complaints of pain and weakness of the back. Walks bent up with the help of a stick. Schnee baths and general massage. He attended regularly, and made such marked progress that he resumed work at the coal-face on February 13th, 1920. He was unable to satisfy his fellow workers, and gave up work on March 23rd. The man is quite fit for light work, but is still unable to follow his old employment.

Ionic Medication.—Treatment with ionic medication was carried out in cases of synovitis of the knee-joint which did not yield to the ordinary treatment. Ionization with sodium salicylate was used in painful affections of the joints. In three cases of chronic suppuration near the ankle ionic medication gave temporary relief, but all three cases were eventually transferred back for surgical treatment. One interesting case of miner's elbow yielded to ionization with sodium iodide:

G. N., whilst attending the centre for contusion of the right shoulder, suddenly developed a large bursa over the left elbow. Ionization with sodium iodide cleared up the condition in one week. The man returned to work and the bursa reappeared. It was again successfully treated in the same manner. The chief interest of the case is the sudden appearance of the bursa while the man was "playing."

GENERAL RESULTS OF TREATMENT.

It is interesting to note, as showing the growth of the centre in the esteem of the local medical men and the workmen, that 181 cases were treated in the first six months and 310 in the second six months. The appreciation shown by the workmen for the efforts made by the employers on their behalf has been very gratifying. It is important to note that many long-standing cases were taken over by the centre and that return to work does not necessarily mean return to old employment.

Table Showing the Number of Workmen Treated, the Average Attendance, with an Analysis of the Cases.

Total number of cases treated	...	491
Number of attendances	...	7,558
Number of working days	...	300
Average weekly attendance	...	145
Average daily attendance	...	25
Average attendance per case	...	15.4

All Cases.

Completed cases	...	446
Still under treatment at centre	...	42
Transferred for surgical treatment	...	3

Completed Cases.

Returned to work	...	425
Settled for lump sum	...	12
Not improved	...	6
Refused treatment	...	3

Analysis of Completed Cases.

Upper Extremity:		Average Attendance.	
Contusion of fingers or hand	61	6.7	
Cellulitis of hand	10	31.0	
Fracture of thumb	2	16.0	
Fracture of fingers	16	15.0	
Fracture of metacarpals	13	15.0	
Amputation of finger	9	12.0	
Contusion of wrist	15	12.0	
Contusion of forearm and elbow	11	9.0	
Fracture of forearm	18	13.5	
Dislocation of elbow-joint	3	27.0	
Fracture of humerus	3	13.0	
Contusion of shoulder	12	13.0	
Dislocation of shoulder	9	27.0	
Fracture of clavicle	2	5.0	
Lower Extremity:			
Contusion of foot	21	7.0	
Fracture of metatarsal	10	18.0	
Fracture of astragalus	1	32.0	
Contusion of ankle	11	5.5	
Fracture of leg	33	30.0	
Synovitis of knee	46	16.0	
Contusion of thigh	9	10.5	
Dislocation of hip	1	7.0	
Fracture of femur	5	46.0	
Fracture of pelvis	1	48.0	
General:			
Contusion of chest	9	8.0	
Strained back	64	9.5	
Neurasthenia following old back injury	9	48.0	
Miner's elbow	1	9.0	
Post-operative muscular wasting	1	24.0	
Paralysis of anterior tibial nerve	1	64.0	

Settled Cases.—Twelve cases were settled; all of these showed considerable improvement, but no suitable work could be found.

Injury to back 6 (3 neurasthenics who only showed slight improvement).

Fracture of pelvis 1, fracture of femur 2, fracture of leg 1 (all these men were able to do light work).

Fracture of thumb 2 (settled for small sums).

Not Improved (6 cases).—Injury to back 3, old dislocation of shoulder 1, old fracture of wrist 1, contraction of hand due to cellulitis 1.

Refused Treatment (3 cases).—Neurasthenia following injury to back 3.

Still under Treatment at End of Year (42 cases).—Twenty-three cases returned to work at the end of the thirteenth month, and in only two cases is complete failure anticipated. These are two cases of rheumatoid arthritis of the knee-joint where injury has supervened.

COST OF ESTABLISHMENT AND CURRENT EXPENSES.

The apparatus and electrical outfit cost £92. The current expenses were: Wages £366, rent £39, sundries (drugs, dressings, etc.) £14—a total of £419.

