is found to exist in but one person in each succeeding generation—all these bring into play vital phenomena which are nearly insurmountable for positive interpretation. But we can not point exactly to the close relation which often must obtain between blood relations, yet a number of examples of hereditary tendencies are brought out by meteorologic, climatologic, and bacteriologic exciting causes. We can at least stand on surer ground as to modifications of family disease in making statements about expectation of life in certain classes of them, where the vague predispositions can be better elucidated. This study teaches in a negative way the importance of the so-called individual element being given high place in sociologic considerations in health and disease. C. Lombroso has recently laid stress on "heredity of acquired characteristics," showing clearly such effects in health.

Then it will be in the line of truer consideration toward clearer elucidation of the subject of immunity, and poisons from within—toxins or metabolites—and from without—toxins, bacteria and other poisons—will be better understood as to their very full meaning to hygiene and disease. No surer thing is in medicine, which every physician of large experience will testify to, than that the vital element, almost beyond the limitations of human investigation for intricate details, adds a ponderous weight to the scales of living. If it can have been pointed out more forcibly in this paper to the advancing mind, that medical science can not go beyond a reasonable association with vital action, the endeavor will serve its intent. It is fitting, too, to bring the subject for discussion before one of the higher arts in medicine—neurology.

BIBLIOGRAPHY.

1. Trans. of Col. of Physicians of Philadelphia, vol. xix.
2. Fay, E. A.: "Marriages of the Deaf in America." 1899.
3. Trans. American Acad. of Med., 1895.
4. For recent résumé of this type of "family disease" the reader is referred to "Family Periodic Paralysis," Jour. of Nervous and Mental Dis., October, 1898.—Edward Wyllys Taylor.
5. Trans. Ass'n Am. Physicians, 1899.
6. Am. Neur. Ass'n, 1899.
7. Jour. of Nervous and Mental Dis., February, 1889.
8. N. Y. Med. Jour., June, 1875.
9. Am. Jour. of Science, September, 1896.
10. Proceedings of Path. Soc. of Phil., May 12, 1898.
11. Ibid.
12. See "Remote Results in Artisan's Palsy": University Med. Mag. July, 1899, for other cases.
13. Taylor and Pearce: Trans. Sect. on Dis. of Children, Am. Med. Ass'n, 1898.

DISCUSSION.

DR. F. W. LANGDON, Cincinnati, Ohio—I must confess that some of the conclusions appear to do violence to our preconceived notions. I noticed particularly the extremely small number of cases, only fifty in a total of 16,500, in which a disease could be traced as hereditary. It is quite possible that this small proportion of "hereditary disease" may be due chiefly to our refinements in nosology—rather than to any real lack of hereditary influence. In other words, it is a question of *name* not of *fact*. I am impressed with the great value of the paper, and the large amount of labor required to prepare it.

DR. F. SAVARY PEARCE, Philadelphia—It struck me just exactly as it struck Dr. Langdon, that in all this collection we were able to find so few cases in which a disease was handed down from one generation to another. The object of the research was to find out what number of instances in a large series of cases were really truly hereditary. A possible fallacy would be that the histories were not taken accurately, but at the Orthopedic Hospital and Infirmary for Nervous Diseases the case records are taken with considerable care and in great detail, and I believe they are nearly accurate in most respects. I hope the paper, when it is illustrated by details presented in the tables not read, may show something more valuable. It would seem from this investigation that in at least 1 to 75 or 1 to 80 cases of nervous disease heredity as to

the same disease may be discoverable if properly searched for; while the proportion is vastly greater as to transmission of nervous predisposition to any form of neural malady in a lineage tinged with marked neuropathic diatheses. It should be stated here that hemicrania was not particularly dwelt on in tracing histories at the Infirmary for Nervous Diseases, except where it actually existed in the patient reporting for treatment; and this subject might be well worth careful statistical inquiry.

UNCOMMON PYOGENIC INFECTION OF THE MIDDLE EAR.*

BY ROBERT SATTLER, M.D.

CINCINNATI, OHIO.

