

value, not only in cases of perforation, but in cases of acute inflammation from extension of disease, while the injudicious attempt to relieve pain by purgatives, carminatives and stimulants may deprive the patient of the hope of recovery. The various other indications are lucidly presented, both as to what should be avoided and what should be employed.

The great value of this volume of Dr. Habershon resides in the fact that it is based upon copious and well studied personal observations, a large number of which are described with more or less detail, so that their salient points confirm the tenor of the text; and it could but rarely happen that a case of abdominal disorder, unfamiliar to the family practitioner, and even to a consultant in large practice, would not find an analogue in its carefully prepared pages. It is a book to be consulted with advantage in the study of individual cases of disease such as it portrays, and, as such, supplies the deficiencies inseparable from the scope of generalized treatises. The present edition is still more valuable than the first, containing additional information, and a number of important tables, as well as exhibiting conscientious revision of its previous material.

The typographical execution of the volume sustains the well-known reputation of the publisher. J. S. C.

ART. XXXV.—*Report of Investigations into the Pathogeny of Diphtheria.*

Conducted by EDWARD CURTIS, M.D., and THOMAS E. SATTERTHWAITE, M.D. 8vo. pp. 56.

THIS is a report, dated Feb. 11, 1877, to the Board of Health of the city of New York, from the honorary microscopist to the Board, Dr. Curtis, at whose request Dr. Satterthwaite was associated with him, in complying with a resolution desiring that he should investigate the causes and nature of diphtheria by means of micro-pathological examinations and otherwise. The report is presented in two parts. Part I. is a general report, and Part II. is a record of experiments.

The investigators took for their subject, *What is the nature of the infectious principle of diphtheria, and what are the circumstances that determine the infection?* Abundant evidence was found of the existence of the forms of bacteria described by other observers, "but these forms were in nowise different in optical or chemical behaviour from the bacteria found in putrescent but non-diphtheritic animal matters."

Experiments were made by inoculating rabbits with diphtheritic material, the animal being chosen partly from lack of facilities for dealing with larger or more troublesome animals, and partly because some German investigations, with which those under discussion were to be compared, had been conducted upon rabbits. Circumstances forced a termination to the investigations before a number of the projected points of inquiry had been sufficiently studied to draw conclusions from them. The results of the investigations made are summed up in nine propositions, not, however, put forth as proven. Condensing these propositions, it appears, 1, that although inoculation of diphtheritic membrane into the muscular tissue of the rabbit produces severe local lesions, and even constitutional disturbance and death, these effects differ too much in their pathology and clinical history from diphtheria in the human subject, to warrant defining them as diphtheria.

2. Similar effects can be produced by inoculation even of a material non-infectious to the human subject, under conditions where diphtheritic membrane is infectious—this material being pulpy scrapings of the upper surface of the healthy human tongue.

3. Effects generally similar, but less intense, can be produced even with Cohn's fluid (an aqueous solution of ammoniac tartrate, potassic and calcic phosphates, and magnesic sulphate), allowed to decompose spontaneously.

4. These effects are not due to simple mechanical irritation, for inoculations of sand produce no effect whatever.

5. Thorough filtration of a proven virulent aqueous infusion of diphtheritic membrane, or of putrid Cohn's fluid, removes their infectious properties.

6. Thorough trituration of proven virulent diphtheritic membrane and tongue-scrappings, with a high percentage of salicylic acid, fails to remove the intensity of the infectious quality of these substances, or even markedly to modify it.

7. There is no theoretical ground for assuming that preventing the bacteria of a diphtheritic patch from making their way through the underlying mucous membrane, will, in itself, prevent general diphtheritic infection of the system.

8. There is no relation between inoculable virulence of a diphtheritic membrane and the period, within three days, that has elapsed between the detachment of the membrane and inoculation with the same, nor between inoculable virulence and gross amount of bacteria present in the membrane. And

9. There is a rough relation between inoculable virulence of a diphtheritic membrane and the severity of the original case of diphtheria, so far as this can be estimated by the termination of the case in death or recovery.

Part II. comprises a record from 206 experiments, which form the basis of the above conclusions. These are divided into, 1, inoculations with diphtheritic matter; 2, inoculations of scrapings from the healthy human tongue; 3, inoculations of decomposed Cohn's solution; 4, inoculations of putrid infusions of calf's liver; 5, inoculations of sand; 6, inoculations of salicylic acid; 7, inoculations of salicylic acid and vaccinia virus; and 8, experiments to test the power of salicylic acid to prevent the development of bacteria in putrefiable fluids.

