Fluid Circulation and the Hearing," "The Hormonal Origin of Heart Damage and Heart Failure," and "Anomalies of the Respiratory System." The staff of the University of Vermont College of Medicine is well represented on the program.

The American Dietetic Association (June 26) will hold two sessions on Thursday for the presentation of papers and a luncheon on Thursday noon. The general theme for the first session is "Children Should Be Well Nourished," and for the second it is "Nutrition and National Defense." May E. Foley, of the Massachusetts Nutrition Defense Council, will preside at the first session and Dorothy Duckles, nutritionist of the Boston Community Health Association, will preside at the second. Gladys E. Hall, educational director of the American Dietetic Association, will speak at the luncheon.

The American Psychiatric Association (June 26) will present a symposium of five papers on "The Psychiatric Aspects of Civilian Morale" under the chairmanship of Arthur H. Ruggles, superintendent of Butler Hospital, Providence, R. I.

The American Society of Agronomy, Northeastern Section (June 25–27) will hold a Grassland Conference in three sessions on Wednesday at which 17 papers will be presented on various aspects of the subject. On Thursday members of the society will visit the New Hampshire Agricultural Experiment Station at Durham, and outlying farms on Friday. The society will join with the Section on the Social and Economic Sciences in a banquet on Thursday evening at which H. H. Bennett will deliver an address on "Soil Conservation in the Northeast."

The Society of American Foresters (June 24–26) will hold two sessions on Tuesday, each consisting of two sections, and two sessions on Wednesday for the presentation of scientific papers. The subject of Section I of the first session is "Forest Insects and Diseases" which will be discussed in six papers. Section II of the first session will consist of five papers on "Forest Fire Control." The chairmen of these sessions in the order they have been listed are H. B. Peirson, Austin H. Wilkins, Perley Spaulding and Harris A. Reynolds. On Wednesday the society will hold two sessions, the first under the chairmanship of Clifford Graham. A total of 27 papers will be presented. On Tuesday evening the society will have a Forester's Outdoor Lobster Dinner (stag) at the Green Gate, in Exeter. At 5 P.M. on Wednesday the members will leave Durham by motor to visit the State Bath House at Hampton Beach. In the evening members of the society will have a shore dinner (ladies invited) in the Ashworth Hotel in Hampton Beach, at which Henry Schmitz, editor-in-chief of the *Journal of Forestry,* will deliver an address. On Thursday the members of the society will make an all-day excursion by automobile to the Pawtuckaway Reservation, the Manchester Water Works Forest (in which a buffet luncheon will be served) and the Bear Brook Recreational Area, at which the trip will terminate, with bathing and picnic supper for those who desire them. Explanatory addresses and demonstrations will be given at all the principal points visited.

The Horticulturists of New England and Eastern Canada will hold a meeting at Durham on June 26 and 27, partly in connection with the American Society of Plant Physiologists. The society will hold a dinner on Tuesday evening and a program on "Hardy Body Stocks for Apple Trees," under the chairmanship of J. H. Waring, of the University of Maine.

THE AMERICAN PHILOSOPHICAL SOCIETY. II

ABSTRACTS OF PAPERS PRESENTED AT THE PHILADELPHIA MEETING

(*Continued from p. 466*)

By Professor EDWIN G. CONKLIN

VICE-PRESIDENT AND EXECUTIVE OFFICER; PROFESSOR EMERITUS OF BIOLOGY, PRINCETON UNIVERSITY

Mental abilities: EDWARD L. THORNDIKE. Psychology once held the view that attention, memory, imagination, reasoning and the like were general faculties or powers of the mind. But experimentation showed (1) that the improvement of an ability by training was specific, not general, and (2) that the correlations between different manifestations of an ability were far from perfect. A mental ability is, as an observed fact, only a probability that certain tasks can be achieved by the possessor of the ability. The meter or test by which psychology measures an ability is usually a selected set of tasks, a sort of inventory by sampling. The scores computed from most of such inventories are best expressed by arranging the tasks in progressive levels of difficulty and stating the percentage of success at each level, or, more conveniently, the level of difficulty at which the person achieves some specified percentage of successes. Psychology seeks to attain adequacy and purity in its measures of an ability; that is, to measure all of it and nothing but it. Purity is especially hard to attain, because abilities are as a rule affiliated, so that the test or meter for any one gives a score that is contaminated, so to speak, by the influence

of others. Factor analysis replaces the set of impure abilities measured by the actual tests by a set of purer factors or components. What services such factors will perform for science, and how far they will be identifiable and measurable is not yet known. Some critics think that they are unrealizable abstractions. Every mental ability presumably depends entirely upon certain structures and activities in the brain. Neurology and psychology have got rid of certain former errors, but do not yet know what these structures and activities are for any of the higher and more complex abilities.

