ARTICLE XVI.

THE DIAGNOSIS OF TYPHUS FEVER. By A. RANDOLPH MOTT, M.D., Resident Physician Riverside Hospital, Health Department, New York City.

DURING a period in which 771 cases of typhus fever were treated at the Riverside Hospital, there were admitted 108 patients who were classed as "improper subjects."

These patients had been seen by one or more physicians, and in certain half the number the unqualified diagnosis of typhus fever was made; the rest were considered to present symptoms sufficiently suspicious of this disease to warrant isolation for further development, and were, therefore, admitted to the quarantine wards of the hospital.

An enumeration of the diseases with which these patients were affected, and the number of cases of each disease, is as follows:—

Classification of 108 Cases mistaken for Typhus Fever.

<i>Febrile Affections (38).</i>		<i>Affections of the Intestinal Tract (7).</i>	
Smallpox	8	Dysentery	2
Measles	1	Diarrhœa	2
Scarlet fever	1	Constipation	3
Typhoid fever	12		
Malarial fevers	13	<i>Affections of the Throat and Lungs</i>	
Febricula	1	(22).	
Urethral fever	1	Acute pharyngitis	2
Rheumatic fever	1	Pneumonia	8
		Phthisis	7
<i>Affections of the Nervous System (15).</i>		Pleurisy	2
Meningitis	3	Bronchitis	3
Cerebro-spinal meningitis	3		
Insanity	1	<i>Traumatism (1).</i>	
Spinal sclerosis	1	Sprain of ankle	1
Alcoholism, acute	6		
Insolation	1	<i>Affections, of the Kidneys (1).</i>	
<i>Affections of the Skin (10).</i>		Pyelitis	1
Purpura	1	<i>Unclassified (14).</i>	
Erythema	3	Scrofula	1
Erysipelas	1	Debility	11
Acne	1	Malingerer	2
Syphilis	1		
Phthiriasis	3		

There is included in this table nearly every disease which writers mention as liable to be confounded with typhus fever; and it may be observed that the frequency with which any disease was mistaken does not indicate the comparative closeness of its resemblance to typhus. Thus, there were three cases of erythema, and but one of measles, yet all writers declare that the latter is sometimes distinguished from typhus fever with much difficulty.

Smallpox and typhus may have the same premonitory symptoms, and

the eruption of smallpox is sometimes preceded and accompanied by a general *erythema*—the *roseola exanthematica* of some authors—in which the early macules and papules of an irregular eruption slowly appear. It is generally stated that this condition is most frequently seen in those for whom the disease has been modified by vaccination, but it may be noted that of the eight cases of the table, in all of which this symptom was present, four died of malignant smallpox.

Thirteen cases of typhus were sent to the hospital as smallpox, making twenty-one instances where these affections were confounded. A positive opinion was not often declared concerning these cases, and indeed twenty-four or thirty-six hours would sometimes elapse after the appearance of the eruption, before it could be decided whether a patient should be admitted to a typhus or a smallpox ward. Except, however, in some petechial forms, the eruption of smallpox will usually lose in a very few hours all resemblance to that of typhus.

Measles, especially the hemorrhagic variety, is more often mistaken for typhus than this table indicates; for during the prevalence of typhus fever very few cases of measles, and not many children of any class, were accepted at the Riverside Hospital. In the case referred to in the table, and in two of typhus, where measles was the first diagnosis, the patients were all adults. The symptoms of measles, other than the eruption, must be depended upon for a correct diagnosis. The spots of the typhus eruption are not infrequently quite as bright as are those of measles, and they may also, in the early stage, disappear on pressure, and be slightly elevated above the surface. The presence or absence of the roseola in the face is not sufficient to establish a diagnosis; the eruption of measles, though commonly abundant in this region, may be confined to the trunk and extremities, while that of typhus is occasionally well marked on the face and neck.

Scarlet fever was in but one instance supposed to be typhus. In this case the eruption was of the ecchymotic form sometimes seen. From an institution, in which scarlet fever was prevailing, a number of children were received, and, among them, ten were found to be affected with typhus.

