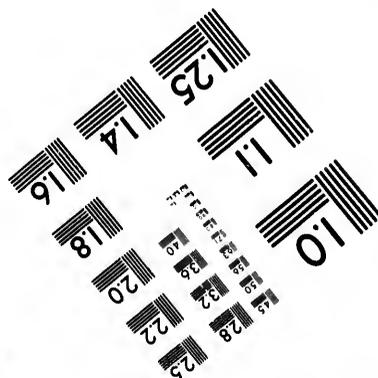
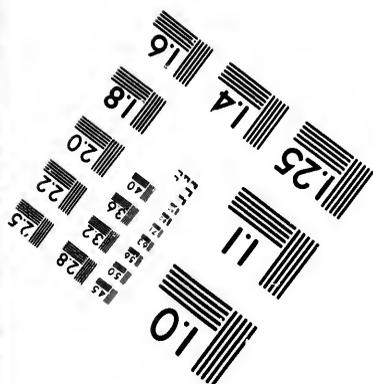
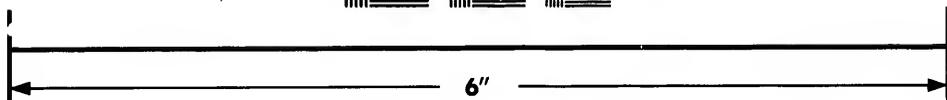
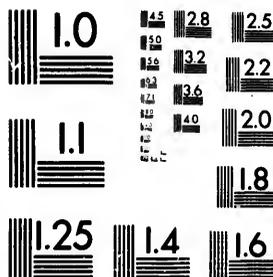


