types of activity which have many of the characteristics of mental organization. The structure and electric potentials of sensory areas point to a complex interplay of interference patterns or of field forces in which structural elements are subordinate to the influence of masses of excitation. Psychological analysis of the mutual influence of sensory elements in the formation of precepts reveals laws of organization identical with those of physical force-fields. Thus neurology and psychology are approaching a common formulation of the laws of organization of their materials. In studies of motivation and of the variables contributing to intellectual activity there is a similar confluence of the two disciplines toward a common statement of principles of organization.

The genesis of behavior form in fetus and infant: ARNOLD GESELL. The morphogenesis of human behavior becomes apparent at an early fetal stage before the close of the second month of gestation. From the beginning behavior tends to assume characteristic *forms* and follows an orderly ontogenetic sequence. Premature birth does not alter the normal progressions. The behavior of 37 prematurely born infants with fetal ages varying from 28 weeks to 40 weeks was investigated by systematic developmental examinations, and cinema analysis. The behavior patterns of the premature infant approximate those of a fetus of equivalent age rather than those of a full-term infant of equal age. A film entitled "Infant Eyes and Hands" will be shown to illustrate the growth of behavior patterns and their characteristic forms at fetal and later maturity. Patterns delineated include the tonic neck reflex, primitive grasping, ocular fixation and progressive types of prehension culminating in precise thumb opposition. Behavior has shape in the same sense that limb-bud and finger prints have shape. The genesis of shape is similar for psychic and for somatic patterns. Form phenomena are found at all levels of organization beginning with molecular, colloidal and paracrystalline levels. Behavior forms stand at the summit of a hierarchical continuum. They are not unique manifestations of organization. They are end products of the same morphogenetic factors and forces which are being fruitfully investigated in the fields of biochemistry and experimental embryology. Experiential and environmental influences inflect and specify, but the primary, provisional and prospective components of pattern are intrinsic. Maturation is the net sum of the gene effects, and as such is the basic determinant of behavior form.

The nature of associations: WOLFGANG KÖHLER. In the classical theory of associations by contiguity the connection between two associated items seems to have been regarded as a neutral bond which remains the same whatever the items in question. More recently this theory has been modified both by Professor Thorndike and by Gestalt psychologists. Thorndike holds that a relation of "belonging" is necessary if two items are to become associated in consequence of their, single or repeated, contiguous occurrence. Gestalt psychologists maintain that the association of such items presupposes their organization within one experiential unit, and that the neural after-effect of such a unit *qua* unit is the fact of association. This Gestalt assumption leads to concrete inferences, because we know from perceptual experience what factors favor the formation of experiential units. Two such factors are similarity and proximity of the items in question, which means that similar items tend to form unitary groups, and that this specific interaction is more likely to occur if the items are neighbors in space and time (contiguity = proximity). The Gestalt interpretation of associations leads therefore to the consequence that, other conditions being equal, similar items will be more strongly associated than items which show no particular resemblance. In several experiments this expectation was fully verified. In fact, the influence of similarity on association is so strong that even very small statistical samples demonstrate it with great consistency. Organization, however, depends upon other factors besides similarity and proximity. At the present time experiments are being undertaken in which the influence of such other factors is tested. In this fashion it may be possible to decide whether an association actually constitutes a neutral connection or whether association is a product of specific interaction between the items in question.

(To be concluded)

OBITUARY

CARY LEROY HILL

CARY LEROY HILL, senior forester of the California Forest and Range Experiment Station, U. S. Forest Service, died on February 26, 1941, at the age of sixty-six. He was one of the true pioneers in American forestry, since he first entered government employment for summer forest work in 1904, and had served his profession continuously for 36 years until his retirement a few months before his death.

Mr. Hill was born at Howell, Michigan, in 1875 and, after graduating from high school, had a varied experience before settling down to his life-calling. He worked for three years for a stove manufacturer, both in Michigan and New York City, in order to finance his college course. After graduation from the University of Michigan in 1901 with a classical A.B. degree, he taught English and mathematics for a year at the Owosso, Michigan, high school. Going west on a summer excursion he stayed to explore the Cascade Mountains in Washington with the Geological Survey, and spent the following winter on the circulation staff of the *Seattle Post-Intelligencer,* "doing" the lumber camps of the Puget Sound region. It was during this western experience that he became interested in the forests and in 1903 returned to his alma mater to attend the forestry school which was just being estab-

lished that fall. There he was awarded the degree of master of science in forestry in 1905.