Typhoid fever, in the twelve cases of the table, presented most frequently an abundant eruption as the misleading symptom. Only two cases, of the few received with a diagnosis of typhoid, proved to be typhus.

But the difficulty of distinguishing between these diseases is well illustrated by two instances, in which a number of boys living in public asylums were affected with symptoms of both fevers. In the first there were, perhaps, twenty patients under observation for several days before typhoid was diagnosed, chiefly by the characters of the eruption, which, in many cases, was profuse. In the other instance there were fourteen patients,

and here no diagnosis could be made, although the febrile symptoms were, in the majority, marked, and the eruption usually abundant. After a few days, however, an adult attendant from the same institution was admitted with undoubted typhus. In each instance the diagnosis was confirmed by autopsy.

Malarial fevers presented an assorted group, in which were found pernicious (one case), intermittent, remittent, and these irregular forms which are accompanied by a history of a recent malarial disease, which yield to quinine, and improved hygienic conditions, and in which, finally, a diagnosis is arrived at, perhaps too often, by exclusion.

Nervous affections are often differentiated with difficulty. Alcoholism not infrequently presents many of the symptoms of typhus; but there is generally no eruption of any kind, and very rarely any elevation of temperature. In meningitis, the resemblance is sometimes yet closer. In one instance, a case of cerebro-spinal meningitis was under observation for ten days before it was suspected of being other than typhus fever.

Affections of the skin should never be mistaken for typhus. There are certain eruptions which may take the appearance of the typhus rash, as seen in some syphilides and in purpura, but other symptoms of the fever are conspicuously absent.

Affections of the throat and lungs numerically head the above table, yet these were the cases which were most frequently sent for quarantine purposes, and could generally be distinguished from typhus after, at most, two or three days for observation and physical examination. Certainly phthisical subjects are not exempt from typhus, but the other affections rarely occur as complications before the end of the second week.

Affections of the intestinal tract sometimes give rise to symptoms which are common at the onset of typhus; indeed, Buchannan (Reynolds's *System of Medicine*) says that "it is particularly difficult to separate the invasion of typhus from an attack of acute dyspepsia."

Pyelitis is the only disease of the kidneys mentioned, but it is very probable that many of the cases of "debility," for the careful examination of which there was an opportunity, owed their symptoms to disease of these organs.

It is obviously improper to declare that the total numbers given above indicate correctly the proportion of mistakes made in the diagnosis of typhus fever, in the same manner that similar numbers would do were it a non-contagious disease. Still, that the frequency of mistake is not entirely dependent on the necessity for making a prompt disposal of such cases, in order to prevent the spread of contagion, is shown by the much smaller number of errors made in the diagnosis of smallpox, a disease certainly as much feared as typhus. Of 1134 cases, sent to the hospital as smallpox, the diagnosis proved to be correct in 1113, leaving but 21 improper cases. (These are the numbers for one year.)

But the symptoms of typhus fever are certainly not so distinctive in its first week as are those of any other eruptive fever, and it is generally within this period that a diagnosis must be made; moreover, typhus is met with in this country only at intervals, sometimes of years, and it is rarely seen at all outside of our seaport towns; consequently but few physicians can have any practical knowledge of the subject. The descriptions to be found in books will hardly justify an early diagnosis. Murchison, in his exhaustive article on this subject, says, of the invasion, "most commonly there are no marked rigors, but merely a feeling of chilliness." But Niemeyer says, that it "generally begins with a single protracted chill of great violence," and Beveridge (Quain's *Dictionary of Medicine*) declares that it more commonly begins in a well-marked way, but frequently nothing definite indicates its commencement. Subsequent symptoms are "pains and aching in the limbs, headache and a feeling of prostration, chilliness, loss of appetite, a furred tongue, and fever; the temperature may be five degrees above normal in the first week. The face is flushed and dusky, and conjunctiva injected." (Murchison.)

