

Just as we finished dinner at 8 o'clock that evening another party arrived. Two ladies with a little Ladakhi servant girl. One was a nursing sister from a Zenana Mission in Kashmir, and the other was a friend who had come out from a big school in Ireland to see India. They pitched their tents on a grassy part of the compound where we had been having meals. There was really no other place, but it meant that even when I was resting I had to keep the flap of the tent down, or the servants would see right inside.

R. was away before dawn next day, and I stayed in the compound nearly all day doing some very necessary mending and re-soleing leather socks. These roads would wear the pads off an elephant!

We dined with the Kunicks that night, and Mr. Peter, the other Moravian Missionary, was there, too. We discovered the possibility of going over to Stok on the other side of the river. I was very anxious to meet the hereditary King and Queen of Ladakh, who are now Rajah and Rani of Stok since the conquest of Ladakh by the Dogras, and R. was keen to try an open nullah on the far side of the river for sharpu, as he had not even seen a good head among the herds in the Leh nullahs.

(To be continued.)

Current Literature.

WEIGL, RUDOLPH. *Faits d'Observation et Expériences démontrant l'Efficacité du Vaccin à Rickettsia pour la Prévention du Typhus. Archives de l'Institut Pasteur de Tunis.* 1933, xxii, 315.

The vaccine used is obtained by anal inoculation of typhus virus into lice, the intestines of which are collected after eight days and a carbolized suspension is then prepared. Three injections at seven days' interval are given, the *Rickettsia* contained in the intestines of 120 to 170 lice being required.

The vaccine has been employed for the last three years in Poland, in French North Africa, and in Belgian Catholic Missions in China.

In Poland over 6,000 people have been vaccinated. In 1931-2, 2,755 individuals received three injections; they were doctors, hospital employees, and persons who had been in contact with typhus patients. Among these there was only one case of the disease, and that was a doubtful one.

The author states that during the course of vaccination of contacts about 0.5 per cent developed the disease in from a few days to fourteen days. These individuals were in the incubation stage of the disease when vaccination was begun, and in them the disease was mild or of an abortive type. He considers that vaccination is not inadvisable during epidemics. But, as the result of guinea-pig experiments in his laboratories, he considers it

desirable that individuals suspected of being in the incubation stage of the disease should receive an inoculation of convalescent serum before being given the vaccine.

In the Belgian missions in China, 200 persons were vaccinated during two years and no protected individual contracted the disease, although one non-protected missionary died of typhus; the disease was rampant in the neighbourhood of the missions. Before inoculation was introduced, typhus was common amongst the personnel of the missions and accounted for 83 per cent of the deaths.

Laboratory experiments have given decisive proof of the efficacy of vaccination against typhus. This was first demonstrated by C. H. Nicolle and H. Sparrow, who immunized an infant by giving three injections of vaccine at one to two months interval, and then tested for immunity by inoculating virus contained in the brains of infected guinea-pigs; the child remained unaffected, while control guinea-pigs contracted the disease.

Three experiments on man were made in the author's institute, the first being made without his knowledge. The subject of the first experiment was the wife of a laboratory assistant, and she, along with the laboratory personnel, had been vaccinated against typhus in 1930.

Her husband, who had suffered from typhus, was employed in nourishing infected lice; he had great faith in the efficacy of anti-typhus vaccination, and his wife must have had great faith in him, for in October, 1931, she allowed several hundreds of the infected lice in his charge to feed on her. This went on for several days until the writer discovered what was being done and stopped the experiment. The woman did not develop typhus and, at her own request, she again began nourishing infected lice and has done so regularly since then. Four non-vaccinated workers in the laboratory were accidentally infected by these lice.

Two other workers in the laboratory, Mme. H. and M. C., repeated the experiment; they were vaccinated early in 1933 and began nourishing infected lice, one one month and the other three months after the completion of the inoculations, and since then several thousands of lice have fed on them daily.

M. H., husband of Mme. H., had never suffered from typhus and had not been inoculated against the disease; he was employed in the laboratory in nourishing uninfected lice. One day he visited his wife in the room where she nourished infected lice and he became infected with typhus, probably from lice excreta. When he began to feel ill, and not knowing what was wrong with him, he gave his healthy lice to a colleague, M. B., to nourish. The latter had neither been vaccinated nor had suffered from typhus. After two days the lice were examined and *Rickettsia* were found in them. The author at once began inoculating M. B. with typhus vaccine, three injections being given at intervals of two days. On the fourteenth day after the infecting bites, M. B. developed typhus, with a rash. He gave a positive Weil-Felix reaction and lice *Rickettsia* were agglutinated by

a 1 : 640 dilution of his serum, but the attack lasted only twelve days and convalescence was rapid. Healthy lice fed on M. B. did not show *Rickettsia* and emulsions of them inoculated into guinea-pigs were non-infective, also blood taken from M. B. at three periods of his illness did not infect guinea-pigs.