Allowing one quarter of the original cost for depreciation, the total cost of the year's working was £23 + £419 = £442. As the total number of cases treated was 491, the average cost per case was 18s. The cost of travelling expenses is not included, and will of course vary with each district. Where the medical officer is not a full-time official, it will also be necessary to add his pay to the current expenses.

With the present high wages the full compensation of 35s. a week is paid to everybody. It is only necessary, then, to expedite the injured man's return to work by one week to make the massage centre a financial success. The employers are quite convinced that this result has been achieved. If the recommendation of the Departmental Committee becomes law, compensation will be paid at the rate of £3 per week, and the saving effected correspondingly greater.

GENERAL CONCLUSIONS.

The loss of function which results from disuse, formation of adhesions in joints, and, above all, from the mental inertia which follows most serious injuries, can only be satisfactorily treated in large infirmaries, hospitals, or specially provided local centres. Treatment should be given daily, and begun as soon as possible after the accident. Return of normal function should be the only aim; it is useless to obtain perfect alignment of a broken bone with stiffness of adjacent joints or to preserve a finger which cannot be flexed into the palm. The results of the first year's working of this centre show that both employer and employee have benefited.

In this district the centre is no longer an experiment, and the employers have recently purchased accommodation for its permanent establishment.

REFERENCES.

- ¹ Report of Medical Consultative Council to the Minister of Health.
- ² Report of Departmental Committee on Workmen's Compensation, Cmd. 816.
- ³ Mennell, *Massage: Its Principles and Practice*, p. 19.

NEUROLOGICAL JOTTINGS.—II.

BY

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Chicken-pox and Herpes.

SINCE the publication of my paper on "Neurological Jottings" ¹ I have had several communications on one of the subjects on which I wrote—namely, the curious connexion between herpes and chicken-pox, and there have also been several communications to the JOURNAL on the subject. In my former paper I referred to several instances of chicken-pox occurring in the same house in which herpes had been present at or about the time at which chicken-pox occurred. In all the cases which had come under my observation or of which I had authentic first-hand information, herpes had occurred in an adult, and had been followed by chicken-pox in younger persons, chiefly children.

Dr. Ingram Cooke ² relates the case of a girl of 16 who came to his surgery for some medicine for her father, who had developed shingles about two weeks before. She asked

Dr. Cooke about a "rash" which had appeared on her body on the previous day. Dr. Cooke found that she was in the early stage of an attack of chicken-pox. This subsequently developed into a characteristic attack, with a good crop of vesicles and a temperature of 102°. There was no other case of chicken-pox in the neighbourhood. Dr. Pereira Gray³ of Exeter wrote as follows:

"There is, no doubt, a close connexion between shingles and chicken-pox. At any rate, they frequently occur together or closely follow each other. But whether the one is the cause of the other or both are dependent on a common factor must be left an open question."

I am permitted also to quote the following two letters. The first is from Dr. H. G. Turney, Senior Physician to St. Thomas's Hospital. He writes:

"I was much interested in your reference to the relationship between shingles and chicken-pox—a fact that I have been convinced of for some time past. Just now a somewhat striking example has come under my notice which may interest you. A married sister of my wife's now living in Edinburgh has two children who during February were laid up with mumps. A maiden aunt, while not actually living in the same flat, spends most of her time with them, and in fact carries on their education. On March 10th, after a day or two of malaise, she developed shingles and was received into the flat to be nursed. Both children developed chicken-pox on March 27th. One of them had, since the mumps, paid a visit to Glasgow and so came into possible contact with infection, but the other had been isolated, and so far as can be traced cannot conceivably have been infected from without. Moreover, the illness took both children on the same day and must presumably have arisen from the same focus. Suspicion points very strongly to the aunt and her shingles, for nothing is known of any other possible source of infection."

I am also allowed to quote the following very interesting communication from Dr. Dorward Brown of Harrogate. He says:

"I was greatly interested in what you say in your paper as to herpes and chicken-pox and their relationship, and hope the following personal experience may interest you: A month ago I had a severe attack of shingles, radiating from the second, third, and fourth dorsal areas across the back and under the axilla to the sternum. A fortnight afterwards my daughter, aged 11, had a mild attack of chicken-pox. During my attack of shingles I also had some isolated vesicles scattered over various parts of my body. Following up this I found that a lady whom I was attending for shingles just before my own attack had been in contact with a family with chicken-pox. Lastly, I was consulted a few days ago by a patient from Bournemouth who has had an attack of herpes, and he informs me that his son and housekeeper followed him with chicken-pox."