"The patients usually lie in a state of apathy, others are restless and can scarcely be kept in bed. . . . Not infrequently the headache is relieved by nose-bled." (Niemeyer) "At the outset, the pulse is full and decided, it speedily becomes soft and easily compressible. . . . Symptoms of catarrh are not uncommon," and "intestinal catarrh and moderate diarrhoea are not of rare occurrence." (Lebert in *Ziemssen's Cyclopædia*.) It should be remarked that the diarrhoeal stool of typhus does not present any of the characters of the typhoidal stool, and is unaccompanied by abdominal symptoms. Indeed, in the early history of a case, this symptom has often to be ignored altogether, as it will be found that some household cathartic has been used which has produced this effect.

Thus far there is nothing to distinguish the affection from many others. About the fourth day the eruption appears, with the descriptions of which all are familiar.

This eruption is usually described as characteristic; "without it," says Murchison, "a certain diagnosis is impossible." Yet this symptom is absent altogether in some cases (about ten per cent.), and its distinguishing features are frequently not well marked until several days after its appearance, and sometimes not at all.

Lebert says he "must protest against its possessing any specific character;" he thinks "it does not perceptibly differ from that of typhoid, and is to be distinguished from it by its profusion and extent over trunk and extremities."

An uncomplicated case of typhus, presenting in a marked manner a majority of the symptoms—the facies and eruption, the febrile and nervous symptoms—should be recognized without much difficulty, but

this condition is not often reached within the first week, to which period the greater number of cases in the above table were supposed to belong.

The liability to mistake typhus is increased by a variety of general conditions. Occurring for the most part among the inmates of tenement and lodging houses, the very conditions which are supposed to originate the fever may serve to mask its features. It is easy to see how a patient of this class, accustomed to misery and filth, and unaccustomed to seek relief for the lesser complaints, may present many of the symptoms of typhus.

Poorly nourished or bloated by intemperance, his temperature may be elevated by some transient cause, or there may be an exacerbation of some chronic disease, which most of his kind possess. The skin of such persons is rarely healthy throughout its surface, and may present a syphilide, an acne, or phthiriasis, so modified and so indistinct, by reason of filth, as to resemble the rash of typhus, while any symptoms which may be wanting will be supplied by the ready tongue of the patient, or perhaps by the anxiety of the observer.

The brief history of a case illustrating some of these difficulties is as follows:—

A man about thirty-five years of age was brought in from the street, unconscious, and supposed to be drunk. The body was fairly nourished, the surface was of a dusky hue, the face flushed, the eyes injected, the pupils small. Over abdomen and chest, and upper parts of arms and thighs, were scattered, rather profusely, small petechial spots, for the most part of minute size. The axillary temperature was 104° ; the pulse 120, full, soft, and compressible; the respirations were 36 to the minute.

Dr. E. G. Janeway saw the patient, and while concurring in the opinion that the case was probably one of typhus, he saw nothing in the conditions which might not be as well explained—in the absence of a previous history—by the presence of acute ulcerative endocarditis. The following day the condition of the patient was not materially changed. The temperature was $104\frac{1}{4}^{\circ}$; pulse 148; respirations 40. It was now noticed that there was some paralysis of the left arm; as the man lay quiet it is not known whether this was present on the previous day or not.

On the third day the patient died. Autopsy ten hours after death. Surface still dusky; eruption persistent. Brain, old cyst of right frontal lobe; embolus of right middle cerebral artery. Lungs normal. Heart, well marked ulcerative endocarditis. Spleen normal in size and consistency, and not enlarged and softened as usually seen in those dead of typhus; there were several red infarctions. Kidneys, multiple emboli. Other organs normal.

There was still a possibility that typhus had existed in conjunction with the above-mentioned conditions, but investigation of the man's previous history proved the contrary. He was known to be an epileptic, and had not been in very good health for some months, but had continued at his work. He was employed as driver of a coal cart, and on the day of his admission to the hospital had been at work for several hours when he fell from his seat and was in an unconscious state.