

ceptibility doubtless plays a rôle. Inconclusive as the report is, it must certainly take rank as one of the most thorough and extensive studies of an outbreak of typhoid fever, not due to water pollution, that has ever been made. That the Washington situation is still a puzzling one is in no wise the fault of the authors of this important document, but is rather due to our incomplete epidemiologic knowledge.

CATERPILLAR RASHES.

The introduction of the brown-tail moth, *Porthesia chrysorrhæa*, into Massachusetts and New Hampshire, and its almost certain spread into neighboring states, needs comment at this particular time, as summer is approaching, and the peculiar skin eruption resulting from contact with the insect has not yet become widely known in the United States. The results of the action of certain poisonous plants of the *Rhus* family are widely known both by the laity and the profession, but even physicians have not yet become acquainted with the irritant effects produced by these moths and their caterpillars.

The knowledge of skin rashes due to caterpillars dates back to the time of the ancients; in modern times the matter has been commented on mainly by the entomologists, who, in making their collections, have occasionally been poisoned. In recent years the attention given to nature study, even in the primary schools, has rendered the collection of caterpillars and moths by children common, and the bright colors of some of the poisonous varieties have added to the collector's zest. In places, too, as recently in the states named, the brown-tail moth, one of the poisonous species, has flourished exceedingly, and opportunities for poisoning have consequently increased. This will be better understood when it is explained that actual contact with the caterpillar or moth is not necessary, and that underclothes dried in the open in the neighborhood of infected trees may become the receptacles of the poison.

Clinically, the poisoning appears in two forms, as Tyzzer¹ has pointed out in his interesting study. If the poisoning results from direct contact, as when a caterpillar falls on the neck and is brushed off, a marked local dermatitis appears, confluent in character, and characterized by reddening and thickening of the skin with the formation of papules and vesicles. Children who handle caterpillars and then, as often happens, rub the eyes and face with the infected hands, develop more discrete lesions often associated with conjunctivitis. When underclothes become infected, too, the lesions are more discrete, and in the form of papules which change to vesicles.

That the hairs of the caterpillar, or to be more exact, the barbed or "nettling" hairs, are the poisoning agent

has been known for some time. The transmission of the irritant by these hairs, even when dried and detached from the insect, explains the occurrence of the rash after wearing underclothes dried in the open, and the occasional occurrence of the dermatitis after merely walking in the neighborhood of thickly infested trees. The older writers were of the opinion that the irritant quality of the hairs was purely mechanical and due to their barbed shape, but the careful studies of Tyzzer have shown that this is an erroneous view. A definite toxic substance of an irritating character is contained within the nettling hairs; it can be destroyed by heat, is soluble in water at certain temperatures, and produces peculiar and characteristic changes in red blood corpuscles brought into contact with hairs which contain it. The intensity of the lesions produced by the introduction of the barbed hairs into the skin depends to a certain extent on the number of hairs introduced; the character of the lesion is always the same, consisting in a necrosis of the epidermal cells about the hairs, the formation of microscopic vesicles about the site of injury, and the production of inflammatory changes around the vessels of the corium. As in most toxic diseases there are marked individual variations in susceptibility, and in caterpillar dermatitis, just as in rhus poisoning, some are very susceptible, and others apparently immune.

JUDICIOUS LUNG GYMNASTICS.

Some pertinent criticisms of the chest-swelling drill so dear to English army traditions have recently been expressed by Lieut. Col. F. A. Davy, M.D.,¹ who finds the "setting-up" drill, by which the military bearing is attained, to be wrong in theory and injurious in practice. This army surgeon asserts that rigid shoulders and protruding chests interfere with the normal course of the circulation. The exercises which bring about these results really invalid many men; they do not benefit the defective, but, on the contrary, often harm even the strongest. "Holding the breath" is condemned as disturbing the balance between the respiratory and circulatory systems and as being directly in contravention of physical laws. Dr. Davy declares that soldiers would be stronger and healthier if they were permitted to abandon the attitude they have worked so hard to attain, and to carry themselves much as the man on the street does. He finds that increased chest measure is often gained at the cost of motility and vital capacity; the young recruit much too often presents on examination a rapidly beating heart, a shortness of breath and a very decided discomfort.