I saw also, a short time ago, a lady, a patient of Dr. Edward Lewis, who told me that about a year ago she had had an attack of occipital herpes, and that her daughter within a fortnight had an attack of chicken-pox! Dr. Claude Wilson of Tunbridge Wells⁴ also relates an interesting experience:

"A patient, A. L., came to Tunbridge Wells with his wife and son, F. L., on April 10th. They lived in apartments, and on April 13th A. L., aged 49, complained of a pain in the right groin and leg. Two days later vesicles appeared on the right buttock, the commencement of a herpetic eruption which, commencing in the inguinal region, spread over the inner side of the right thigh and calf, and on April 17th he was seen by Dr. Wilson, when the condition was a characteristic one of herpes. On May 1st F. L., the son, aged 18, noticed a few pearly spots on his forehead, and by May 3rd he was covered with hundreds of typical chicken-pox spots, distributed all over the body, accompanied by considerable pain and much constitutional disturbance. So far as can be ascertained, he had not been near any case of chicken-pox."

These instances seem to me to furnish very strong evidence of the close connexion between shingles and chicken-pox, and to lend support to the plea conveyed in the paper by Dr. Le Feuvre, referred to in my first communication, that "shingles should be recognized as an infectious disease, and one, under certain unknown conditions, likely to become a starting-point for a chicken-pox epidemic."

Early Phases of Disseminated Sclerosis.

Disseminated sclerosis is now recognized as one of the most curiously protean diseases, especially in regard to its early symptoms. It often simulates hysteria, as Dr. Thomas Buzzard pointed out long ago, and there is little doubt that even now many cases, not all of them in the early stage, are wrongly regarded as hysterical. In the early stage there may be no sign indicating organic disease. A girl happens to knock or strain her arm, and finds that

she cannot move it. In such a case a gentle application of faradism may remove what is apparently merely a functional disturbance. But after a few weeks or months, if there is a recurrence of the trouble, associated with tremor or nystagmus, there is then unfortunately no doubt that structural changes have supervened. I do not mean to say that every functional condition in which no evidence of structural change exists necessarily develops later into one of disseminated sclerosis, but undoubtedly some do, and it is well to be on the lookout and to recognize that functional paralysis may result from central changes which are slight and of which the obvious manifestations are transient.

I recall the case of a clever young Jewess who had worked very hard, and who consulted a colleague on account of paralysis of the left arm which she found to be present one morning. There were no signs of organic disease, and an application of faradism was followed by immediate restoration of function. Six months later she came again with a recurrence of weakness and tremor in the arm, and complaining also of slight difficulty in walking. The arm improved after treatment, but it was found that she had exaggerated knee-jerks and ankle clonus, also that nystagmus was present. This patient rapidly developed all the signs of disseminated sclerosis; she became unable to walk, and died four years after the onset of the transient paralysis of her arm.

Squinting and ocular palsies are sometimes also transient and of equal significance. Some years ago I saw a girl of 18 who was working for an examination, when her eyes began to trouble her. I saw her in consultation with an ophthalmic surgeon, who insisted that the condition was hysterical. I could not share this view because the squinting was such, in my opinion, as could not be feigned. It cleared up, however—a fact which seemed to favour the view that it was hysterical. There was a recurrence some months later, which also cleared up; but later marked nystagmus developed, and the case became one with all the classical signs of disseminated sclerosis.

As illustrating the various modes of commencement of disseminated sclerosis I may mention the case of a young lady whose physical health and hygienic environment seemed perfect. She had noticed some mistiness of vision, and consulted Mr. J. B. Lawford, who found that she had optic neuritis in each eye, and he sent her to me in order that I might examine her with the view of discovering, if possible, some cause for this. There was no headache or vomiting—nothing to indicate any intracranial trouble. The only definite sign I could discover, apart from the condition of the optic discs, was an extensor response from one sole. She had no difficulty in walking, although she confessed to feeling more easily tired than usual. I need only say that, in spite of enforced rest under excellent conditions as regards food, fresh air, etc., she rapidly developed all the signs characteristic of disseminated sclerosis, and died less than two years after the trouble with vision began.