In looking over these records, numbers of which are presented in detail, and others in a more or less general manner, we became aware of the conscientious performance of a great amount of varied labour. Thus, the inoculations with diphtheritic matter were made with pure membrane, with its aqueous infusion, cold and boiled, filtered and putrid, with the reddened mucous membrane of the trachea, kidney-tissue, and with a mixture of pure membrane and salicylic acid; and these, with the other materials employed, were also varied in somewhat similar manner. A great many microscopic examinations were made of the products at the site of the inoculations, and of various organs after death.

Much as the ingenuity and pertinacity of these experiments may be appreciated, it is questionable whether anything has been learned in solution of the inquiry as to the causes and nature of diphtheria. Inoculations of the cornea of the rabbit failed, in the hands of Drs. Curtis and Satterthwaite, to produce extensive diphtheritic keratitis with constitutional symptoms, and even termination in death, as announced by Eberth. Nothing resulted but small local spots of inflammation at the site of each puncture, which appeared the day after infection, and, speedily subsiding, left the eye well by the fourth or sixth day. Hence, subsequent inoculations were made into the muscular, or into the subcutaneous connective tissues; and the results confirmed those of other investigators in producing poisonous effects, fatal in the majority of instances. These effects, however, were deemed manifestations of local irritant poisoning, and not evidences of diphtheria, for similar results followed inoculation with scrapings from the upper surface of a somewhat furred tongue in the healthy subject, and to a less extent with inoculations of putrescent Cohn's solution.

To offer a fair prospect of success, experiments with diphtheritic products and other presumed sources of contagion, should be made upon animals known or

suspected to be susceptible to diphtheria, as contended for by some veterinary surgeons. Rabbits, evidently, are not good subjects for the infection of diphtheria.

The negative value of the investigations under consideration, as far as they go, is incontestible, and their record is presented in a straightforward manner that commends the little pamphlet to the study of those inclined to continue the same field of inquiry.

J. S. C.

ART. XXXVI. — *Notes on Rheumatism*. By JULIUS POLLOCK, M.D., F.R.C.P., Senior Physician and Lecturer on Medicine, Charing Cross Hospital, etc. 12mo. pp. 115. London: J. & A. Churchill, 1879.

"THE Treatment of Acute Articular Rheumatism by the Salicylate of Soda, with Notes of Cases," would be a more appropriate title for this little essay than the one it bears; but the author was probably deterred from adopting it by the fact that it has lost somewhat of the appearance of originality. The three chapters, extending over seventy-two pages, on muscular rheumatism, have been interpolated apparently solely with the object of justifying the more comprehensive title, but being foreign to the general tenor of the article, they had better have been omitted, especially since they add nothing to existing knowledge on the subject. Moreover, the term muscular rheumatism, as generally applied and used in this book, is a misnomer; it has nothing in common with true rheumatism; it is not an active inflammation, is not attended by fever, does not run a definite course, and has no tendency to heart complication. If further proof of its distinct nature were needed, it is found in the general opinion of observers that it is certainly not relieved by salicylate of soda, which exerts almost a specific influence over rheumatism. While its pathology is obscure, it is evidently a local and not a general disease. Its etiology is closely connected with muscular mal-nutrition and an abnormal condition of certain muscular fibrillæ or sarcous elements, and is favoured by causes that depress the system, aided by local strain, fatigue, or exposure to dampness and cold. The term myalgia, proposed by Inman, is now coming into general use, to express this condition, in which pain is produced in a muscle obliged to work when its structure is imperfectly nourished, or impaired by disease (Anstie); and while possessing the negative merit of not expressing any opinion as to the pathology of the morbid state, at the same time it is free from the positive objection of grouping under a common title diseases essentially different. It is not intended, however, to deny the existence of transitory pains around the joints, and stiffness or contracture of tendons which are often encountered in rheumatic subjects, and which are also unaccompanied by fever, and may occur simultaneously in several different portions of the body. These are accompanied by signs of the rheumatic diathesis, and are benefited by alkalies and a non-nitrogenized diet. Myalgia, on the contrary, is located permanently in certain muscles, which are tender to the touch and are subject to painful spasm; it is not connected with a special diathesis, and is caused by overwork and under-feeding, with accidents of exposure to cold. It is to be treated by rest, anodyne applications, tonics, and nitrogenized food; and in the way of prophylaxis we should remember that, as mentioned by our author, "to avoid muscular rheumatism, we must shun those things that produce it," such as cold and damp, straining, overwork, and dyspepsia.

The experience of Dr. Pollock leads him to fully indorse the salicylate of soda treatment of articular rheumatism, and the clinical notes of sixteen cases thus treated are given in the appendix.

F. W.