

Löffler bacillus and its toxins or to associated bacteria. As far as I know, these are the first injection experiments ever made on animals with this bacillus or its products. At the same time a careful study of the leucocytosis was made, and the work of previous investigators in this line gone over. Autopsies were made in all cases and the organs examined.

Rabbits were used, as their ears naturally fit them for intravenous injections and the blood is easily obtained. The normal number of white corpuscles averages a little higher than in man. As there is a considerable variation in individual animals a count was made in every case before beginning an experiment. Rabbits offer the further advantage that they present no digestion leucocytosis.<sup>10</sup> The blood was always taken from the ear and diluted (1 to 200) with a three-per-cent. salt solution colored with methylene blue. The Thoma-Zeiss instrument was used, and the corpuscles in at least fifteen cubic millimetres counted. The differential counts were of 500 white cells hardened with alcohol and ether and stained with Ehrlich's "triple-stain." The toxins used were from a filtered bouillon culture which had been twenty-three days in the thermostat, and was preserved by the addition of one-half per cent. of carbolic acid.

I wish here to acknowledge my indebtedness to Dr. J. H. Wright of the Harvard Medical School for the use of the toxin solution, and to thank both him and Drs. Councilman and Mallory for valuable advice and assistance in my work.

(To be continued.)

## Clinical Department.

### OBSERVATIONS UPON CASES HAVING THE SO-CALLED "TÂCHES BLEUÂTRES" IN THE BOSTON CITY HOSPITAL.<sup>1</sup>

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SYNONYMS: *tâches bleues*, *tâches ombrées*, *tâches ardoisées*, *tâches phthiriques*, *maculae ceruleae*, *maculae cyanicae*, *pelioma typhosum*.

ALTHOUGH reference to the literature upon this subject seems to indicate that the presence of these *tâches bleuâtres* is of little diagnostic significance in any case, yet their precise origin seems still to be a matter of some doubt, and hence a collection of the various theories upon the subject is of interest.

At one time these bluish spots, varying in diameter from the size of a pin-head to that of a fifty-cent piece, not disappearing upon pressure, and most frequently found upon the abdomen and flanks, during the course of typhoid fever, were supposed to be due to that disease. Slight allusion is made to them in Flint's "Practice of Medicine," under the head of Typhoid Fever, but no suggestion is made as to their causation. Trousseau had noticed them also in typhoid fever. Other observers found that the spots were not confined to typhoid, but noticed them in various other diseases: yellow fever, pleurisy, pneumonia, gonorrhoea, and also in non-febrile diseases.

In 1868 Moursou, a pupil of Falot, and physician in the French navy, first advanced the idea that these spots were not the result of any one disease, but were

<sup>1</sup> This paper will appear in the Boston City Hospital Reports, Sixth Series.

due to the presence of pediculi pubis. Later, in quite an elaborate and careful paper, he gave his proofs of this theory, and as a result of his observations, makes the following statements:

Over 250 cases had been observed in every variety of climate and in diverse diseases, mild and grave. Delicacy of the skin, a blond complexion, and a phlegmatic temperament, he noticed, were the most usual accompaniments of the spots. He asserts that every time he found these spots the pediculi pubis or their ova were also present. He noticed, moreover, in healthy men who had had the parasitic infection for at least twenty days, that the majority of them had the *tâches bleues*.

Moursou's observations were so carefully made that one is certainly impressed by the probable truth of his theory, which has been substantiated by subsequent observers, namely, O. Simon, Gibbies, Gebbin, notably by Duquet and Mallet. The former injected under the skin a paste made with the bruised pediculi and water, and spots similar to the *tâches bleuâtres* made their appearance. Mallet believes that the color is caused by the secretion contained in the thorax of the pediculus opposite the anterior pair of legs where there are two pairs of salivary glands, the contents of which are conveyed under the epidermis through the "haustellum" or sucking apparatus of the insect.