Psychoanalysis and the scientific method: CARNEY LANDIS. Psychoanalysis must be considered as a grouping of three diverse subjects, *viz.*, a therapeutic method, a speculative philosophy (metapsychology) and an experimental psychological procedure. Considered as a psychological experiment, it is possible to subject psychoanalytic findings and reports to the usual criteria imposed by scientific methodology. Such phenomena as anxiety, resistance, unconscious memories, transfer, insight, etc., are psychological experiences which are a result of, or a concomitant of, the particular form of experimental procedure used in psychoanalysis. There is no need to have recourse to a speculative system of philosophy to explain or understand these phenomena. The application of the usual criteria of scientific research to psychoanalytic procedures shows that the acceptance of Freudian metapsychology in anthropology and in the social sciences is unnecessary. Psychoanalytic reports have forced psychologists to recognize and to inquire extensively into the role of early childhood development of mental life as it affects the mental life of the adult; have shown the importance of forgotten memories and childhood fantasies as they influence the thought and action of the adult; and has forced the attention of psychologists to the facts of the psychology of sex and sexuality. In brief, psychoanalysis has contributed a form of psychological experiment which has brought out much of value to psychology, but these contributions have been overshadowed, and partly overlooked, because of the greater emphasis on a speculative philosophy which is non-scientific.

Psychology and defense: ROBERT M. YERKES. In the World War, American psychologists pioneered by making their methods serve the army and navy. Our allies and antagonists made slight use of military psychology. Following the war the subject was neglected in America, and no provision was made in our military establishments for further development of methods or of personnel. Germany, however, entered into our progress and between wars molded psychology and psychotechnology as instruments of social progress. Research and training centers were established, and hundreds of men were trained for service to the state. Of these, many became military psychologists. The contrast is striking. Ours in 1917–1918 was the initiative and leadership in this new field of professional service; to-day leadership has passed to the Nazis, who have an unparalleled organization to deal with problems of propaganda, morale, personnel and like matters of human engineering. We have no comparable organization, few military psychologists and no training schools in army or navy to meet prospective needs. But psychology has other than military values for defense. The so-called learned professions of medicine, law, religion meet but a fraction of recognized needs. From the sciences of physics and chemistry have developed branches of engineering which enable us to control physical environment. But corresponding developments from the biological sciences of branches of human engineering to shape and control the nature and nurture of man exist in promise rather than fulfilment. Medicine during the centuries has developed into a highly prized learned profession, concerned chiefly with making or keeping us well and vigorous. There is no comparable profession to which the normal, ordinary individual can turn for information, prognosis, advice or other guidance in matters of self-development, education, vocational choice, social adjustments. In the interest of social progress it would seem incomparably more important to improve human nature and increase the ability and usefulness of the individual, than, in accordance with our current concentration of effort, to prolong life into senility or to preserve those hopelessly defective, insane or otherwise afflicted. For this purpose, psychobiology, psychology and the social sciences should be invaluable. There is urgent, although inarticulate, need for a new profession or group of professions to fill the gap between medicine and religion. Therefore the following proposal: That psychology be recognized as a profession basic to the development of all branches of mental engineering; that professional schools of psychology similar in principle to those of medicine and physical engineering be established; that following successful completion of four years of work graduates of such schools be awarded the degree of doctor of psychology instead of doctor of philosophy, and in case they desire to practice their profession, be licensed under appropriate federal and state laws. In this picture, psychology stands as complement to the great profession of medicine. It would, however, be concerned primarily with assistance to the normal, healthy individual, whereas medicine is necessarily concerned in first line with the abnormal or pathological person.

Motivation, learning and adjustment: EDWARD C. TOLMAN. The values which for us human beings adhere to environmental objects and situations derive from the basic biological and social drives. The intrinsic values belong to the final states of "satiation and sufferance." Environmental objects and situations acquire instrumental values in that they serve as means or hindrances. A distinction must be drawn, however, between values, as we, the omniscient observers, know them, and subjective desirabilities, or "valences," as the individual projects them into the environment. Most of the serious problems of motivation arise out of incorrect valences, projected by the individual and which do not correspond to the true values. Such incorrect valences arise from incorrect "beliefs." Normally, beliefs are established through learning. And, when so established, they tend to be correct and "rational." As rational, they are easily subject to relearning and correction. Situations of undue frustra-

tion and conflict, however, tend to lead not to learning but to beliefs which are erroneous and almost inevitably "irrational" or "traumatic." The essence of such irrational or traumatic beliefs is that they are tremendously resistant to correction through further learning. The uncovering of the types of childhood situation which tend to develop such irrational traumatic beliefs and resultant incorrect valences was Freud's major contribution. The ghastly picture which the international scene exhibits to-day is, I believe, the result of a special case of traumatic beliefs. We human animals, living in groups, traumatically "identify" with these groups and accept the successes of the latter, or of their leaders, as substitutes for our own successes. This tendency appears to be insuperable. Two solutions, however, suggest themselves: an amelioration of the individual's lot within the group; and the enlargement of the size of the controlling group until hostility from other groups becomes bootless.

