5. When osteomyelitis complicates an operation on the frontal sinus it usually makes its appearance as a non-inflammatory oedema in the soft parts which cover the margin of the bony wound, and this sign is still more ominous if an area of oedema appears at some distance from the wound in the sinus. A coincident rise of temperature may be noted. If such a swelling be incised no pus escapes, but the wound does not heal and suppuration soon makes its appearance, while the oedema spreads still further.

The only treatment of any value in such case is to expose the frontal bone very freely and to remove its whole thickness involving a liberal area of healthy bone around the inflamed region. Delay and hesitation are unpardonable, while fomentations, incisions in the oedematous areas, or the administration of vaccines only betray the ignorance of the surgeon as to the grave condition of his patient.

6. As to the cause of the complication, my impression is that it is due to two details in faulty technique: (1) When the sinus is opened and the diploic spaces in the margin of the bony wound are exposed, infective material is introduced into them by curetting the walls of the sinus with a small sharp spoon. The diseased and pus-infected mucous membrane should be wiped away gently with small sterile swabs. (2) The lips of the wound in the soft parts should be left widely open and only the lightest packing placed in the sinus cavity. Since adopting these precautions I have experienced no anxiety in any of my cases.

It may not be out of place to state that opening an acute or chronic empyema of the frontal sinus by the intranasal method does not exclude the possibility of osteomyelitis of the frontal bone, for at least one case has already occurred, the details of which may be studied in the *Journal of Laryngology*, June, 1917, p. 186.

A NOTE ON THE ASSOCIATION OF HERPES ZOSTER WITH ARSENIC.

BY

HILDRED CARLILL, M.A., M.D. CANTAB., M.R.C.P.,
NEUROLOGIST TO THE ROYAL NAVAL HOSPITAL, HASLAR.

It is well known that arsenic administered in large quantity may have a harmful effect on the nervous system, both central and peripheral, and from time to time cases of herpes zoster have been recorded which have been ascribed to arsenic. Hutchinson was one of the first observers to point out this association.

Herpes zoster is looked upon commonly as being secondary to some change, either haemorrhage or inflammation, in the posterior root ganglia of the spinal nerves, but it has been recognized for a long time that the lesion is not confined to these ganglia. For instance, in some cases the cerebro-spinal fluid has been found to contain a well-marked lymphocytosis, pointing to involvement of the meninges, and in others the occurrence of Kernig's sign has suggested that the posterior roots have not escaped the inflammation.

Many cases of herpes zoster have been described which have been associated with, or followed by, a generalized vesicular eruption, and Dr. Parkes Weber¹ has recently summarized some of these. It has been suggested that herpes zoster is a modified and localized form of varicella, but the evidence of this is by no means conclusive. On many occasions the apparent connexion between these two diseases has been noted. There can be little doubt, however, that some of the cases were examples of a generalized shingles, but in others true herpes zoster appeared to have been produced from contact with a patient suffering from varicella, and vice versa.

The following case is of interest, as it relates both to the question of the association of arsenic with herpes zoster and also to the question of generalized herpes zoster:

A naval officer, aged 54, was seized during January, 1916, with an attack of multiple adenitis, together with paresis of the lower limbs and retention of urine. Except for the fact that he had spent twenty-three years in India there is nothing in his history which appears to have any bearing upon his illness.

He was a stout man of close on 15 st. in weight. On admission to Haslar on February 25th, 1916, he was found to

have almost complete paraplegia of the upper motor neurone type. The lymphatic glands in his cervical, pre-auricular, axillary, and inguinal regions were markedly enlarged and somewhat tender. There was no palpable enlargement of the spleen. The red cells were 4,500,000 and the white cells 3,000 per cubic millimetre. Of the latter, 50 per cent. were polymorphonuclears, and there were 2 per cent. of eosinophiles. The colour index was 0.77. His systolic blood pressure was 150 mm. of mercury. There were no visible haemorrhages. The Wassermann reaction of his serum was negative (Fildes). The cerebro-spinal fluid was not examined.

The connexion between the glandular enlargement and the paraplegia was not very evident, nor indeed was the nature of the adenitis. We were unable to obtain the consent of the patient to the removal of a gland. There was no evidence that the mediastinal glands were involved. Towards the end of March his general condition, other than that of the glands, had improved considerably. Treatment by liquor arsenicalis was commenced, and he continued with it until May 9th, 1916, when he went on convalescent leave.

On July 5th, 1916, he was readmitted, looking and feeling much better. He was able to walk quite well. The condition of the glands appeared to be about the same as when he was last seen. He told us that he had been taking the medicine throughout. On July 10th an eruption of herpes appeared on the right side of his abdomen. It assumed considerable dimensions, and covered roughly the area of skin corresponding to the eighth, ninth, and tenth dorsal segments of the cord. The eruption was not preceded by any pain but it was associated with pain when it was fully developed. By this date he had been taking 15 drops of Fowler's solution daily since March 23rd, a total of some 1,600 drops, or, roughly, 15 grains of arsenic. The eruption rapidly became generalized, vesicles appearing over the face, body, and limbs; the eyelids were considerably swollen. After a short time the eruption healed in the usual manner, and on July 28th the patient was discharged to his home. The condition of the glands was not materially altered. The temperature was normal throughout, except during the time when he was suffering from herpes.

REFERENCE.

¹ *British Journal of Dermatology*, March, 1916.

The Croonian Lectures

ON

ADAPTATION AND DISEASE.

DELIVERED AT THE ROYAL COLLEGE OF PHYSICIANS,
LONDON, JUNE 26TH, 1917.

BY J. G. ADAMI, M.D., F.R.S.,
TEMPORARY LIEUT.-COLONEL C.A.M.C.

LECTURE IV.

THE PHYSICO-CHEMICAL BASIS OF IMMUNITY AND
EVOLUTION.

(Abstract.)

In the previous lectures it had been shown that the studies upon pathogenic bacteria and upon immunity proved conclusively the existence of direct adaptation of a definite order, both in the lowest and in the highest forms of life. To the academic biologist such a suggestion of a direct action of external agencies as a prime cause of variation is as shocking and improper as would be the suggestion of a risqué story to some dear, modest elderly maiden lady. And yet it is along these lines that medical research is surely leading us.

Believing that we are in the right, where is it that the biologists have gone wrong? It was suggested that the

Photograph taken to show enlargement of glands and healing herpes on July 26th, 1916. A few of the generalized vesicles can be seen.