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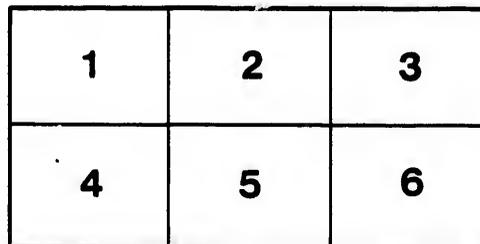
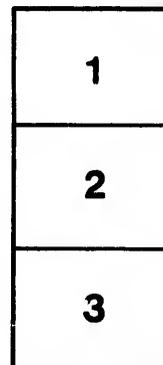
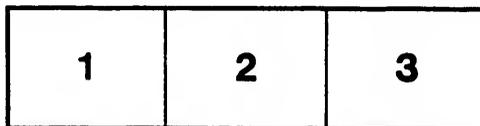
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ANOMALOUS CASES  
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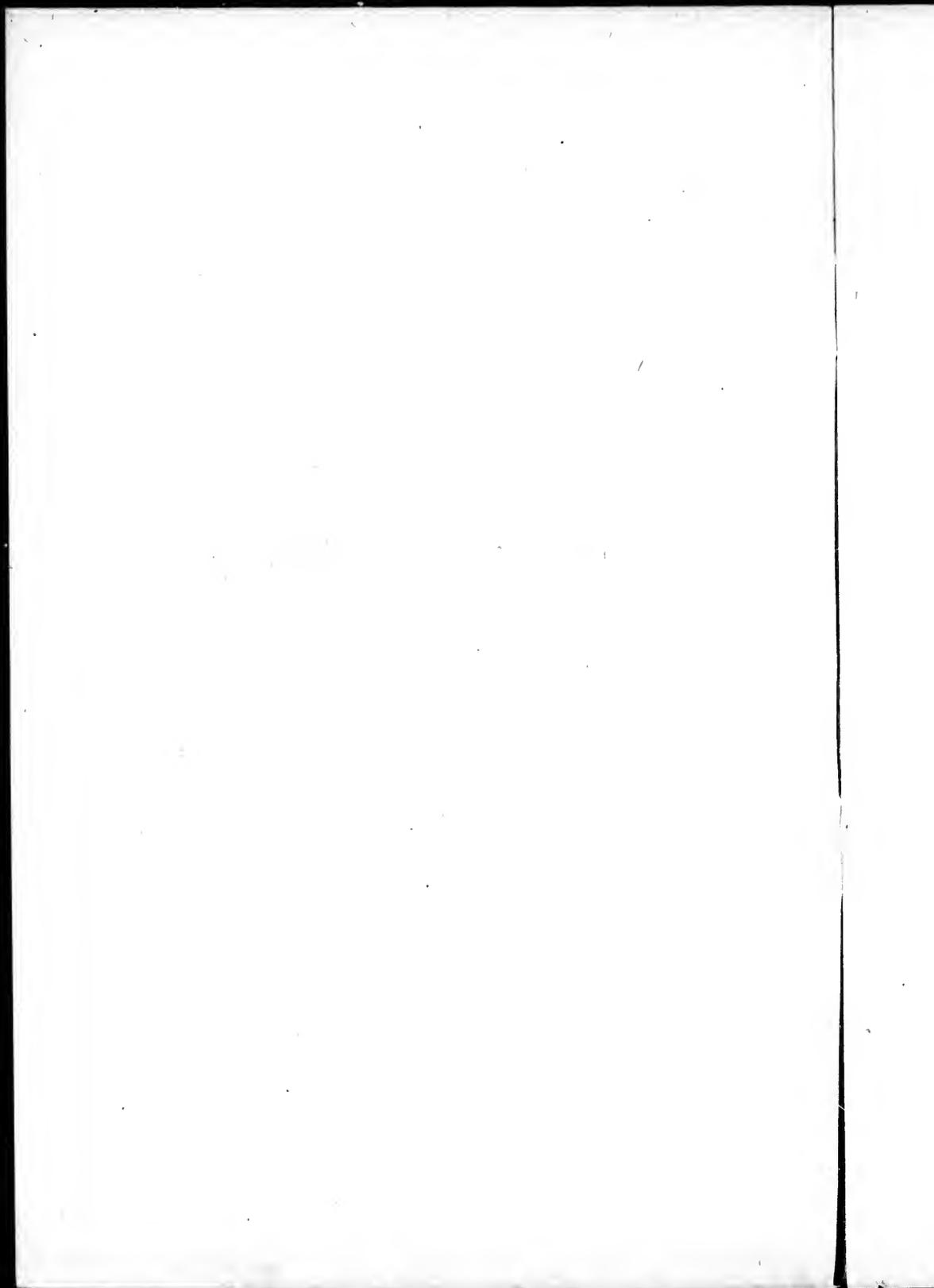
BY  
H. S. BIRKETT, M. D.  
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*(Reprinted from the Montreal Medical Journal, June, 1893.)*

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## ANOMALOUS CASES OF PRIMARY NASAL DIPHTHERIA.\*

By H. S. BIRKETT, M.D.,

Demonstrator of Anatomy and Lecturer on Laryngology, McGill University;  
Laryngologist to the Montreal Dispensary.

AND WYATT JOHNSTON, M. D., MONTREAL.

### CLINICAL HISTORIES—BY DR. BIRKETT.

CASE I.—K. E., aged 7. This little girl I was asked to see in consultation with the late Dr. Ross, in reference to a discharge from the right nostril. She was just recovering from a sharp attack of measles and was considered to be progressing favourably until the day before the consultation, when it was noticed that there was a thin, ichorous discharge from the right nostril, and during the day the voice became a little husky. The following morning when seen, the child was found sitting up in bed and enjoying herself with her toys, and apparently very well. Upon examination of the nose, just making its appearance within the right naris, was seen a thin membrane, quite white in colour, rather leathery in consistence, readily raised from the mucous membrane covering the septum, leaving its surface studded with several bleeding points and only in contact with the mucous membrane of the opposing inferior turbinated bone by reason of the swollen condition of the mucous membrane itself—these two conditions being sufficient to occlude that naris—the skin of the upper lip was somewhat reddened, excoriated and moist from the moderate acrid discharge coming from the affected nostril. The left nostril, after the application of a 5 per cent. spray of cocaine, was seen, by a

