I am of opinion that it is not so, and that they never act as true extensors, in that they become independent of flexor impulses, and are dissociated from the rest of the muscles supplied by the median and ulnar nerves. True extension consists of a "pressor" impulse along the extensor tract, with inhibition of the flexor group of muscles. But, inasmuch as the flexor carpi radialis and ulnaris are powerful muscles and the flexors of the carpus have been diminished by their removal, they fix or slightly extend the carpus when a flexor impulse is transmitted via the median and ulnar nerves to the flexor musculature of the forearm, no matter what the ultimate insertion of its individual muscles may be (in this case the extensor surface of the metacarpus for two of them). It is this slight extension and fixation of the wrist which allows full play to the flexors of the fingers and thumb. Shortening of the tendons of the extensor carpi radialis longior and brevior acts in the same way, but is apt to stretch after a time, and is not so satisfactory as the fascial ligament mentioned above.

When the essential fact is fully realized that it is the acute flexion of the wrist which is so disabling in musculo-spiral paralysis, the cases of this complaint will rapidly become fewer. There should be no excuse for a drop-wrist to-day. If the wrist be fixed in slight extension by any of the above methods, the "uselessness" of the hand will largely disappear, even if nothing more is done to promote active extension of the fingers. The fingers, indeed, will largely settle this question for themselves, and will, to a certain extent, become "passively" extended by the "rebound" on the inhibition of their flexor impulse.

Notes on the Operation.

Asepsis.—This is of course essential; a tendon anastomosis which undergoes the present day epidemic of sepsis will not be a success.

Correct Alignment of the Anastomosed Tendons.—It is necessary to lay stress on the absolute necessity of the "donating" tendon being in a straight line from the belly of the muscle to the acquired insertion. If this is lost sight of a "lateral implantation" ensues, resulting in little or no benefit to the patient. Surgeons, for long too closely wedded to the anastomosis of two tendons through short incisions, have lost sight of the intervening "kink" round which the tendon works with a maximum of friction and a minimum of effectual pull. This is particularly noticeable in the transposing of flexor muscles to act as extensors by passing them through the interosseus membrane, or the anastomosis of the palmaris longus to the extensor ossis metacarpi pollicis. The general lie of the muscle and oblique opening through the interosseus membrane or pronator quadratus, with a straight line passing through the points formed by junction of belly and tendon, interosseus opening, and insertion into the bone, are the essentials to be aimed at. Muscles do not act well when pulling round an imperfect muscular or fascial corner.

Re-education of the Transplanted Muscles.—Flexor muscles probably never act as extensors when their insertion is transplanted with this end in view. They probably act by fixing the carpus or by overbalancing their recently divorced brother flexors, bringing about some degree of extension when a flexor impulse is initiated in the cerebral cortex, since they are more powerful muscles than the surviving flexors. In any case they allow the flexors of the fingers better play, and before this can be effected to the maximum of its power, considerable re-education is necessary. This takes the form of active and passive "purposive" movements, faradism to the bellies of the transplanted muscles, and ergographic contractions of the fingers, which by the "rebound" helps to stimulate the contraction of the newly acquired extensors.

Early Movements.—Slight passive extension of fingers and carpus should be begun quite early (after a week or ten days), but active movements should be delayed until six weeks after operation.

The method of anastomosis I have used has been that of buttonholing the receiving tendon, inserting the donating tendon through it, and carrying its distal end for some distance along the dorsal aspect of the receptor, and fastening with several fine linen thread sutures.

In conclusion it might be mentioned that the observations in this paper are based on some dozen cases. In almost every instance the patient voluntarily expressed

himself as well pleased with the result. I do not recall any case in which there was not at least a fair degree of improvement on the ante-operative paralytic condition.

NOTES ON CASES OF INFLUENZA IN A BASE HOSPITAL IN ITALY.

BY

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DURING a period of ten weeks (September 20th, 1918, to November 30th, 1918) a severe epidemic of influenza occurred in the area served by the hospital. Among the cases admitted 43 deaths occurred; it is with these that the present paper deals.

In 15 of these 43 cases an examination of the sputum was made during the early stage of the illness. In 9 instances the sputum was so heavily contaminated from the mouth, being loaded with bacteria of mixed types, that it was not possible to pick out any which could be regarded as likely to have been present in the bronchial secretion. In 2 cases (13 per cent.) pneumococci were found, in 1 case (7 per cent.) streptococci, and in 4 cases (27 per cent.) influenza bacilli. By the term influenza bacilli is meant bacilli, sometimes free, sometimes enclosed within polymorphonuclear leucocytes (both forms frequently occurring together), having a length of 0.8μ to 1.5μ , and a breadth of 0.5μ to 1.0μ , not staining by Gram's method, and presenting some variation in length and breadth in different sputa and cultures, as also in the same stained preparation.

