints there is always a plentiful supply of typed blood available for emergency purposes. Moscow surgeons are prodigal in their use of blood transfusion, so that it is a common sight to see, in the course of an operation, a junior assistant walk in unobtrusively and "up-end" the contents of one of the jars of preserved blood through a needle into the saphenous vein of the patient. The objection to this method is that this blood has not as high a haemoglobin index as fresh blood, and in most

of the other hospitals blood is obtained in the usual way from donors; but in the Sklifassovski the use of preserved blood is a routine measure.

Like all Moscow hospitals the Sklifassovski has small wards devoted to the immediate post-operative care of patients who have undergone a serious operation, after which they are sent to bigger wards. But again, like most other Moscow hospitals, these are overcrowded and the equipment is of the simplest. As a result, judged by our standards, the wards are cheerless.

I was shown the very efficient method of bringing in emergency cases. A com-

plicated system of electrical devices regulates the dispatch of ambulances. Each ambulance takes a doctor with it, and it is a matter for some pride with the staff of the Sklifassovski that within one minute of receiving a call a complete unit is on its way. Coloured lights on the main roads near the hospital signal ambulances which may have been sent on a false alarm to return, and the central station in the hospital is in constant communication with them.

The Sklifassovski is used for post-graduate instruction only. The Botkin Hospital, a large general hospital, similarly restricts its hospital practice to post-graduates. Many of the surgeons at the Botkin are women. There I saw Dr. Thal, Professor Otchkin's first assistant, operating. She advocates partial gastrectomy as the method of choice for duodenal and gastric ulcers, and uses Finsterer's technique. For carcinoma of the rectum the combined abdomino-perineal operation is done here, and some operations for inguinal hernia were being performed by Bassini's method.

Surgery of the Central Nervous System

Professor Burdenko was kind enough to take me round with him to the Neuro-Surgical Hospital and to the First Moscow Hospital. He is the director of a surgical unit at the First Moscow, chief of the Neuro-Surgical Hospital, president of the Medical Society of the U.S.S.R., president of the All-Union Surgical Society, and heads the Prosthetic Committee of Military Surgeons. He holds

Professor Burdenko operating at the Neuro-Surgical Hospital. In the foreground is the apparatus for a constant record of the arterial pressure.

the Order of Lenin, the title of Honoured Scientist of the U.S.S.R., and is an elected member of the Central Executive Committee, a Governmental body. He is perhaps best known to us through Dr. Harvey Cushing's quotations of his work on the neurogenic theory of peptic ulceration.

Professor Burdenko teaches and practises general surgery. I saw him do several gastric and orthopaedic operations, but his specialty is the surgery of the central nervous system. He works at the Neuro-Surgical Hospital, which has 100 beds. There is a surgical staff of four assistants and four registrars, with, in addition, a group of neurologists, radiologists, and biochemists. I was shown a large number of x-ray films demonstrating the arteriographic method of localizing brain tumours with the use of injections of thorium salts. There were numerous ventriculograms on record in the diagnostic rooms, and the museum contained many pathological specimens.

The operating theatres are air-conditioned, a special theatre being used for septic cases. Their technique in brain operations follows closely that elaborated by Cushing, and for anaesthesia they use avertin and local. In operations on the fifth nerve they favour Dandy's occipital approach, where the second and third divisions are chiefly involved. A continuous blood pressure record is obtained throughout operations by means of an apparatus perfected at this institution. A cannula is tied into the dorsalis pedis artery, and a graphic record indicates the patient's condition at any moment during the operation. The wards have recently been renovated and the whole institution enlarged. To it come most of the complicated neurological cases in the Soviet Union, though there are neuro-surgical hospitals at Leningrad, Rostov, Gorki, and Kharkov.

The First Moscow Hospital

At the First Moscow Hospital in the Pirogovskaya (named after the famous Russian surgeon Pirogoff) there are three surgical units, of which Professor Burdenko's is one. It has 160 beds, and is in charge of ten chief assistants and twenty house-surgeons. This is an undergraduate teaching hospital, and since students come in two complete shifts, one in the morning and early afternoon and one in the late afternoon and evening, a great deal of arduous teaching work devolves on the teaching staff. The second shift is necessitated by the number of students who do other work unconnected with medicine for part of the day and wish to become doctors. After the third year this duality ceases, and medical study is regarded as whole-time work. An appreciable number of nurses become doctors in this way. These students are, of course, paid a stipend while pursuing their studies.

In the museum of the First Moscow there are a large number of specimens showing gastric erosions and small ulcers in cases where tumours of the third and fourth ventricles have been present. It is this phenomenon which first led Professor Burdenko to propound the neurogenic theory of the causation of gastric and duodenal ulcers. Dr. Smirnov, who is chief research biochemist to Professor Burdenko, told me about her experimental work on shock. She has many records of experiments which show that the fall of blood pressure in shock is due to the inhibition of the action of adrenaline by its quinone oxidation products. She is now working on the problem of eliminating these oxidation products.