It has long been recognized that cauterization of posterior and middle nasal hypertrophies, even if practiced with every caution in the selection of cases, method, and accompanied by every required antiseptic precaution, is not unattended by dangers. This warning is often not heeded until personal observation and experience have afforded convincing proof of its truth. Formerly, when the use of the galvano-cautery and other escharotic methods to effect the shrinkage of the hypertrophied areas of the mucous covering of the inferior turbinates was more general and their application more reckless, it not infrequently came to pass that acute pyogenic infection of the middle ear, of the ethmoidal cells, and even septic infection resulted as a complication in cases even where the operation was clearly indicated and necessary.

The destruction of posterior hypertrophy in particular is fraught with risk and danger. Fierce resentment on the part of the cauterized region, altogether out of proportion to the slight local injury inflicted, terminates in sphacelation and is followed or attended by destructive complication of the adjacent cavities and sinuses.

More recently, with careful selection of cases and greater circumspection in the choice of methods, with the use especially of the cold snare for the posterior thickening and the rigid avoidance of the thermo- and galvano-cautery, the frequency of occurrence of these often grave secondary complications has been markedly lessened.

It is true that in many cases the process which is excited as a result of the cauterization causes an acute purulent otitis media only, with perforation of the drum, but stops short of further destructive inflammation elsewhere. In a few cases, however, the pyogenic products which are present in the nose, wander or are forced into the middle ear along the Eustachian canal, and then is precipitated, with almost incredible rapidity and severity, a violent infection of the middle ear, antrum cells, and often even of the meninges and cerebellum.

The following case will illustrate: The patient was a young woman of frail physique, but in the best of health and with no history, antecedent or at the time, of any ear trouble. She had for several years been annoyed from time to time, by nasal stenosis, in consequence of hypertrophic rhinitis. There was present, both middle and posterior hypertrophy, more marked on the right side. At the suggestion of a specialist of distinction and experience, the latter removed the posterior thickening of the right side of the nose. Violent reaction with general septic infection followed this attempt, and after a few days it was evident that complications of the right ear had been added. Together we made every effort to arrest the progress, only to have

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our fears realized, that an unusually severe otitis media had given way to acute empyema of the antrum and cells. On the twelfth day after the nasal operation, surgery, to meet every indication which might be disclosed, was practiced. Pus was found under the periosteum, the cortex was very vascular and succulent and even the outermost cells full of pus. When the antrum was reached a gush of pus occurred. Improvement in breathing and pulse was at once observed. The proportionately large amount of pus found here suggested to us at once, what was also discovered afterward through exposure of the tympanic attic, viz., perforation of the tegmen and a large extradural abscess.

Fearing that complete escape of pus and drainage could not be secured, the middle fossa, in a locality most favorable to meet the desired indication, was opened, and it was fortunate that this was done, for it enabled us to evacuate a large accumulation of pus, which along the first channel, would well-nigh have been impossible. The most complete drainage was thereby secured, and in spite of the general septic infection, the patient recovered.

A PRELIMINARY INVESTIGATION OF THE THEORY OF THE INOCULATION OF MALARIAL FEVER THROUGH THE AGENCY OF MOSQUITOES.

BY ALBERT WOLDERT, M.D.
PHILADELPHIA.

(Concluded from Page 269.)

For some time past I have been studying the different species of mosquitoes collected in eastern and central Texas, eastern Pennsylvania, and the eastern coast of New Jersey. I learned that during the month of October the *Culex pungens* was the most common species which prevailed to the greatest extent in all of them. I have made sections of many of them and examined these microscopically. Probably 2000 sections have been made. The subject of entomology is a very important one in connection with this work, and in this department of science there is much room for improvement, such as the classification of mosquitoes.

NATURAL ORDER OF THE MOSQUITO.