It has often been noticed that there are several superficial points of resemblance between some cases of disseminated sclerosis and cases of general paralysis of the insane—especially is this the case with reference to mental symptoms. There is the same mental "facility" in many cases of disseminated sclerosis which is so striking and almost characteristic of general paralysis—one is struck by the fact that patients suffering from disseminated sclerosis so often express themselves as feeling so well and that they do not seem to be concerned about their helplessness. Frequently, too, they are even amused by their disabilities. In some instances it has been difficult to be sure of the diagnosis. I can recall two cases in which the original diagnosis of disseminated sclerosis was definitely contradicted by the course of the illness. One was a hospital patient who had nystagmus, slurred speech, weakness of the legs with exaggerated knee-jerks, and extensor responses, and volitional tremor of the hands. The pupils were equal and reacted to light and during accommodation. There was no history of syphilis, but there was extensive destruction of the palate, apparently of syphilitic origin. This man remained in hospital for some weeks, but no change supervened. I learnt afterwards, however, that he developed mental symptoms and had to be certified.

The other case was that of a man who was sent to me some years ago by Mr. William Lang, who found that he had

definite pallor of his discs, with little or no visual impairment. There was nystagmus, but no pupillary change, and, although he walked rather feebly, the knee-jerks were present and active, and there was no change in the plantar response. He spoke slowly and with slightly slurred articulation. I regarded the case as one of disseminated sclerosis. He continued in the same condition for five years, when he developed mental symptoms of the grandiose character so often met with in general paralysis; he became very fat and then wasted and died, the mental condition becoming one of profound dementia before he died. In this case, in spite of the early changes in the discs which Mr. Lang had noted, there was no progressive deterioration of vision, but I think the case, although the progress was unusually slow, was really one of general paralysis and not of disseminated sclerosis.

REFERENCES.
¹ BRITISH MEDICAL JOURNAL, February 28th, 1920. ² Ibid., April 3rd, 1920. ³ Ibid., April 3rd, 1920. ⁴ Ibid., June 19th, 1920.

A SIMPLE METHOD OF COMBINING ETHER ADMINISTRATION WITH THE VERNON HARCOURT INHALER.

BY
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SINCE writing previously on the subject of the Vernon Harcourt inhaler,¹ advocating more extensive employment of this dosimetric method of chloroform administration, I have had considerable additional experience with the inhaler, and this has not caused me to modify the opinion expressed in that paper. It seems to me that the prevalent attitude towards chloroform, banning its use as an anaesthetic, is extreme, and that this agent still occupies a valuable place. I agree that it must be given with great care, but think dangers may be very largely discounted by the employment of the Vernon Harcourt inhaler, which limits the vapour strength to $2\frac{1}{2}$ per cent.

It is often asked, Why use a complicated mechanism such as this when a drop bottle and simple mask are so much more convenient? The principle in both cases is identical, air being drawn over the surface of evaporating chloroform, taking up a percentage in passing. In reply to this the British Medical Association Chloroform Committee pointed out many years ago that the percentage of chloroform taken up from the mask and drop-bottle method is difficult of control; it may easily exceed $2\frac{1}{2}$ per cent., and when this happens the danger zone is entered. Levy has attacked this view. In a paper on "Cardiac fibrillation and chloroform syncope"² he says:

"It is now obvious that the present-day teaching—that safety lies in attention to vapour percentages—must be permanently abandoned, but there is no reason for a violent reaction, leading to the extreme opposite practice"; and again: "The theory of death by overdose has, in my opinion, been a most deplorable one for humanity."

The experiments on which his conclusions were based were performed almost exclusively on cats. Embley,³ commenting on Levy's findings, suggests that experiments on cats with regard to chloroform action on the heart are misleading. Talking of ventricular fibrillation, he says:

"I have found it to occur during the administration of chloroform in three out of five successive cats, whilst out of several hundred successive dogs in which death had been caused designedly by chloroform under a great variety of conditions, I have never observed it except as a terminal process when the blood pressure had fallen very low from shock or some other cause—quite a distinct event from that form of fatal syncope in cats." And again: "The control of the cardiac rhythm in the dog is markedly vagal, and it approximates in this respect to that of the human."