On the other hand, M. H., who must have received a comparatively small amount of infecting material, transmitted the disease to 100 per cent of lice fed on him.

The author considers that the vaccine administered to M. B., although unable to prevent the disease, established a relative immunity, and that antibodies prevented virus from spreading in the circulation, although it continued to develop in the tissues. Experiments were then made on guinea-pigs, and they confirmed this assumption, for guinea-pigs, vaccinated immediately before or after inoculation of typhus virus, became infected after a prolonged incubation period with either a febrile or an indefinite form of the disease, but the virus did not appear in their blood, although the brains and supra-renal capules of these animals were infective to lice and guinea-pigs.

LAWRENCE, G. P. The Use of Autogyros in the Evacuation of Wounded.

The Military Surgeon, 1933, lxxiii, 314.

Experiments have been made by the United States Army Air Corps, and others, in the transportation of sick and wounded by air. Special airplane ambulances and ambulance planes extemporized from transport machines are part of the equipment of all U.S. army flying fields. These machines require larger landing grounds than are usually found near the firing line or even within the division area.

The writer considers that autogyros would be ideal for ambulance work and gives a description of their structure and capabilities.

A point of great value is that in still air an autogyro can take off with a run of 240 feet, while with a breeze of twenty miles per hour a run of only 100 feet is required, and with a thirty-five mile per hour wind the machine can rise almost vertically. The autogyro can climb about 100 feet in a minute, that is about twice as fast as a bomber, and as it can rise at twice as steep an angle as does an ordinary aeroplane, it can get up from a very small field. It can land in a space twice its own length. It can maintain altitude at a speed of twenty-four miles per hour, and against a wind of thirty miles per hour or more it can hover or fly backwards. A recent model has no fixed wings or rudder, and is even more stable and easier to control than the earlier models.

A manufacturer has designed an autogyro ambulance to carry a pilot, one sitting case and two cases in American Navy wire basket type Stokes stretchers. This machine is said to be easier to load than a motor ambulance wagon. It has a cruising speed of over 100 miles per hour, can hover, can descend perpendicularly, and can take off at a steep angle with a very

short run. The writer considers that such a machine could remove wounded from collecting stations chosen by collecting companies trained in reconnaissance for ambulance gyros and in signalling to them. Flight could be made direct to a general hospital in from fifteen to thirty minutes, obviating transfer of patients to the division hospital and evacuating hospital, thus saving two ambulance rides and a rail journey. The work of the division hospital would then be mainly concerned with the lightly wounded who could be retained till fit. The ambulance battalions and evacuation hospitals would have much less work than at present and fewer would be required.

Working on an estimate of ten per cent of casualties for a day, giving for a brigade a total of 382 requiring transport, the writer calculates that it would take thirty-eight hours to bring them to the evacuation hospital by present methods, while four autogyro ambulance planes could evacuate them to a general hospital fifty miles away in about thirty-one hours.

Autogyros could often go further forward than ambulance wagons, and they could "potter around" in the dark guided by the collecting company using electric flash lights.

Cavalry wounded could be collected by autogyro much more easily than by the present medical squadron.

The author considers that as evacuation is an army responsibility and not usually a corps function, aerial ambulances should be organized as an army ambulance wing similar to the Bombardment Wing.

Reviews.

RECENT PROGRESS IN MEDICINE AND SURGERY, 1919-1933. By various authors. Edited by Sir John Collie, C.M.G., M.D., D.L., J.P. With a foreword by Lord Horder of Ashford, K.C.V.O., M.D., F.R.C.P. London: H. K. Lewis & Co., Ltd. 1933. Pp. xii. + 368, 33 illustrations, including 12 plates (4 coloured). Demy 8vo. Price 16s.

Sir John Collie and his collaborators tackled an enormous task in summarizing medical progress in the last fifteen years in a volume of 353 pages, and they have produced a very serviceable work.

Some of the twenty-one chapters are of great interest to the surgeon, especially those on surgical tuberculosis, radiology, manipulative surgery, plastic surgery, anæsthesia, and the two very valuable articles on orthopædic surgery and on urology, by H. A. T. Fairbank and J. Swift Joly respectively. In the pages allotted to the eye Sir William Duke-Elder gives a brief, but clear outline of the use of the slit lamp, and the modern outlook on intra-ocular infections and glaucoma are amongst the subjects considered.

The chapters dealing with advances in medicine are concise and up-to-