It is common to find men who have been athletes during their college days to be suffering from hypertrophied and even chronically dilated hearts, with blowing murmurs, especially pronounced at the carotids. These men pant easily and tire in a most distressing

1. Jour of Med. Research, March, 1907, abstracted in this issue of THE JOURNAL, p. 1460.

1. Davy (F. A.): Army Medical Dept. Report for 1905, Lancet, Feb. 16, 1907.

way on slight exertion. They are not nearly so "fit" as men who have lived normally, without attempting to "build muscle" by means of inordinately severe exercises. Woods Hutchinson tells us that, according to statistics, athletes are two and one-half times as liable to cardiac diseases, 60 per cent. more liable to kidney diseases, and 25 per cent. more liable to die of the three main infectious diseases of adult life than the average man. No doubt the same will be found true of those workingmen who most frequently subject their bodies to heavy and exhausting strain.

For phthisical individuals lung gymnastics should certainly be interdicted in the presence of a decidedly subnormal temperature; or when there is fever (certainly when 100 degrees is reached), in cavity formation, in all acute processes, in evidently advanced disease, in tuberculous laryngitis, in rapid pulse and tumultuous heart, in fatigue or dyspnea on exertion, in hemoptysis or blood-streaked sputum, in pathologic blood conditions, in recent pleuritis, in other intercurrent or complicating diseases, when the weight is much below the normal for the patient's height, when strength and vitality are much reduced. It must be always remembered that in phthisis the organism is on the verge of bankruptcy, and may easily collapse with immediately fatal issue when the imposed exercises are excessive or beyond its strength. Of course, before prescribing "deep breathing, with the lips closed," the upper air passages should be examined for hypertrophies, exostoses or other obstructions to respiration.

THE DIAGNOSTIC DOSE OF TUBERCULIN.

It is an unfortunate fact that the manner in which tuberculin first came into use led to a revulsion of feeling against it on the part of many physicians. Once introduced, and if it had not been that Koch's hand was forced its introduction doubtless would have been delayed, it was hailed with acclamation and used without discrimination, with the natural result that its good features were overshadowed by the resulting catastrophes. Notwithstanding the manner in which the majority of physicians have since held aloof from it, many of the lung specialists have used it continuously for both diagnostic and therapeutic purposes. Its value in diagnosis can be readily understood when it is stated that from 50 to 80 per cent. of the patients who enter the German sanatoria for pulmonary tuberculosis have no tubercle bacilli in their sputum. Many of them have very slight physical signs of tuberculosis, and in many of these cases it is doubtful whether the signs represent an active process or are the result of healed tuberculosis or a pneumokoniotic process. The necessity of a correct diagnosis in these and other doubtful cases is especially great from the patient's standpoint, for it may mean the difference between freedom and a long sojourn in an institution.

One of the most serious errors which attended the administration of tuberculin in the early days after its introduction related to dosage. There can be little doubt that too large amounts were given, with resulting severe local and general reactions and positive harm to the patient. Wright's work on the opsonic index has exposed the fallacy, so far as the therapeutic use of tuberculin is concerned. Whether or not we have been giving too large doses for diagnostic purposes is still under discussion. At the Tuberculosis Congress in Paris in 1905 Löwenstein and Kauffmann claimed that the dosage used to-day was much too large, and that 2/10 milligram repeated three or four times at intervals of a few days was sufficient. The old Koch method was to begin with one milligram and gradually increase to ten.

The relative value of the different doses has been tested by Roepke¹ on over 700 patients. He soon came to the conclusion that the dose advocated by Löwenstein was much too small, as it entirely failed to produce reactions in most of the patients with early lung signs on whom it was tested. Roepke also concluded that the doses used in the old Koch method were unnecessarily large, and that it was not entirely the question of dose, but also the matter of sudden increase in dose which decided the reaction. He found 2/10 milligram was enough for an initial dose, and recommends giving five times this dose in a few days, i. e., one milligram, and a few days later, if no reaction has occurred, five times the second dose. This gives results equally as good as the old Koch method and with only half the maximum dose. The tuberculin reaction is unquestionably of great value in diagnosis, and it is to be hoped that the profession at large will recognize that the procedure is not dangerous if properly carried out.

GRADUATE MEDICAL STUDY.

The need of graduate technical instruction has been apparent for some years. The introduction of new methods of diagnosis and treatment requiring the use of new instruments and apparatus has rendered the education of the physicians, as given at the medical schools of ten to twenty years ago, entirely inadequate for the needs of the present day. This need has been but imperfectly supplied by the graduate school and to meet it more perfectly there has been developed in Prussia and extended over the German Empire a system which is in striking contrast with those formerly in vogue. In the first place it is designed to furnish what is essentially free instruction to all physicians. A small registration fee is charged for some courses amounting only to two or three dollars. Secondly, instead of concentrating the instruction in large cities it is aimed to carry it to the less populous centers where the physicians from the smaller towns and villages can attend without having to travel far. The course usually is about two weeks long and the distance being small, the doctor can go

1. Ztschr. f. Tuberculose, March, 1907.