\* Read before the Montreal Medico-Chirurgical Society, January 3, 1893.

careful examination, to be entirely free of anything like membrane and quite patent to respiration. The child was extremely tractable and permitted a perfect laryngoscopic examination to be made, revealing the presence of a very delicate, transparent membrane, situated upon the laryngeal surface of the epiglottis and extending directly downwards, not laterally, to and upon both vocal cords; the membrane was so delicate as to allow of the underlying hyperæmic mucous membrane being distinctly visible. The voice was only rough in tone. The following morning there was a slight, watery discharge from the left nostril, but no membrane was to be seen upon careful examination until the next day, when a membrane similar in character and situation to that which occupied the right nostril two days previously, was plainly visible, and as on the first visit a small portion of it was removed and sent to Dr. Johnston for examination. Twenty-four hours later, curiously enough, this nostril which had contained membrane, now only had a moderately thick, yellowish secretion, which was easily removed by means of an alkaline spray. The membrane in the left nostril was seen to have receded almost to the posterior third of the inferior meatus on the first day. Careful rhinoscopic examination, which the child readily permitted, revealed no membrane in the naso-pharynx, and inspection of the tonsils, fauces and pharynx, showed these parts to present nothing more than a hyperæmic condition of the mucous membrane. Five days from the onset of the trouble the mucous membrane of the nose and larynx was perfectly free from false membrane, the secretion from the nostrils being thick, yellowish coloured mucus.

The respiration, which at first was buccal, had now become nasal, and the voice increased in tone and clearness. The child's general condition was remarkable. She sat up in bed the greater part of the day and amused herself with her playthings. The pulse never reached 100, and the temperature never rose above 98.5. There was no loss of knee-jerk and the urine was entirely free of albumen throughout the whole course of her illness.

CASE II.—The second case concerns a boy of eight years old,

whom I was asked to see by Dr. J. A. Macdonald. The features of this case differ from the foregoing only in one or two points: (1) The membrane made its appearance in the left nostril first. (2) The underlying mucous membrane did not bleed upon the removal of the false superimposed membrane. (3) Tended to recur after removal.

The general condition of the child's health did not seem to be effected by the existing trouble. There was no loss of knee jerk; no albumen in urine; no elevation of either pulse or temperature. There was no existing membrane in the naso- or buccal-pharynx. A striking feature was the absence of any glandular enlargement in both cases. Dr. Johnston reported Loeffler bacillus in both cases.

The chief interest in these cases is, I understand, in the bacteriological investigation, for cases of nasal diphtheria are frequently seen by us all, but the absence of all the classical symptoms may perhaps interest some. Here we found two children suffering from a dread disease which usually produces rather profound symptoms, and the fact that the characteristics of the membrane were wanting, no fetor present, no enlarged glands, no alteration in the pulse nor elevation of temperature, no nervous phenomena either attending or following the course of the disease, no reaction upon the general health of the children, made one hesitate about pronouncing them to be true diphtheria, but the presence of the Klebs Loeffler bacillus in the one case, and of the development of an undoubted faucial diphtheria in another member of the second family, decided that we had to deal with a true specific disease. The first case, however, for the first forty-eight hours presented a difficulty in diagnosis between diphtheria and a disease only of late fully recognized, namely, fibrinous rhinitis, from the fact that this case, in its clinical aspect, corresponded to such a condition, and, moreover, it followed upon an infectious fever, namely, measles, in which, in the majority of reported cases of fibrinous rhinitis, it is especially found to follow, and only the demonstration of the existence of the Klebs-Loeffler bacillus enabled us to make a positive diagnosis.

## BACTERIOLOGICAL EXAMINATION OF THE MEMBRANE—

BY DR. JOHNSTON.

In Case II the membrane, microscopically, showed fibrillar structure, but did not give the staining reaction of fibrin. By Weigert's stain, fibrin can be readily distinguished under the microscope. The fibrin filaments come out bright blue, and many bacteria, notably the diphtheritic bacillus, are also stained. In the present case the number of bacteria was very small, and the results were atypical.