Egyptian planetary texts: O. NEUGEBAUER. There exist only three Egyptian texts dealing with astronomy in the modern sense of the word, all of them written in Demotic and belonging to the period of the Roman domination of Egypt. One of them gives the calculation of the new moons and has been published by Neugebauer and Volten in 1938. The two other texts are tables for the movement of the planets during a given period of years: the papyrus Berlin *P* 8279 rev. was published by Spiegelberg in 1902, but he only gives a very unreliable translation without commentary. The second document (the so-called "Stobart Tablets," now in Liverpool) was published in 1855 by Brugsch, philologically very excellent but also with very little astronomical commentary. It seemed necessary, therefore, to give a modern edition of these planetary texts, based on a careful investigation of the originals and accompanied by historical, paleographical and astronomical commentaries. It was possible to arrive at a complete understanding of the content of the texts and in this way to correct an error in their dating given by Brugsch. Many different questions are involved in determining and checking the planetary positions given, *e.g.*, the calendar system employed, the problem of the origin of the counting of longitudes in the ecliptic or the reliability of the Greek reports on Egyptian astronomy. Special considerations have been devoted to the paleography of Demotic number signs and to the symbols for planets and zodiacal signs, which are the basis for the notation still used to-day.

The Syro-Hittite civilization in the light of the excavations at Hamath on the Orontes: HARALD INGHOLT. During these excavations, sponsored by the Carlsberg Foundation of Copenhagen, Denmark, and undertaken during the years 1931–1938, twelve different levels were unearthed. Of particular interest were the finds made in two consecutive layers representing the material culture of the city from about 1200 to 720 B.C., the year in which Hamath was conquered by Sargon, king of Assyria. Typical of the oldest of these two levels was the custom of cremation, the gradual introduction of iron and the occurrences of inscriptions in the Hittite hieroglyphic script, all three characteristics together peculiar to the so-called Syro-Hittite culture. More than 1,100 cinerary urns, found in the city below the mound, contained a wealth of different small objects giving valuable information about the bearers of this civilization. They were the Peoples from the Sea, Indo-European tribes who during their wanderings about 1200 acquired new homes in the Aegean world, in Anatolia and in Syria-Palestine. In the more recent of the two levels, which begins about 950 B.C. cinerary urns were still found in the city below the mound; but no doubt another ethnic element, the Semitic Aramaeans, had taken over the power. Extensive architectural remains of Syro-Hittite type were brought to light on the mound itself, permitting the reconstruction of a monumental entrance to the citadel, a temple and two palaces. A number of basalt sculptures were found, most of them lions guarding the entrances to the buildings. Several graffiti in Aramaic bear witness to the language of those now in power, even though a few inscriptions in the Hittite hieroglyphic script and graffiti similar to one recently found at Boğazköy still remind us of the former ruling class. The civilization of the Peoples from the Sea has had a profound influence not only on the countries of the Near East, but also on the Etruscans and the Greeks.

Sumerian literature: A preliminary survey of the oldest collection of literary creations in the world inscribed on clay tablets dated approximately 2000 B.C.: SAMUEL N. KRAMER. The dominant cultural group in the Near East from prehistoric days to the end of the third millennium B.C. were the Sumerians, a non-Semitic people whose very name, erased from the memory of man for over 2,000 years, was not identified until 1869. From 1877 on, however, Sumerian monuments and inscriptions have been excavated in large quantities in the ancient sites of Sumer such as Lagash, Nippur, Shuruppak, Kish, Uruk and Ur. Of all these excavations, those conducted by the University of Pennsylvania at Nippur proved particularly unique and significant; they uncovered a large group of tablets and fragments dated approximately 2000 B.C. and inscribed with Sumerian literary compositions consisting of epics and myths, hymns and laments, proverbs and "wisdom." As practically the oldest written literature of significant quantity ever uncovered, these compositions which influenced profoundly all the peoples of ancient Near East including the Hebrews and Greeks, furnish new, rich and unexpected source material for all the related humanities. Unfortunately the contents of these compositions are still unavailable to layman and scholar, primarily because for almost half a century the larger part of the tablets and fragments have been lying uncopied and unpublished in the Museum of the Ancient Orient at Istanbul and in the University Museum at Philadelphia. To remedy this situation the writer has spent twenty months in Istanbul copying 170 "literary" pieces and has devoted the better part of the past two years to the studying and copying of the Sumerian literary material in the University Museum. As a result, the reconstruction and translation in the course of the next few years, of a large group of Sumerian literary compositions, are now

assured. To demonstrate concretely the method and process of reconstructing these compositions and to illustrate the swing and rhythm, the mood and temper of their poetic contents, the writer read with explanatory comment his translation of "Inanna's Descent to the Nether World," a universally significant myth whose contents he has succeeded in reconstructing in the course of the past five years.

