nite and specific tendency for all heterochromatin to come together."

Blakeslee, Albert F. "Cytogenetics and Evolution." "Interchanges are only one of the types of chromosome alteration which have evolutionary significance."

Dobzhansky, Th. "Chromosome Differences between Races and Species of Drosophila." "It seems justifiable to conclude that, with the exception of translocations, all the types of chromosome changes which are known to differentiate its species are met with in races as well."

McClung, C. E. "Evolution of the Germ Plasm." "We are certain of the continuity of germ plasm, and of the general nature of the material record of racial experience. It seems evident that the hope for an understanding of racial and individual development waits upon a fuller knowledge of the nature and behavior of the visible elements which embody the germ plasm."

Jennings, H. S. "Hereditary Status of Rhizopods." "There is nothing known as to Mendelian heredity in Rhizopods. There is no knowledge of inheritance and variation in sexual reproduction. . . . It deals with heredity and variation in reproduction from a single parent, in vegetative reproduction. . . . There remains the question: Is it the chromosomal materials, is it the genes that become altered when hereditary diversities are produced in a single clone through the action of the environment or otherwise? Jollos is of the opinion that it is *not* the chromosomal materials that are altered."

Diller, William F. "Nuclear Behavior and Reproduction in Ciliated Protozoa." "Underlying all the apparent diversity and variability of nuclear phenomena one comes to discern a fundamental similarity whose expressions are differences in degree and not in kind."

Sonneborn, T. M. "Inheritance in Ciliated Protozoa." "I have reviewed in this paper some situations in ciliate genetics, in which typical genetic inheritance is unquestionably involved, but I have also attempted to set forth a number of situations, including by far the greater part of what is known about ciliate genetics, which are extremely difficult to interpret along orthodox genic lines. . . ."

Churney, Leon. "The Physico-chemical Properties of the Nucleus." The author discusses the properties under the headings: Colloid chemical properties of the nucleus and cytosome, viscosity, osmotic properties of the nucleus, permeability of the nuclear membrane to water, amphoteric properties of the nuclear constituents.

Duryee, William R. "The Chromosomes of the Amphibian Nucleus." "Facts such as these offer strong support to commonly accepted genetic theory, that master molecules or molecular templates, as genes have been called, remain imbedded in the axis cylinder, ready to divide in mitosis and become distributed for work in some future cell."

Henshaw, Paul S. "Radiation and the Cell Nucleus." "As a consequence the exponential dose-action curves, in so far as they are reliable, may be taken to indicate that biologic changes as extensive as cell death may be induced by single event action—perhaps even by the production of single ion pairs."

These authors present a brief summary of important problems in their fields. The tentative nature of the subject is indicated strongly and the line of future work pointed out. Naturally, in so diversified a subject, there is lack of agreement, but it is surprising to see how far it really obtains on broad general principles. There is, for instance, practically no disagreement with regard to the chromosome theory of inheritance. Expressed or implied, it lies at the basis of each paper. In view of the fact that the subject of cytology is but seventy-five years old, and modern genetics but forty years, this is not a bad record. As presented in the symposium here it offers a very hopeful prospect for future developments.

C. E. McCLUNG

## OCCUPATIONAL DISEASES

*Occupational Diseases. Diagnosis, Medico-legal Aspects and Treatment.* By RUTHERFORD T. JOHNSTONE. 558 pp. Philadelphia and London: W. B. Saunders Company. 1941.

THIS is an excellent book written by a man who has had years of experience not only in the diagnosis and treatment of a wide variety of industrial diseases but also in that newer and increasingly important field, the dealing with claims for compensation. The book covers the most important industrial poisons; the dusts, injurious and inert; the dermatoses; injuries from physical agents, and there is also a chapter on "the industrial back" and on hernia, and a full discussion of traumatic neuroses and malingering.

A chemist would be puzzled over the choice of title for the first section, "Gases, Solvents and Fumes," and still more by the groupings under this title. The halogenated hydrocarbons are scattered through five chapters, instead of being treated as a group, and such diverse bodies as nitrobenzene, dichlorofluoromethane and ethylene dichloride are grouped together. However, this does not really produce confusion and is of minor importance. What is of major importance is Dr. Johnstone's selection of material. He very wisely gives little space to the earlier literature, which is abundantly covered in the older textbooks, and instead covers fully the very latest contributions. This is especially well illustrated by the chapters on

benzol, carbon tetrachloride, carbon disulfide and carbon monoxide.