Ample provision is made for chronic and incurable cases. These homes have a staff of fully trained doctors and nurses. Patients do not pay, but the pensions which they receive for old age and ill-health are appropriated as payment while they are inmates.

In the U.S.S.R. it is usual for three or four operations to be performed simultaneously in one theatre. Since the major part of surgical work is done under local anaesthesia it is a common thing for the patient who is having an abdominal operation to find himself a few feet removed from another who might be undergoing an amputation of the thigh. This practice is not unusual elsewhere on the Continent, and when the question was raised as to whether the psychological effect on patients was harmful

it was met with some surprise. Soviet surgeons maintain that a nervous patient is no more nervous in such an atmosphere than he would be in a theatre devoted exclusively to his own case. This may, however, be merely making a virtue of necessity, and more adequate facilities will in the future, I have no doubt, lead to a different outlook.

Simplicity of Technique and Equipment

Russian surgery is characterized by a simplicity in technique and a bareness of equipment which is obviously a carry-over from the lean years. We are accustomed in modern theatres to an elaboration of technique, a paraphernalia of gaily coloured sheets, many instrument trays, and much accoutrement, so much so that in some of our hospitals a surgeon going in to operate takes almost as much care in dressing for the part as a leading actor. This may be due to an overdose of seeing ourselves as others see us on screen and stage. Whether it is actually reflected in our mortality figures is something I leave others to decide. In Moscow operating theatres at the moment surgeons are limited in their choice of "gadgets," with the result that their operations have a kind of Spartan simplicity which appears almost indecent to us. Suture materials are confined to silk and catgut. Surgical gloves are incredibly bad, and fit as loosely as our post-mortem gloves. It is a tribute to the skill of their surgeons that they are able to work in loose, ill-fitting gloves.

Nurses' homes are regarded as an anachronism. It is considered wrong to coop nurses up in institutions and subject them to regulations and restrictions which are inevitable in such circumstances. Many nurses are married, and they come to their work in the Moscow hospitals in the same way as workers going to a factory or office. Sometimes blocks of apartment houses are built close to the hospitals for the convenience of the nursing staff, but their husbands and children, if any, live with them. I ought to add that since a nurse's uniform consists mainly of a white overall put on over everyday clothes, and since Moscow's everyday clothes at the moment are of very poor quality, nurses do not convey an impression of neatness and cleanness. This is sure to be improved upon as the rapidly increasing standard of living advances.

It is amazing to see the preponderance of women medical students. At the First Moscow fully 75 per cent. of the medical students are women. This is due to the fact that for the present men are more attracted to engineering and technical work.

I have mentioned the fact that some of the operating theatres are air-conditioned and that many others will follow suit. I feel that surgeons everywhere should agitate strongly for this boon in their theatres. It is almost a tradition with us that a surgeon should work in an exhausting atmosphere of heat and little ventilation. The theatres of the Post-Graduate Hospital at Hammett are an example in this country of work done under the best conditions.

Economic Status of Surgeons

I shall conclude with a few words on the economic position of surgeons in the Soviet Union. Salaries vary, and more responsible posts are better paid. All medical salaries have recently been increased. A surgical specialist attached to a large hospital would receive about 1,500 roubles a month. The average rate of pay for the whole population of the Soviet Union is now about 160 roubles a month, so that 1,500 represents fairly good remuneration, though variations in the price of goods make all estimates of income difficult to assess by our standards. There is, of course, no unpaid voluntary work, and in most cases wives of doctors work and earn a salary as well. Housing conditions are still so poor that a surgeon in Moscow may have to be content with a two-roomed or three-roomed apartment for himself and his family, and at the moment very few surgeons have a car at their disposal, so that they must rely on Moscow's overcrowded public transport service.

Groups of Soviet surgeons occasionally attend conferences in other countries. They themselves hold frequent congresses. It should help the advancement of surgical knowledge, both here and in the Soviet Union, if groups of British surgeons would undertake visits to the surgical clinics of the Soviet Union, and if they in turn would invite their Soviet colleagues here. Arrangements for such visits could be made through the Society for Cultural Relations with the U.S.S.R. or possibly directly through the Soviet Embassy.

MEDICAL SCIENCE SINCE HUXLEY

ABSTRACT OF PROFESSOR EDWARD MELLANBY'S LECTURE

The Huxley Biennial Lecture was delivered at Charing Cross Hospital Medical School on November 28th by Professor EDWARD MELLANBY, who took as his subject "The Rapid Advance of Medical Science since Huxley."

