

PROGRESS

OF

MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM OSLER, M.D.,

PROFESSOR OF MEDICINE IN THE JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND,

AND

W. S. THAYER, M.D.,

ASSOCIATE PROFESSOR OF MEDICINE IN JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND.

Acute Nephritis following Mumps.—PAGANELLI (*Riv. Crit. d. Clin. Med.*, 1902, vol. iii., 726), from Silvestrini's clinic, reports a case of mumps in a boy, aged nine years, who had never suffered from any of the exanthemata. At first the symptoms were light, the affection being limited to the right side, while at the same time a younger brother had bilateral parotitis. Two days later the patient became very ill: respirations, 44; temperature, 39.4° C; pulse, 120. Slight œdema of the eyelids and of the extremities, especially of the hands and feet. Urine scanty, 0.4 per cent. albumin; in the sediment, numerous hyaline and epithelial casts and a moderate number of red and white blood corpuscles. Stained specimens from urine passed into a sterile vessel showed a moderate number of bacteria, a few bacilli coloring with Gram, but no cocci which held their color with Gram. Cultures showed only a few ordinary bacteria (*mesentericus*, *proteus*, *sarcinæ*, and bacilli of the colon group). One rabbit inoculated with the sediment of the urine died after fifteen days of infection with a variety of the bacillus coli, while the other died after a month, of coccidiosis. After sixteen days the fever fell to normal, the œdema disappeared, the urine cleared up, and the patient rapidly recovered. The relation of this attack to the parotitis, together with the absence of evidence of any other general infection, led the author to believe that the renal process, was due to the specific cause of parotitis. While slight albuminuria is not infrequent during the course of parotitis, actual acute nephritis is so unusual as to justify mention of the case.

On the Working Capacity of the Heart.—GALLI (*Münchener med. Wochenschrift*, 1902, Band xlix., pp. 953, 1005, 1049). While the recognition of weakness of the heart muscle is easy enough when recogniz-

able dilatation and subjective symptoms of dyspnea, etc., have developed, yet it must be said that we have up to the present time possessed no satisfactory means of estimating the muscular capability of the apparently normal heart. Galli in a careful study seeks to show that valuable information concerning this important point may be obtained from a study of the reduplications of the heart sounds, and more particularly of the reduplication of the second sound heard in the pulmonic area. The majority of observers have divided the reduplications of the second sound into the physiological and pathological, regarding as physiological reduplications those occurring in apparently normal individuals which are inconstant and vary with different phases of the respiratory act. The truth of Potain's observation that the so-called physiological reduplication of the second sound is especially marked at the end of inspiration and at the beginning of expiration has been recognized by most observers. Observations as to the frequency of the reduplication, however, have varied greatly. Gerhardt found it 18 times out of 260 individuals, who were, however, for the most part patients, though the majority were not in bed; Potain, 38 times out of 500; while Landgraf in 594 healthy soldiers failed to find a single reduplication. Galli examined carefully 300 individuals—200 apparently healthy individuals, 100 others—patients in the hospital. These were examined frequently at different times of the day and under varying conditions. He made frequent examinations of 120 carabinieri at one of the barracks in Rome. His observations here were most interesting in that he found early in the morning an average of 19 reduplications in every 100 men. In the middle of the day after exercise there were 40; at half-past three in the afternoon 56. Where a reduplication had occurred in the morning it was *never* absent in the afternoon or evening. Reduplication was more frequent in the recumbent posture, in which he examined all his patients; while Landgraf's statistics were based upon examinations made in the erect posture. This he believes may be due to the fact that the left ventricle has more work to do in the erect posture, on account of the increased blood pressure which results in a slight retardation of the second aortic sound—enough to prevent a reduplication from delay in pulmonic closure. The reduplication was constantly found during recovery from infectious diseases.

What conclusions may be drawn from these observations? Dehio, while accepting the division into physiological and pathological reduplications, has stated that, in his opinion, the reduplication of the second sound when present in otherwise healthy individuals is suggestive of weakness of the right heart. Galli inclines strongly to the same opinion, believing, moreover, that the "diastolic reduplication is a valuable symptom of exhaustion of the heart muscle, and gives us, therefore, a measure of the functional capacity of the heart." The right ventricle may be called the *locus minoris resistentiæ* of the heart, and the period of the respiratory act at which this phenomenon is especially perceptible is just that time at which the greatest work is called for. "The right ventricle is . . . during inspiration, but especially at the end of inspiration, much filled with blood, and must, as a result, contract with greater energy in order to empty its contents into the pulmonary vessels—all the more since the elastic pull of the lungs reaches its highest degree at the end of inspiration;" though

it is possible that this is compensated for to a considerable extent by the simultaneous dilatation of the pulmonary vessels. If, however, the right heart be weakened, systole at the end of inspiration will be more difficult, slower, and may well result in a slight delay in the closure of the valves; and the degree of interference with the right heart will depend upon the depth of the inspirations. In cases, then, of very slight weakening of the heart muscle, the pulmonary reduplication may be heard only at the end of inspiration—"a reduplication of the first degree." If the weakness be a little more, the difficulties in the way of contraction of the ventricle may last for a few beats into expiration—"a reduplication of the second degree." Where severe alterations of the cardiac muscle are present we may have a persistent reduplication during all phases of the respiration—a "reduplication of the third degree." Delay in the second aortic sound may also occur, but for different reasons, which the author considers.

According to Galli, then, diastolic reduplication is a symptom of exhaustion of the heart muscle, which may depend upon four causes: (1) Diseases of the heart muscle; (2) elevation of pressure in the pulmonary vessels or the aorta; (3) modifications in the pull exercised by the lungs ("Lungenzug"); (4) nervous causes. The recognition of these facts is a matter of importance because of the value of rest and proper treatment in early cases. His conclusions are as follows:

1. The present division of reduplications into physiological and pathological is not justified, since it does not rest upon clinical facts; they should rather be divided into reduplications of the first, second, and third degree.

2. Diastolic reduplication is always and under all circumstances a pathological phenomenon; that of the third degree is the worst and the least influenced by the rest.

3. Diastolic reduplication is an indication of insufficiency of the heart, and is therefore a good criterion for the estimation of the functional capacity of the heart.

4. It is necessary to separate the pathology of the heart sharply into that of each side, and to distinguish between reduplications due to affections of the right and of the left ventricle.

5. Rest is the best method of treatment for diastolic reduplications and the best method to prevent the development of cardiac insufficiency.

1. Experiments on the Effects of Freezing and Other Low Temperatures upon the Viability of the Bacillus of Typhoid Fever, with Considerations Regarding Ice as a Vehicle of Infectious Disease. **2. Statistical Studies on the Seasonal Prevalence of Typhoid Fever in Various Countries and its Relation to Seasonal Temperature.**—SEDGWICK and WINSLOW (*Memoirs of the American Academy of Arts and Sciences*, vol. xii., No. 5, pp. 472-577) conducted a series of very elaborate experiments on the effects of freezing and other low temperatures on the typhoid bacillus, with the view of determining the degree of risk of typhoid fever being contracted from infected ice. They also endeavor to find an explanation for the autumnal prevalence of typhoid fever by a most elaborate statistical study of the disease in various countries.

The authors first give an exhaustive review of the literature relating to ice