The material for the book was gathered in a clinic which for 25 years has offered medical and surgical industrial service and which evidently is a consultative center for a large part of California, handling some 11,000 patients a year. It was opened soon after the passage of the Workmen's Compensation Act, which covered diseases of occupation as well as accidents, and thus, from the first, this aspect of industrial medicine was of great importance and recurs again and again in the discussion of individual cases. Dr. Johnstone's attitude toward the medico-legal problems is eminently fair, free from over-indulgence but equally free from a hard-boiled scepticism. It is evidently the result of long experience on a mind free from prejudices and is perhaps most clearly shown in the section on neuroses and malingering.

A mild criticism might be made of one or two subjects. Nitrous fume poisoning is rather too briefly handled, considering its great importance in the production of high explosives and in welding. The diagnosis of lead poisoning, based on history of exposure, clinical symptoms and laboratory findings, is very well dealt with, but the picture given under the heading "Suggestive evidence of incipient intoxication and inactive or arrested plumbism" would by many physicians be called "definite and active plumbism," requiring suspension from lead exposure, even if no disability is found. It seems to this reviewer that the connection between chronic plumbism and peptic ulcer, nephritis and vascular damage is dismissed too lightly in view of the available evidence.

There are indications of rather hasty preparation in some places (talc is included among the silica-containing dusts on page 307, but correctly classed as hydrated magnesium silicate on page 305) and the proofreading is surprisingly faulty for a Saunders book; "consistency" for "constituents," "ascribed to" for "described," and one whole line misplaced on page 335.

One very good feature of the book remains to be mentioned, the sections on treatment, which are detailed and clear, not general and vague as is too often true in books of this kind.

ALICE HAMILTON

DIVISION OF LABOR STANDARDS,
WASHINGTON, D. C.

# REPORTS

## GRANTS MADE BY THE BANTING RESEARCH FOUNDATION

THE Banting Research Foundation reports that grants made to individuals working on medical problems in different parts of Canada last year were instrumental in furthering research of considerable interest in several fields. Following are brief summaries of work performed by those holding grants during part or whole of last year.

To test the accepted hypothesis that oxidation of α-estradiol to estriol, or hydration of estrone to estriol, takes place in the uterus under the influence of progesterone, W. S. Bauld, of Dalhousie University, working with Dr. R. D. H. Heard, showed that in the rabbit this transformation occurred.

W. H. Feindel and Dr. C. B. Weld, at Dalhousie University, studied the permeability of the eye membranes in dogs to the sugars xylose, glucose, sucrose and raffinose. It was found that their penetration into the aqueous humor was inversely related to their molecular size, and that raffinose represents the approximate limit of the size of the molecule which passes through the membranes.

Dr. K. C. Fisher, of the University of Toronto, extended his investigation of the mechanism of the action of anesthetics to include a broad variety of narcotic agents and cells. The initial interpretation, namely, that the metabolism of a cell is separable into two independent parallel fractions, has been fully borne out.

A. G. Gornall, of the University of Toronto, found that in ureasynthesis studies the accumulation of citrulline occurred in liver slice saline containing $NH_3 \cdot CO_2$, lactate and ornithine. This research forms an important step in our knowledge of the means by which urea is formed in the body.

Dr. Mavis Gunther, of the University of Toronto, has made a survey of the progress of lactation in a series of women. She has accumulated statistics of when and why infants are weaned and has analyzed the causes of women being unable to nurse satisfactorily.

M. M. Hoffman, of Dalhousie University, working with Dr. R. D. H. Heard, has furnished experimental confirmation of the hypothesis that the urinary oestrogen, oestrone, arises in the body from the ovarian follicular hormone, α-oestradiol. The metabolism of the corpus luteum hormone was also investigated and it was found that in the rabbit, as in the human, pregnane-3 (α), 20 (α)-diol is the main excretory product and the conversion in the rabbit is not appreciably affected when the uterus is removed.

A. F. McKay, of Dalhousie University, working with Dr. R. D. H. Heard, continued investigations dealing with the degradation of cholesterol to Ring B substituted androgens, with the object of elucidating