The ship of the soul on a group of grave-stelae from Terenuthis: CAMPBELL BONNER. In this paper four small grave-stelae from Terenuthis in lower Egypt are illustrated, and their interpretation is discussed. The period of the burials was at the end of the fourth or the beginning of the fifth century of the Christian era. In all four examples a figure representing the deceased person is in a boat or is about to enter one. It is well known that the ancient Greeks often compared human life to a voyage, and the imagery connected with the ship of life was taken over by the Christians. In consequence of this, the ship-symbol occurs on a number of Christian tombs in the catacombs of Rome. In previously published material from Christian Egypt, this symbol is rarely found; and yet the Christian idea of the ship of the soul divinely guided to its final harbor was probably accepted all the more readily in Egypt, because the people had inherited from dynastic times the belief that the soul was carried in a boat, sometimes with the guidance of a divine ferryman, to the abode of the blessed.

Some pre-armada propagandist poetry in England: TUCKER BROOKE. In the years 1585 and 1586, when England was expecting invasion by Spain, and combating "fifth-column" activities which centered around Mary Queen of Scots, the Oxford University Press issued a series of sixteen-page pamphlets intended to sustain the national morale. They were in Latin verse and appear to have had a wide distribution, but they have never been reprinted and are almost unknown to bibliographers. A set has been discovered at the Huntington Library and another at Winchester College, England. The most interesting of the contents are twelve odes, written during 1585 and 1586 and offering practically a month-by-month expression of national feeling.

SCIENTIFIC EVENTS

A READING MACHINE FOR MICROFILMS

Mathematical Reviews, the new international abstracting journal of mathematics, which has established a microfilm reprint service enabling subscribers to obtain a copy of any article reviewed has now arranged for the manufacture and supply of a reading machine for microfilm.

When the microfilm reprint service was introduced, it was realized that the usefulness of this service would depend to a large extent upon the availability of reading machines. The Committee on Scientific Aids to Learning of the National Research Council is promoting, among other things, the use of microfilm. As a result of its efforts, a reading machine is being manufactured which will be sold at a retail price of $32.00. A grant from the Committee on Scientific Aids to Learning has made it possible for *Mathematical Reviews* to distribute a limited number of these machines on the following terms:

A reading machine for microfilm will be given—as long as the available supply lasts—to any person who has paid his subscription, at the rate to which he is entitled, to *Mathematical Reviews* in advance for three years beginning January, 1941. The person who receives a reading machine must pay express charges and import duty, if any, from Buffalo, N. Y. Until January 1 this offer was made only to the present subscribers.

In the fall of 1939, an advisory group on microphotography to the Committee on Scientific Aids to Learning, composed of Keyes D. Metcalf, director of the Harvard University Library, *chairman;* Professors Ralph D. Bennett and Ernest H. Huntress, of the Massachusetts Institute of Technology; Dr. Vernon D. Tate, of the National Archives, and Dr. Irvin Stewart, director of the Committee on Scientific Aids to Learning, *ex officio,* was requested to consider the possibilities of designing and making available a simple, inexpensive microfilm reading machine for the use of the individual scholar. Several designs were suggested, and three models were constructed. Each of these models was thoroughly tested both in the laboratory and in actual use; a set of plans and specifications embodying the final accepted design was prepared for distribution to manufacturers specializing in equipment of this type.

Bids for the manufacture of the reading machine were received from a number of companies, and the Spencer Lens Company was authorized to build a pilot model. It was built, tested and inspected, and the Committee on Scientific Aids to Learning has now signed a contract for a number of these machines. In addition, they will be placed on the market by the Spencer Lens Company.

FELLOWSHIPS IN THE NATURAL SCIENCES OF THE NATIONAL RESEARCH COUNCIL

THE National Research Fellowship Board in the Natural Sciences of the National Research Council has made the following fellowship appointments for the academic year 1941–1942:

Paul J. Allen (Ph.D., plant physiology, University of California, 1941). At Harvard University. The intermediate carbohydrate metabolism of the obligate parasite, *Erysiphe graminis,* with a comparative study of different strains.