It is of interest to compare the above figures with those obtained in the routine examination of sputum from patients in the hospital during the period under observation. In all, 116 specimens of sputum were received; of these, 64 (55 per cent.) were too heavily contaminated in the mouth to be of value; 28 (24 per cent.) contained influenza bacilli, 2 containing also pneumococci and 1 streptococci; 10 (9 per cent.) contained *Diplococcus catarrhalis*, 7 (6 per cent.) pneumococci, 3 streptococci, 1 staphylococci, and 1 tubercle bacilli. In all cases the bacteria enumerated were present in great abundance. If the specimens which were heavily contaminated from the mouth are discarded, the above percentages are much higher: thus the specimens in which influenza bacilli were found form 57 per cent. in the first series and 54 per cent. in the second. The latter series represented all the cases in hospital; it was not confined to cases regarded as influenzal.

On *post-mortem* examination, pneumonia was present in every case except two (95 per cent.), affecting both lungs in 37 cases (86 per cent.), and complicated in 5 cases (11.5 per cent.) with pleural effusion, in 8 cases (18.5 per cent.) with empyema, and in 1 case with pneumothorax. Cloudy swelling of the kidneys, liver, and spleen, friability of the heart muscle, and enlargement of the mesenteric and mesocolic lymphatic glands were present in varying degree in different cases. Enlargement of the adrenals, with collection of a brownish liquid or of semi-liquid material between cortex and medulla, was met with. Slight enlargement of Peyer's patches, with or without enlargement of the solitary glands of the small intestine in the neighbourhood of the caecum, was also observed. In one case there was ulceration of the large intestine, and in two cases blood staining of the root of the aorta and of the pulmonary artery was marked.

Microscopical examination of the exudate from the affected lung showed influenza bacilli in 17 cases (38.5 per cent.), streptococci in 18 cases (42 per cent.), staphylococci in 7 cases (16 per cent.), pneumococci in 7 cases (16 per cent.), and *Diplococcus catarrhalis* in 2 cases (4.5 per cent.); in 7 cases (16 per cent.) no bacteria were found. Double infections were observed in 14 cases—namely, influenza bacilli + streptococci, 4 cases; influenza bacilli + pneumococci, 2 cases; influenza bacilli + *D. catarrhalis*, 2 cases; influenza bacilli + staphylococci, 1 case; and staphylococci + streptococci, 4 cases. In one case a triple infection of influenza + staphylococci + streptococci was observed.

At thirty-five of the autopsies blood-agar cultures from the hepatized lung were made. Colonies of influenza bacilli were obtained in 15 cases (43 per cent.), staphylococci in 19 cases (54 per cent.), streptococci in 19 cases (54 per cent.), pneumococci in 2 cases (6 per cent.), *M. tetragenus* in 1 case (3 per cent.), and Gram-positive bacilli in 1 case. Influenza bacilli and staphylococci were obtained in 3 cases, influenza bacilli and streptococci in 5 cases, influenza bacilli, staphylococci, and streptococci in 2 cases, influenza bacilli, staphylococci, and pneumococci in 1 case, staphylococci and streptococci in 8 cases, streptococci and *M. tetragenus* in 1 case. In one case no growth was obtained.

The blood-agar medium was made by adding to peptone meat extract agar (previously melted at 100° C. and then cooled to 50° C. to 45° C.) 10 per cent. of a solution of blood (warmed to 40° C.). The latter solution was prepared by mixing 5 c.cm. of human blood, withdrawn from a vein, with 95 c.cm. of sterile 0.85 per cent. sodium chloride solution, and then laking by the addition of 10 c.cm. of ether. Colonies of influenza bacilli were isolated by plating out.

In several instances influenza bacilli could not be obtained in culture though present in the lung exudate; the reverse was also observed. In three cases influenza bacilli were found in the sputum, but subsequently at the autopsy could not be recognized in the lung exudate on microscopical examination of a smear preparation; in one of these cases however, colonies of influenza bacilli were obtained on culture from the lung exudate.

If all observations are grouped together (sputum, smear from lung exudate, culture from lung exudate) the following figures are obtained: Influenza bacilli were found in 56 per cent. of the cases; staphylococci in 51 per cent.; streptococci in 49 per cent.; pneumococci in 18.5 per cent.; *Diplococcus catarrhalis* in 7 per cent.