Whether or not this be the explanation of Levy's theories, they seem to me to be at variance with clinical experience. In using the Vernon Harcourt apparatus the occurrence of symptoms of cardiac failure have been conspicuously less frequent than when ordinary drop methods have been employed. In those cases in which such symptoms have occurred it has been as an accompaniment of shock-producing surgical procedure, and extremely rarely, as Levy's contention seeks to prove, in the early stages of administration.

It is always advisable, however, to have ether available, and a disadvantage of the Vernon Harcourt inhaler is the impossibility of combining ether, or of changing to ether without a change of apparatus. To overcome this the following simple expedient occurred to me: I employ an ordinary Hewitt wide-bore ether inhaler, without the bag. To fit on in place of the bag attachment Messrs. Coxeter and Son made for me a metal diaphragm fitting to the distal end of the Hewitt reservoir and having a perforation cut through its centre to fit the tube of the Vernon Harcourt inhaler. The Hewitt reservoir is charged with the usual quantity of ether, and, as there is no bag and therefore no rebreathing, administers it by the open method.

In practice I induce anaesthesia by means of chloroform through the Vernon Harcourt inhaler and then introduce ether according to requirements. In cases of cardiac failure the chloroform may be shut off and ether alone administered. In my experience this combination apparatus has proved most useful.

REFERENCES.
¹ Glasgow Medical Journal, January, 1917. ² American Year Book of Anaesthesia and Analgesia, 1915. ³ American Journal of Surgery, January, 1916.

Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

DEATH AFTER TONSILLECTOMY.

THIS note deals with a case which was under the care of Mr. Alban Evans, who kindly agreed to publication and furnished information about the clinical features of the case:

D. R., male aged 14, at puberty, was first seen at the ear and throat out-patient department of Swansea General Hospital complaining of nasal obstruction and frequent sore throat. Examination showed large and unhealthy tonsils, chronic catarrhal rhinitis, and dull, retracted tympanic membrane. Operation was advised, and the tonsils wereenucleated and a large adenoid mass removed by Mr. Alban Evans. Some thyroid enlargement was noticed before the operation; neither during nor after the operation was there abnormal haemorrhage. The boy was removed to the recovery room and appeared to be doing perfectly well, when about half an hour after the operation he suddenly collapsed and, in spite of prolonged remedial measures, did not recover.

A post-mortem examination made next day revealed no sign of asphyxia or violence; the thyroid gland was very obviously enlarged on external view. The brain appeared normal and showed no haemorrhages of any kind. The larynx was normal, the trachea free of blood, and its lumen between the third and fifth tracheal rings was diminished about one-half by pressure from the enlarged thyroid. The sites of the removed tonsils were clear of blood clot; removal had been complete. The thyroid gland was greatly enlarged, weighing 160 grams; a cut into the gland substance showed presence of colloid secretion and some congestion. The gland had completely enveloped the trachea and compressed the posterior wall so that the lumen was crescentic in shape. Histologically, the thyroid showed an unusually large proportion of secreting cells and congestion of the blood vessels; comparison of this gland with sections of simple goitre removed at a thyroidectomy showed it to contain less colloid. The thymus gland was larger than normal, weight 57 grams; it did not exert pressure on the air passages. Microscopic examination showed apparently normal thymic tissue. The oesophagus was normal, as were also the bronchial and cervical glands. The heart, save for a moderate degree of dilatation of the right auricle, appeared entirely normal; the ventricles were in diastole. The lungs were both well aëriated and free from congestion or oedema; there was no collapse of lung tissue nor other sign of respiratory obstruction or failure. The right upper lobe was slightly adherent to the parietal pleura. In the abdominal viscera the only sign of disease found was mesenteric adenitis of tuberculous type, not advanced. The stomach was empty save for a trace of swallowed blood, and the spleen, pancreas, and suprarenals looked quite normal to the naked eye.

The exact mechanism of death in this case is obscure; the leading features were:

1. Enlargement of thyroid with narrowing of trachea—possibly a late event—and enhanced activity of the gland.
2. Enlargement of thymus.
3. An "adenoid" tendency, not very pronounced.

The boy did not die of asphyxia; apparently there was cardiac failure associated with hyperthyroidism, possibly of acute onset, and with an unusually large thymus.

In the discussion on status lymphaticus held by the Royal Society of Medicine at Bournemouth in June, 1914, the opener, Dr. Hugh Thursfield, laid stress on the