Most of the modern text-books in speaking of the *tâches bleues* seem to accept the theory of Moursou, notably Ziemssen, Strümpell, and Osler, although Osler evidently feels some doubt as to whether the mere presence of the pediculi is the cause of the spots, or whether there is not some accompanying condition of the patient which favors their appearance. He says: "If really caused by these parasites, it is difficult to understand why they should be present only with fevers," which implies that he has not met with them in non-febrile cases. An objection to the theory of Moursou was brought forward by some from the fact that the *tâches bleues* are sometimes found upon people of undoubted cleanliness of body, and of the highest moral character; an objection which would not in itself seem to be valid, because of the undoubted fact that such people have often by accidental means become infested by these insects, the presence of which can have been easily overlooked by the examiner.

In an article entitled "Blue Spots in Typhoid Fever," in the New York Medical Journal of October 20, 1894, Dr. A. V. M. Anderson, of Melbourne, Australia, is quoted. In the Australian Medical Journal of August 20, 1894, he writes that the "rash" is one of the least commonly seen in typhoid fever, and probably escapes observation on account of indistinctness. He found them in eight out of 915 cases. In five they were present upon entrance, the duration varying from five to fifteen days; in others they appeared on the fifteenth, twenty-first, and forty-second days, and disappeared usually in a week or ten days.

Dr. Anderson could find no evidence of the pediculi pubis, and had not noticed them on patients with other diseases. They were detected over the course of the subcutaneous veins, and would seem to indicate, according to Dr. Anderson, that they are due to an altered condition of the blood, which shows itself in the tendency to epistaxis in so many cases of typhoid. He regards them as of little clinical significance.

Still another theory is advanced by Professor Revilliod, of Geneva, for the purport of which I am in-

debted to Dr. C. G. Cumston, who informs me that in a clinical lecture upon the subject, Revilliod stated that he believed the spots to be due to the *excrement* of the pediculus pubis, which he believes to be an insect of very cleanly habits, and that during the night he leaves his usual seat at the root of the hair, and deposits his feces in adjacent portions of the body. I have been unable, unfortunately, to obtain Revilliod's proofs either for this action on the part of the insect, or for his theory of the excrementitious nature of the spots; but it serves to show the diversity of opinion which still exists upon the subject.

Another theory which has been advanced is, that this insect has a special liking for the bodies of patients suffering certain diseases; but although they certainly seem to have been noticed more frequently in typhoid fever than elsewhere, as yet no substantial proof has been given that this fact is anything more than mere coincidence.

During my service in the last two years I have come across nine cases in which the *tâches bleuâtres* were present, and in every case the presence of pediculi pubis was proven. Three of these cases were typhoids, which recovered, and the others were one each of phthisis, jaundice from gastro-duodenitis, acute bronchitis, intermittent fever, hysteria, and the one which showed the most numerous spots being a fatal case of cerebral meningitis following an otitis media. Of these cases seven were males and two were females.

In Dr. George B. Shattuck's service this year up to the present, eight cases are recorded in which the blue spots were noticed, but unfortunately no record is made as to whether the pediculi were also present or not. In two which I examined I was unable to find the insect by most careful search, but in one of these cases I only made the examination on the day of discharge of the patient, who had been ill several weeks with typhoid; and in the other the patient had been transferred from the surgical ward as a possible typhoid case, having entered with suspected appendicitis, so that sufficient time had elapsed for the removal of possible pediculi before I saw the patients. The other cases, six in number, were all typhoids, which also recovered.

Judging by the frequency with which pediculi were found to be present in my cases, I can but feel that they would have been found in at least the majority of the other cases had special attention been directed to this point earlier.

Although from such a small number of cases nothing can be proven absolutely, yet they at least show that the spots can appear in quite a variety of diseases, and are not confined to either severe or mild forms of disease.

From this comparatively slight experience I am led to accept the view of Mourson as the correct one.