The mosquito belongs to the natural order *Diptera*, sub-order *Nemocera*, and to the family *Culicidae*. Two genera are most commonly known, namely, *Culex* and *Anopheles*. The word "mosquito" is derived from the Spanish and Portuguese *mosca* or the Latin *musca*, which means a gnat or fly. The name probably originated in the West Indies, where it is learned that the term "culex, mosquito" was first applied to a kind of gnat streaked with silvery white, the female members of which have a piercing and sucking proboscis and annoy man.

Mosquitoes are distinguished from *Chironomus*, which they resemble very much, from the fact that the former are provided with an elongated proboscis or biting apparatus, while in the *Chironomus* the proboscis is but poorly developed. The wing of the mosquito is covered with hair-like scales that often extend beyond the posterior margin. The *Chironomus* is often seen in swarms or clouds, which give rise to the impression that there is a deluge of mosquitoes in a certain locality. Some members of the family *Simuliidae* are also called mosquitoes. All told, about 150 species of mosquitoes have been described. The natural food of this insect is probably the juice of plants, the sucking of blood being an acquired taste. They only forage for food

within a short range of their natural habitat. How long the adult insect can live under the most favorable circumstances is not known. One writer says that the impregnated female may survive the winter, feeding in sheltered spots, such as barns, cellars and outhouses.

It is stated by authors on this subject that the eggs of the mosquito are deposited by the female in a delicate boat-shaped mass on the surface of the water. These are packed side by side with the smaller end uppermost, forming a concave mass that floats readily. They hatch within a few days, and within a period of from three to four weeks develop into the full-grown insect. Several broods are hatched each season, about 300 eggs being deposited. Frequently—but not always—the female dies after depositing the eggs. When the egg cell ruptures, the larval stage begins, and in the case of the *Culex pungens* or common mosquito the body of the larva becomes partly submerged and floats with head downward, but breathes through the pneumatic tube at the extremity of the tail. To these bodies the term "wigglers" or "wrigglers" is applied. The eggs of the *Culex pungens* may be deposited in buckets or pails around the house, and in stagnant water. This variety may be termed a "house mosquito." Not all mosquito larvæ are deposited in stagnant water, for the soil may also harbor them. It is said that this insect is found in the Rocky Mountains, where stagnant water is unknown. The male probably never bites man, owing to the non-development of the mouth parts. He may be readily distinguished from the female from the fact that the former is provided with antennæ which are broadly feathered—bearded—or plumose, while in the latter the antennæ are slender and only have a few lateral bristles. (see Fig. 1.) It has been stated that the male "rarely enters our dwellings and lives unnoticed in the woods," but I must dissent from this view.

GENUS ANOPHELES DISTINGUISHED FROM GENUS CULEX.

According to Ross, the larvæ of *Anopheles*, unlike those of *Culex*, do not swim with head downward, but lie flat on the surface, like sticks, due to absence of a breathing tube. The larvæ of *Anopheles* are not found in buckets of stagnant water around the house, in wells, cisterns, and drains, or in artificial collections of water, but are only found in natural ponds or puddles, such as persist after heavy rains. They have been found in puddles between rocks, in rice-fields and between the rows of growing grain. Fish devour the larvæ with avidity, hence they are seldom found in lakes or ponds where fish are present. The *Anopheles* is a distinctly rural mosquito. In searching for the adults, Ross usually found them around stables and cattle byres. The adult *Anopheles* may be distinguished from the *Culex* in that the former has spotted wings, the palpi are as long as the proboscis, and when the insect rests against the wall the body projects outward, while in the *Culex* the body hangs downward. In the *Anopheles* that I have seen, the legs are quite long and very much finer than in the *Culex*, and are not striped. It has been said that certain species of *Culex* have spotted wings. I can not speak for all species of the latter, but the following named species do not have spotted wings as the term implies in the case of the genus *Anopheles*: *Culex triseriatus*, *Culex impiger*, *Culex pungens*, *Culex stimulans*, *Culex posticus*, *Culex teniorhynchus*, *Culex fasciatus*, *Culex perturbans*. The following species of *Culex* have whitish transverse bands across the legs: *Culex teniorhynchus*, *Culex stimulans*, *Culex fasciatus* and *Culex excitans*.