Huxley died forty years ago, and it was difficult nowadays, said the lecturer, for young people to realize the influence exerted by his personality and writings at the time when he himself was an undergraduate. The first prize he ever got at Cambridge was invested in the purchase of all Huxley's works. In those days it was customary for undergraduates to discuss before various societies the topics which had interested them; on reading again some of his own undergraduate efforts he had been impressed by the extent to which he must have been influenced by Huxley. Many of Huxley's teachings had now passed into common currency; many of his views, intensely controversial at the time, were now accepted as a matter of course. His *Collected Essays* were the finest English literature ever written by a man of science. Huxley was a medical man, trained at the Charing Cross School, but he was no ordinary medical man. The treatment of disease never interested him, and he never practised. But that hospital might pride itself that, if it did not make Huxley a great doctor, it did help to provide him with the early training which made him a great scientist and philosopher.

The Conquest of Disease

It must be puzzling to those who read the *Essays* to notice how little space Huxley devoted to medical science as opposed to physical science. The explanation was that medical science had hardly begun in his day, and even biological science was largely observational. In an essay in 1866 Huxley remarked: "We have learned somewhat of Nature; we only partly obey her. Because our knowledge is imperfect and our obedience not complete typhoid is our companion and cholera our visitor." If Huxley were to enter Charing Cross Hospital now he would discover a revolution in the diagnosis and treatment of disease. He would find many diseases being treated and cured for which in his day there was no cure or control apart from *vis medicatrix naturae*. Modern advances in nutrition would have pleased him, confirming all he had written about biological activity. He would have rejoiced also to see the rise of antiseptic surgery and the general acceptance of the principles of asepsis. In some years in the 'sixties the deaths from scarlet fever numbered over 90,000. Huxley declared that the nature and cause of this scourge would one day be as well understood as were those of silkworm disease in his own time, and the long-suffered massacre of infants would come to an end. Since then the organism of scarlet fever had been isolated, its structural and chemical activities detected, and an antitoxin prepared. The killing power of the disease had decreased tremendously. In 1875 the deaths numbered 720 per million of the population; in 1934 only 20 per million. Professor Mellanby gave the results of a large-scale experiment in London. During the last two

years 1,877 children received treatment by the intravenous injection of scarlet fever antitoxin, and 1,419 received the same treatment except that no serum was injected, and these therefore could be regarded as controls. The tendency was to give the worse cases the antitoxin treatment, so that really the figures were weighted against those receiving this treatment. Among the 1,877 cases so treated only two deaths occurred, and among the 1,419 cases twelve deaths, while the average stay of the former in hospital was 18 days and of the latter 33.9 days. He thought Huxley would have rejoiced at seeing this scientific advance.

Huxley and the Experimental Method

Up to this point, said the lecturer, Huxley, had he been present, would have been distressed by this paean of praise, and would probably have departed, so he proposed to say a few words in criticism of him in the hope of bringing his spirit back again. He had grave doubts whether Huxley ever appreciated the significance of the experimental method of investigation as a principle. It was surprising to him that Huxley should never have specified or used the words "experimental method"—in fact, the word "experiment" itself was seldom used by him. It might be thought, perhaps, that he took it for granted that the experimental method was synonymous with scientific research, but there was other evidence that he did not appreciate experiment—as, for example, his criticism of Francis Bacon. Huxley hated the idea of pursuing knowledge because of the practical results; it must be pursued for its own sake. No man received greater admiration from Huxley than Descartes, who accepted and preached the experimental method and extolled the work of Harvey on the circulation of the blood as pointing the royal road to discovery, yet Huxley never seems to have mentioned this aspect of Descartes' writings, except casually.

Frankly, this attitude of Huxley disturbed him. Huxley was more an exponent of science than an active investigator for many years of his life, yet here he was scorning the particular views of his brother philosophers Bacon and Descartes when, with wonderful foresight, they proclaimed the experimental method which had so greatly transformed the world. Huxley was an investigator of the observer type, and this might have hindered his appreciation. To quote Lord Moulton, "When reduced to observation, science crawls; as you can use experiment science advances rapidly." The common use of the experimental method had been the greatest factor in the advance of medical science since Huxley's day.

One of the greatest triumphs of the experimental method had been to establish on the firmest basis a view advanced by Claude Bernard in 1865, that many diseases were due to the abnormal working of processes which, when physiological, resulted in good health. Health and disease were often different aspects of the same thing. When the innumerable chemical agents were present in the right amount and working in harmony perfect health resulted; when unbalanced and inadequate the result was ill-health. The modern methods of medical science were laid down in an astonishingly specific way in Claude Bernard's *Introduction à la Médecine expérimentale*.

Laboratory Control

The lecturer went on to suggest some of the changes which would interest Huxley if he could enter a hospital now. Though the interpretation of a morbid condition still rested largely on the physician's past experience, the control of diagnosis and treatment by laboratory methods had become more and more prominent. Some regretted this, and said that the art of medicine was disappearing. This was true, but it seemed useless to regret it. The new method was only an additional weapon in the doctor's