#### BIBLIOGRAPHY.

- J. Mourson. *Annales de Dermatologie et Syphiligraphie*, Paris, vol. ix, p. 198. *Nouvelles recherches sur l'origine des taches ombrées.*  
 J. J. Levisseur. Notes on a case of maculæ ceruleæ. *Journal of Cutaneous and Genito-Urinary Diseases*, 1889, vol. vii, p. 414.  
 A. Strümpell. *Handbook of Medicine*. (Translation.) 1887, p. 16. *New York Medical Journal*, October 20, 1894. Blue spots in typhoid fever.  
 Flint. *Practice of Medicine*, 1886, p. 959.  
 Osler. *Practice of Medicine*, 1892, pp. 15 and 1049.  
 Moore. *Eruptive and Continued Fevers*, 1892, pp. 236, 272, 370, 371.

- Jamieson. *British Journal of Dermatology*, vol. i, No. 10. *Diseases of the Skin*, 3d edition, 1882, p. 589.  
 Murchison. *Treatise on the Continued Fevers*, 3d edition, pp. 272, 370, 516; 2d edition, pp. 132, 516, 684.  
 A. Wolff. *Lehrbuch der Haut- und Geschlechtskrankheiten*, 1893, p. 303.  
 H. R. Crocker. *Diseases of the Skin*, 2d edition, 1893, p. 922.  
 G. T. Jackson. *Diseases of the Skin*, 1892, p. 346.  
 Duguet. *Gaz. des Hôpitaux*, 1880, vol. lili, p. 362.  
 Chatlain. *Précis iconographique des maladies de la peau*, 1893, p. 353.  
 Besnier and Doyou. Translation from M. Kaposi, *Pathologie et traitement des maladies de la peau*, Paris, 1891, p. 933.  
 Ziemssen. *Handbuch der speciellen pathologie u therapie*, vol. xiv, 1884, p. 390.  
*Annales de Dermatologie et Syphiligraphie*, 1880, p. 544; 1881, p. 357; 1889, p. 28.  
*British Journal of Dermatology*, 1889, p. 321; 1890, p. 209.

## Medical Progress.

### RECENT PROGRESS IN LEGAL MEDICINE.

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#### CADAVERIC RIGIDITY.

TISSOT has formulated some new views concerning post-mortem rigidity which differ from the theories previously promulgated by physiologists.<sup>1</sup> Most authorities have accepted the explanation of this phenomenon offered by Brücke and Kühne, that it is due to a chemical change, the coagulation of myosine; while others, following Ingsten and Brown-Séquard, regard it as a final contraction of the muscles and thus a physiological fact. Tissot's conclusions are as follows: (1) The rigid muscles can very often be electrically excited for a variable period after the advent of rigidity and even when it is completely developed. This persistence of excitability is almost constant in cases in which rigor mortis has supervened with rapidity. (2) The rigid muscles which have lost their electrical excitability often preserve their mechanical contractility for a considerable time. (3) The rigid muscles which have lost both their electrical and their mechanical excitability can still be excited to contraction by chemical stimuli. Contrary to the statements of several physiologists, the excitability of muscles to chemical reagents (chloroform, ammonia, ether, etc.) persists much longer than the mechanical contractility and is always the last to be lost. (4) Whilst the electrical excitability progressively diminishes, the excitability of muscles under certain reagents increases and reaches its maximum when that under electricity has disappeared and at the moment when the muscle becomes rigid. With some reagents, however, the reverse occurs and the diminution of the excitability is progressive. (5) Tetanized and fatigued muscles present an exaggerated sensibility to chemical reagents in the same manner as rigid muscles. This reaction has also been observed in muscles whose vessels have been ligatured for some time, and in muscles which have been submitted to the action of air, heat, drying effects, etc. (6) Contraction produced in rigid muscles by the action of some excitant, even if it be only a limited exposure to the vapors of chloroform or ammonia, is accompanied by the production of a "current of action" in the muscular fibres; it is also accompanied by the disengagement of heat, as in the contraction of living muscle. (7) Rigid muscles, when exposed to the air, give off carbonic acid and absorb

<sup>1</sup> *Lancet*, May 26, 1894, p. 1320.