plasm is regarded therefore as containing a structural framework (largely of fibrous proteins) embracing a liquid menstruum containing soluble proteins, metabolites and inorganic salts, in which are embedded microscopic and submicroscopic particulates of highly complex composition. Both the chemical nature and the biochemical properties of these components vary widely.

Lazarow contributes a detailed discussion of the results of the investigation of these factors carried out in the Chicago laboratory within the past ten years. Along the same lines Claude describes the distribution of nucleoproteins among the various components of cytoplasm, and Gersh and Bodian report on a histochemical analysis of the changes occurring in motoneurons of the Rhesus monkey after root section. The methods used in separating various cellular components are treated at length in an article by Hoerr on the liver cell, while Beams describes the value and use of the ultracentrifuge in studies of this sort. Mirsky and Pollister discuss the fibrous nucleoproteins of the cell, and Schmitt, Hall and Jakus describe work in which they have examined various fibrous structures (collagen fibers, cilia, flagella, etc.) by use of the electron microscope. The soluble components of the cytoplasm are discussed in an article by Stern on such macromolecular particles in cytoplasm as ferritin, the complex containing cytochrome oxidase and the cytochromes, bacteriophage, etc. Articles by Chambers, Lowry and Scott are concerned primarily with the mineral constituents of protoplasm, Chambers describing experiments using his microdissection technique, Lowry describing investigations of the type initiated by Hastings, Eichelberger and their associates, while Scott reports studies of mineral distribution using the electron microscope. Striking differences in mineral content between intra-cellular and extra-cellular fluids have been recognized for some time. It becomes clear now that there are also intracellular localizations in mineral distribution. A review by Barron discussing various features of cellular respiration and a paper by Cowdry describing in detail the histological changes involved in the development of carcinomata in mice treated with methylcholanthrene complete the volume.

There can be no question of the importance of the objectives of the research discussed in this volume. Up to now the emphasis of workers in the field has been, as Professor Bensley rightly says, on "separating things before proceeding to their analysis." While knowledge as to the enzymic and chemical composition of these various cellular components is still slight, it is clear that biochemical schemes of intermediary metabolism must eventually be expressed in such terms and reconciled with such data.

As is the case with most books of this kind there are individual statements, ranging from matters of pure error to questions of proportion and opinion, with which one may disagree: for example, QO_2 (page 18) is not the customary symbol for respiratory quotient nor can one agree, for example, with the statement (page 56) that "oxaloacetate is used . . . as the phosphorylated compound in the formation of phosphopyruvate and synthesis of carbohydrate. It might also produce isocitrate"—when the first of these reactions is supported by no direct experimental data while the synthesis of isocitrate from oxaloacetate has been demonstrated beyond question. However, these are typical of the small flaws in what is, in general, an admirable effort.

The book has been edited by Professor Norman Hoerr and includes an appreciation of Dr. Bensley's work by E. V. Cowdry and an excellent portrait of Professor Bensley as a frontispiece. In format and typography it corresponds to the other volumes of the series.

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REPORTS

PRESENT TEACHING ACTIVITIES OF THE SCHOOL OF TROPICAL MEDICINE, IN COOPERATION WITH THE INSULAR DEPARTMENT OF HEALTH

IN 1926, at the inaugural ceremony that launched the School of Tropical Medicine as the first of its kind in the Americas, Dr. William Darrach, then dean of the College of Physicians and Surgeons of Columbia University, defined the objectives for which the new school had been founded as "the study and teaching of physical and mental ills as they occur in the tropics." These objectives were further defined in an early announcement of the school, thus: "The primary aim of the school is to give opportunity to study in a tropical environment the cause and prevention of that large group of ill-defined disorders known as tropical diseases and, at the same time, to observe the influence of tropical conditions on disease in general." Again in his inaugural address, when commenting on the advantages of Puerto Rico as the site for the School of Tropical Medicine, Dr. Darrach said, "The student will have the opportunity to see not only the dark side of conditions and their distressing effect on mankind but also the brighter side of what is being done to con-

trol them . . ." (referring to the work that was then being carried on by the Insular Department of Health).