Cultures from the exudation had an appearance not quite the same as that of the diphtheria bacilli, being coarser and somewhat yellowish. Microscopically, the bacilli in the cultures had exactly the appearance of the diphtheritic bacilli. I inoculated the conjunctivæ of two rabbits, having first wounded the membrane by scratching, but did not succeed in producing any diphtheritic exudation. On account of these negative results I thought it was not a case of diphtheria. I preserved the cultures, however, and some months afterwards, in working over some old cultures, I experimented with these and found they possessed the property of growing on serum in twenty-four hours, and, invisibly, on potatoes. This made me think they might after all be the true diphtheria bacilli. I injected some of the cultures subcutaneously into a guinea pig, and found it killed in a typical manner, so that after all we had to deal with true diphtheria. The rabbit is a more refractory animal than the guinea pig towards diphtherial virus, and I had at first probably a mixed culture, which afterwards became purified on being passed through serum. Thus we had a curious exudation which had not the ordinary characteristics of the diphtheritic exudation, either to the naked eye or to the microscope, where the patient was apparently not at all sick, and yet where we got finally positive proof that we had the genuine Loeffler bacillus to deal with.

In Case I, I received a small piece of the dried membrane about the size of a pin-head. I moistened this and made cultures in the usual way, and obtained a very abundant growth of colonies with all the general appearances of the diphtheria bacillus.

To test their nature I inoculated a guinea pig in the usual manner, and the animal died within forty-eight hours with the typical infection. Here there is no doubt we had a case of anomalous exudation caused by the diphtheria bacillus.

In neither of these cases were there any diphtheritic paralysis. The children recovered perfectly.

Important studies on the ætiology of fibrinous rhinitis have appeared, one by Koplik, in the *New York Medical Journal*, August 27, 1892, and the other by Park, in the *New York Medical Record*, 1892. Both observers met with cases in which there was a membranous inflammation of the throat of an anomalous character; they varied greatly in severity, sometimes forming a mere film of exudation and at other times forming a thick fibrinous layer. Altogether ten such cases were observed where the diphtheria bacillus was found. They even found the diphtheria bacillus in cases which presented no membrane at all—in cases of catarrhal sore throat, and in cases of what was apparently follicular tonsillitis. A. C. Abbott (*Medical News*, May 13th, 1893) has also described three mild cases of fibrinous rhinitis where the Lœffler bacilli were found. We, therefore, have certain anomalous inflammations of the mucous membrane of the throat and nose, which do not anatomically or clinically present the picture of diphtheria, but in which the diphtheria bacillus is present, and there is very little doubt that it is the causative agent of the condition.

There are some points that are interesting in connection with these cases. Why does diphtheritic inflammation sometimes run such an anomalous course? Is there any connection between the anomalous anatomical condition and the absence of fever, swelling of the glands, albumen in the urine, subsequent paralysis typical of the effects of the diphtheritic poison? We are only beginning to learn how this poison works. The anomalous condition was apparently not due to any weakness in the virus, but to some power which the patient has of resisting its action—a condition of partial immunity. It would be interesting in such cases to find experimentally whether the serum of such individuals possessed undue resisting powers to the

bacilli compared with the serum of other people. An artificial immunity against diphtheria may be induced by inoculation with modified virus, or the injection of small quantities of poison into animals, and the serum of such animals inoculated into others gives protection. Whether there is another specific disease condition, fibrinous or pultaceous rhinitis (which latter is the French term applied to this anomalous condition), is a matter which is not yet clear. A number of cases have been now examined, and Abel claims that fibrinous rhinitis may be set up by the pneumococcus (the specific agent in pneumonia).—*Centralblatt Bakt.*, Dec. 28, 1892. It may be mentioned that the first of our cases (Case II) was recorded in the MONTREAL MEDICAL JOURNAL, September, 1891.

