only the normal cases but also the management of the various complications and abnormalities to which each one is subject.

One of the most valuable contributions to the work is the chapter on therapeutic immunization and vaccine therapy which was prepared by Dr. George P. Sanborn. It is thorough and at the same time concise, and presents all of the more important essentials for the application of this valuable adjuvant to surgical science.

A complete index of authors is appended, and the text is liberally interspersed with charts, drawings, and photographic reproductions, most of which are original and serve well to illustrate the methods and ideas as described in the text. On the whole, the book is a very satisfactory and comprehensive treatise on the subject of surgical after-treatment and serves admirably the purpose for which the authors have intended it.

WALTER A. SHERWOOD.

THE PITUITARY BODY AND ITS DISORDERS. By HARVEY CUSHING, M.D., Associate Professor of Surgery, The Johns Hopkins University; Professor of Surgery (Elect), Harvard University. Octavo, 341 pages, 319 illustrations. Philadelphia and London: J. B. Lippincott Company, 1912.

ONLY at rare intervals in the history of medical literature does a book appear which stands out as something striking and fundamental. Such an epoch-making volume is Cushing's recent classical monograph on hypophyseal disease. Though numerous scattered papers have been published in the past twenty-five years, and especially in the last decade, on the disorders of the pituitary body, it has remained for an American surgeon to give to the world for the first time a systematic and crystallized conception of the varied clinical manifestations resulting from pathological lesions of this organ. The book is no mere compilation of the literature, but is mainly the result of a most extensive personal clinical experience and experimental research, and it will undoubtedly rank as the reference work of the future on the diseases of the hypophysis cerebri. It is possible that some of Cushing's deductions may be disproved by coming investigators, yet it is certain that his book will stand out pre-eminent as the first attempt to present in a concrete scientific form a com-

plete picture of the various clinical states produced by disease of the pituitary gland.

The volume is an outgrowth of a lecture delivered before the Harvey Society in December, 1910. The twenty cases, on which this lecture was based, were more than doubled in the succeeding nine months. From these two-score odd accurate clinical studies and extensive experimental work, of which only a portion has already been published, this book has developed.

In Part I, the morphology and histology of the gland, including its mode of secretion, the question of accessory glandules, and its circulation, are briefly considered. Considerable space is devoted to the known facts of hypophyseal physiology, obtained by the injection and ingestion of extracts, by glandular transplantation, and by extirpation methods. As is well known, it is the last of these methods that has given us the most information, and Cushing and his assistants have contributed not a little to our knowledge on this score. He believes with Paulesco that total hypophysectomy is fatal and that the lethal outcome is due in the main to the loss of the anterior lobe. His results with partial hypophysectomy are also incorporated, and from these have been obtained the first experimental proof that certain hitherto imperfectly understood clinical phenomena are due to lessened glandular activity or hypopituitarism. He has reproduced the adiposogenital dystrophy of Bartels or the Froehlich type in puppies, and, what is still more significant, he has succeeded in producing a post-adolescent form with adiposity and sexual atrophy in adult canines.

In this section he also calls attention to his thermic reaction found upon injection of pars anterior in anterior lobe deficiency. He utilizes this as a diagnostic test. The necessity of normal posterior lobe activity to effective carbohydrate metabolism is also considered. Glycogenolysis and emaciation occur after injection of posterior lobe extract, and adiposity and high sugar tolerance are found in posterior lobe deficiency. Part I is concluded by a somewhat too brief discussion of the pathology and chemistry of the organ.

Part II, which is really the body of the work, is devoted to an admirable clinical analysis of a series of forty-seven cases, which Cushing has had the opportunity to study in the past two years. He has grouped these cases of dyspituitarism into an original

classification, which he himself modestly suggests as provisional, but which for the present is certainly an excellent working basis.

He forms five main divisions, as follows: (1) cases with marked neighborhood and glandular symptoms; (2) cases with marked neighborhood but absent or inconspicuous glandular symptoms; (3) cases with marked glandular but absent or inconspicuous neighborhood symptoms; (4) cases of obvious distant cerebral lesions with accompanying symptoms of secondary involvement of the hypophysis; (5) cases of polyglandular disease.

The first four groups are subdivided into (*a*) predominant hyperpituitarism; (*b*) predominant hypopituitarism, and (*c*) mixed or transition cases,—dyspituitarism. In subdivision *a* we have (*x*) the pre-adolescent form or gigantism, *typus Launois*, and (*y*) the post-adolescent form or acromegaly, *typus Marie*. In *b* we likewise find (*x*) the pre-adolescent form, adiposity with skeletal and sexual infantilism, *typus Froehlich*, and (*y*) the post-adolescent form of adiposity with sexual atrophy, the type which Cushing has produced experimentally, of which he gives clinical illustrations, and for which the reviewer would suggest the title, *typus Cushing*. Among Cushing's cases are found examples of the majority of the various main groups and their subdivisions.

As Cushing points out, the main defect in this classification is due to the dual nature of the gland, which has an anterior lobe associated with growth and a posterior lobe affecting tissue metabolism. Hence, one or both lobes may be involved, either or both may be over- or under-active, the over- or under-activity of either or both lobes may begin in infancy or in adult life, and finally the over-activity of either or of both lobes may be followed by an insufficiency of either one or both parts of the gland. The innumerable combinations can readily be imagined, and it will be seen that it is necessary to interpret each individual case on its merits, as Cushing does, and that one cannot be content with placing this or that case into an arbitrary class.