Since its beginning, the School of Tropical Medicine strove to establish close relations with the Insular Department of Health—a strongly centralized organization that maintains active contact with every part of the island—and has cooperated in research projects and teaching activities, many times pooling mutual resources for the benefit of both. In 1940, the Insular Department of Health was able to expand its activities as a result of additional budgetary appropriations made possible by the inclusion of Puerto Rico under the provisions of Titles V and VI of the Federal Social Security Act. The need for personnel trained in public health to direct the various new functions, in which the department was to participate, was immediately apparent. It was imperative to organize a teaching program as soon as possible and the School of Tropical Medicine, with its already well-developed departments of bacteriology, chemistry and nutrition, clinical medicine, dermatology, medical zoology and pathology, and its adjoining 50-bed hospital being operated as the school's chief teaching and research clinic, was the logical place for setting up the necessary training schedules.

Therefore, with the financial assistance of the Insular Department of Health, a Department of Public Health was created in the School of Tropical Medicine. During the first year courses for health officers, public health nurses and laboratory assistants were offered as a preliminary step in developing this program of education. Two hundred individuals have enrolled since then. At the present time, and for the coming academic year 1944–1945, the Department of Public Health of the School of Tropical Medicine, in cooperation with the Insular Department of Health, is offering the following courses:

(*a*) *Master of Science in Public Health:* This course of study, which covers a full academic year, is designed to provide the student with an understanding of the basic principles of public health work in their practical as well as theoretical applications. The subject-matter and sequence of study is, in general, similar to that provided by universities of the United States and Europe, with the exception that here more emphasis is placed on problems incident to a tropical environment. The course is essentially a postgraduate one and open only to doctors in medicine.

(*b*) *Master in Sanitary Science:* This is a course planned to acquaint the students with the principles and practices of public health engineering adapted to tropical environments. Candidates for this course must be graduates in science or engineering. The course lasts one full year.

(*c*) *Certificate in Public Health Nursing:* This basic course in public health nursing covers a full academic year and is open to registered nurses with at least two months of field experience in public health work.

(*d*) *Certificate in Medical Technology:* This course was established to meet the pressing need for trained workers in public health and hospital laboratories. It is open only to graduates in science who show evidence of having approved courses in biology, chemistry and physics.

(*e*) *Short Courses for Sanitary Inspectors:* This is a short course designed to provide an understanding of certain elements of public health work to persons now engaged in, or intending to engage in, public health work.

In addition to the financial assistance rendered, the Insular Department of Health contributes to these courses by providing facilities for field work. It is possible to carry on field work anywhere on the island and in any of the various agencies of the government. It is routine for students to make the District Hospital or the Public Health Unit their headquarters for whatever work they have in mind. These various agencies are also open to members of the school and to visiting scientists for any research work they may care to undertake.

The courses thus offered by the school follow the general pattern utilized in similar continental schools, although they are adapted to meet the needs of tropical areas, especially those incident to Puerto Rico. Because of the many facilities available, these courses are made as objective as possible. The student spends a large portion of his time in the field, studying the problem first-hand and the application of method or methods best adapted to its solution. The Division of Health and Sanitation of the Office of the Coordinator of Inter-American Affairs is sending several students to the school, since it feels that the health problems of many of the Caribbean, Central and South American countries are likened in many ways to those found in Puerto Rico, with the added incentive that here the most up-to-date methods are applied towards their solution.

The teaching of tropical medicine has continued as heretofore, special emphasis being given to bedside teaching, teaching at the dispensary combined with practical epidemiology and field work.

In summarizing, it may be said that mutual benefits have been derived by this close association between the Insular Department of Health and the School of Tropical Medicine of the University of Puerto Rico. A unique opportunity is thus provided for the teaching of tropical medicine and public health, as well as for research in these fields.

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