The cases first occurring were of a severe type rapidly terminating fatally; subsequent cases were of longer duration, and were frequently complicated with pleural effusion and empyema.

CHRONIC TRENCH FEVER.

BY

GORDON WARD, M.D.

DURING the last few years many cases of trench fever have passed through the hands of medical officers, and the disease is likely to trouble us and our patients for some years to come. For this reason I am prompted to send a note of two cases which exemplify somewhat unusual symptoms, although such as the nature of the disease would lead us to expect.

CASE I.

Pte. C. W. B., Royal Warwicks, was admitted to hospital as a N.Y.D. case. He complained of extreme pain in the head and legs, and of sleeplessness due to the pain. He presented the following signs, namely, frequent sweating, irregular temperature, never above 100° at night, and showing no definite periodicity, occasional vomiting, and more frequent nausea; pulse rate varying from 76 to 116, and the typical hyperalgesic

areas (C8 and D1; D 7, 8, 9; all lumbar) described by Carmalt-Jones. A diagnosis of trench fever seemed fully justified. It was thought that cases of trench fever with small evening pyrexia might show a much larger swing than normal below the normal line. A few cases and a few controls from other

cases were therefore put on special charts. This case was the best example obtained of the phenomenon expected. Chart herewith shows this. It was not found to anything approaching the same extent in any case not trench fever. Possibly this may be of some assistance in diagnosis.

It was very difficult to obtain accurate records of pulse rate in all cases, but it may be stated that this followed the temperature pretty accurately except that the prevailing rate was lower after he had been in bed a week. Case II is an example of vasomotor symptoms. These have not attracted much notice but are mentioned in the American report. Analogy with malaria led me to look for them, and some degree of "dead fingers" and "dead feet" was noted in several cases. Cases were not included unless the "dead areas" were obvious to sight and touch. Other symptoms of the same order resembled giant urticaria and erythromelalgia.

CASE II.

Rfn. A. E. B., K.R.R.C., was admitted with typical acute trench fever. In the first seventeen days he had four bouts of pyrexia. After this the temperature became irregular. On the twenty-sixth day he had acute pain in the legs, which were observed to be very red (the feet only). This was much increased when the legs were allowed to hang over the edge of the bed. This erythromelalgic syndrome was not observed again. On the twenty-ninth and thirtieth days he had slight haematuria, the urine contained a few granular blood casts. On the thirty-second day the urine was free from albumin and casts and remained so. At the same time as the haematuria there was some oedema of the calves of the legs, there was none of the feet. The oedema was very slight. There was no other oedema. His temperature was 101° on the two days of haematuria, afterwards it did not exceed 99°. His pulse was usually between 60 and 80; it was not recorded in the acute stage of his illness except on admission, when it was 116. He was up on the fortieth day, and sent to England on the forty-second.

Case II did not suffer from dead fingers, and the erythromelalgic symptoms were only present on one occasion. I consider that the haematuria was not significant of a kidney lesion but rather analogous to the occasional haematuria of malaria. It may have been haemoglobinuria, and this seems probable on theoretical grounds. It was not reported until the thirty-ninth day, and the next specimen obtained did not contain blood cells but only casts containing yellow pigment. The quick disappearance of urinary signs is also significant. I have seen oedema of the calves also in malaria in the absence of albuminuria. This note does not profess to be complete; it was very difficult to carry out detailed investigations in France, but I hope that, in spite of this, the mere mention of such symptoms may be of use to others and of interest from the theoretical side.

April 20th, 1919.

Kettsomian Lectures

ON

JAUNDICE: WITH SPECIAL REFERENCE TO TYPES OCCURRING DURING THE WAR.*

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LECTURE III.—PART II.

SPIROCHAETAL AND ACHOLURIC JAUNDICE, Etc.

INFECTIVE JAUNDICE IN SPIROCHAETOSIS ICTERO-HAEMORRHAGICA.

THIS form of jaundice was first differentiated by two Japanese workers, Inada and Ido,¹⁰ in November, 1914, who made a brilliant investigation into the etiology, symptomatology, and pathology of the disease.

In September, 1916, Captain A. Stokes, R.A.M.C., and Captain J. A. Ryle, R.A.M.C., published¹¹ an account of several cases they had carefully investigated amongst our troops in Flanders, and later, in January, 1917,¹² they published a further account of this work. Major-General Sir Bertrand Dawson, Lieut.-Colonel Hume, R.A.M.C., and Captain S. P. Bedson, working independently, published¹³ a very complete account of their observations on cases

* Delivered before the Medical Society of London, April-May, 1919.