The above classification applies primarily to cases of gross lesions, particularly tumors, of the hypophysis. The question is further complicated by the possible existence of a merely functional over- or under-activity of the gland without demonstrable anatomical changes.

The case histories are fascinating reading. They are not

the usual compilation of dull historical data, for aside from the fact that the cases themselves are out of the ordinary, they are described in so interesting a fashion that the reader frequently feels he is actually becoming acquainted with this or that particular patient, just as one learns to know a character from a novel or a biographical sketch. The summary of the hypophyseal symptoms and the epicritical analysis in each case deserve special commendation. The histories are further enlivened by excellently chosen photographs, and by radiographs of the sella and extremities, which are reproduced in their natural size. Perimeter charts, photographs of pathological specimens, and microphotographs of the pathological findings are added wherever possible.

Part III is devoted to an analytical review of the incidence, the symptomatology, and the treatment of hypophyseal disease based mainly upon the author's personal experience. It would be impossible in the space allotted to me to give a satisfactory abstract of this portion of the book. Every sentence is significant, and I shall only indicate the general trend of the argument. Each particular symptom, neighborhood, general pressure, glandular, and polyglandular, is carefully analyzed and its relative importance dwelt upon. Three new cases are added to illustrate hypophyseal glycosuria and hypophyseal epilepsy. Perhaps a trifle too much stress is laid upon the significance of glycosuria in hyperactivity and increased carbohydrate tolerance in insufficiency of the posterior lobe.

The lesion itself, certified in twenty-nine cases, is next discussed, and finally the question of treatment is taken up in detail. The indications for surgical intervention, namely, to relieve the general pressure symptoms, to combat the functional hyperplasia, and to relieve the neighborhood symptoms, are considered *seriatim,* and the various methods of approach are reviewed.

For direct sellar approach Cushing has finally adopted a one-stage transphenoidal operation with sublabial incision and submucous septal resection. This is practically a combination of Kanavel's inferior nasal and Hirsch's endonasal operation. Every effort should be made to avoid lacerating the mucous membrane, and the turbinates are flattened out by retraction and dilatation, but not removed. The use of urotropin as a preventative against meningitis, and the importance of careful radio-

graphic study as a means of orientation, the necessity of perfect anæsthesia, and the danger, if one's direction is wrong, of perforating the cribriform plate of the ethmoid, are emphasized.

By the transphenoidal approach local sellar decompression, partial extirpation, or cyst evacuation may be accomplished. A subtemporal approach may be used for simple decompression, especially in superimposed lesions, or for combined decompression and exploration. Finally both avenues of approach, intra- and extracranial, may be combined. Cushing has performed these various operations either single or combined on 43 patients, who have been subjected, all told, to 61 operations. A table of these cases is appended. Of the 43 cases, only 28 are included in Part II, and 15 are new cases added since the completion of that portion of the work. Cushing has had by far the largest individual operative experience, and his results are, for this reason, if for no other, of the utmost significance. The mortality in 29 actual transphenoidal attacks was only 13.7 per cent. The main result of operation has been the relief of neighborhood symptoms. Symptoms of intracranial tension are likewise improved, and it is hoped that hyperpituitarism may yet be influenced. Glandular implantation in hypopituitarism is looked upon as a further possibility of surgical intervention. Further, a preliminary sellar or subtemporal decompression, or both, is suggested as a means for more effective radiotherapy.

The matter of glandular therapy in hypopituitarism by ingestion and injection is next taken up. Cushing has seen some very definite results from these measures, particularly as far as the adiposity and the subjective symptoms resulting from glandular insufficiency are concerned. An ingenious suggestion for determining the dosage is offered. The patient should be given daily enough glucose to cause glycosuria in a normal person of equal body-weight and then increasing amounts of glandular extract are given till a trace of sugar occurs in the urine of the patient, who, of course, originally had an increased tolerance. Injection is the more effective measure, and in two cases overcame the somnolence, when feeding failed.

The possibility of the beneficial effects of glandular transplantation are considered, and one case is recorded in which Cushing had the opportunity to carry out this procedure. The result was extremely satisfactory.

X-ray treatment, especially in combination with operative measures, promises to be useful in cases of strumous hyperplasia, especially where the tumor symptoms predominate. Neighborhood and pressure symptoms have both been influenced in some of the later cases, and it is suggested that the X-ray may effect the growth of cells in the struma, much in the same way as the cell division of the spermatogenous epithelium of the testis is arrested.

An exhaustive bibliography of 256 numbers completes the volume.

Possibly some will feel that Cushing is a trifle too speculative in his inferences and somewhat over-enthusiastic in his conclusions. These attributes, which give the work a distinct individuality, merit rather praise than condemnation. Would any scientific progress be possible without a certain amount of imagination and optimism on the part of the investigator? Cushing's book is a great step forward, and it will be an enduring monument to the earnest and able efforts of its author. The volume should be in the private library of every physician, for there is practically no specialty in medicine which is not overlapped by the subject under discussion. Of especial importance, however, is the book to the surgeon, for it is from him that the definite practical results are to come in the treatment of those unfortunates suffering from pituitary disease. DE WITT STETTEN.

FIG. 1

Acute suppurating subdeltoid bursitis.