Since July 1, 1905, Mr. Hill had been with the Forest Service continuously, with the exception of three years, 1909–12, when as assistant professor of forestry at the University of Michigan, he taught forest utilization, wood technology, mensuration and dendrology. Even during this period, the Service retained him as collaborator. He served for a time as chief of the Forest Products Division of the Regional Office in Denver, as forest examiner on the Sierra National Forest in California, and subsequently in the California Regional Office in San Francisco. At various times he was occupied with land classification, was chief assistant in timber management, had charge of law enforcement in California national forests and later of forest products activities. Since 1927, he had been with the California Forest and Range Experiment Station, where his responsibilities included direction of the products and economics research, and more recently special services in forest land utilization.

Mr. Hill was the author of numerous publications ranging from semi-popular articles in trade journals to technical bulletins and covering such a wide range of topics as wood paving in the United States, law enforcement on the national forests, heptane from California pines, air seasoning of western softwood lumber, marine borers and their relation to marine construction, utilization of El Dorado County land, and many others.

He served as executive officer of the San Francisco Bay Marine Piling Committee, 1919 to 1927, and as chairman of the natural resources committee of the California Economic Research Council throughout the existence of that organization. He was a senior member of the Society of American Foresters, and served as chairman of the California section of that society from 1927 to 1929. His membership in other learned societies included the American Association for the Advancement of Science, California Academy of Sciences, California Botanical Society and the East Bay Astronomical Association. He was a fellow in the first two of these organizations.

Mr. Hill had a wide circle of friends outside his profession as well as within it, and his personal contacts reached far beyond the United States to Europe, Africa, Australia and the Orient. The forestry profession and American scientists as a group have lost a staunch and able colleague.

EDWARD C. CRAFTS
CALIFORNIA FOREST AND RANGE
EXPERIMENT STATION

RECENT DEATHS

DR. SAMUEL BRADFORD STONE, assistant professor of chemistry at Brooklyn College, died on May 7 in his forty-fifth year.

DR. WILLIS COHOON CAMPBELL, professor of orthopedic surgery at the College of Medicine of the University of Tennessee, died on May 4 at the age of sixty years.

SIR ALBERT SEWARD, from 1906 to 1936 professor of botany at the University of Cambridge, died on April 11 at the age of seventy-seven years.

SIR JAMES GEORGE FRAZER, anthropologist, author of "The Golden Bough," died on May 7 at the age of eighty-seven years. Lady Frazer died a few hours later.

SCIENTIFIC EVENTS

THE NEW YORK ZOOLOGICAL PARK

THE official opening of the African Plains in the Bronx Zoological Park took place on May 1. This is a first step toward exhibiting animals according to their distribution by continents.

The opening ceremony was marked by short addresses by Mayor La Guardia, Sir Gerald Campbell, minister from Great Britain, Commissioner Robert Moses and the Honorable J. J. Lyons, president of the Borough of the Bronx. President Fairfield Osborn, of the New York Zoological Society, made a brief opening address which follows:

> This ceremony welcomes the life of a far-away continent to New York. It marks the opening of a new vista to the wonders of nature. It spells the beauty of living things, creatures age-old, yet ever new. We are here to greet this sight, and millions of others will do likewise before the year is out, grateful for an hour of recreation, snatched from these troubled days. We can be refreshed for a while from the spectacle of man's cruel and needless destruction of himself. We should have no patience with those unthinking persons who rant that man, in his present cruelties, is reverting to primitive nature—to the so-called law of the jungle. No greater falsehood could be spoken. Nature knows no such horrors. Through the ages, from Aristotle to Darwin, the great philosophers have interpreted the equitable principles governing all living things. Hitler, and his totalitarian system, whatever battles he may win, is bound to lose in the end. Man's age-long insistence on freedom for the individual isn't anything in the world but the straight, pure, unadulterated urge of any higher mammal. Add to that man's spirit and soul. The totalitarian system may be found among ants and bees—it is impossible for man! I wish that dictators had studied some of these things before they started this catastrophe. Let me remind you again that the world of animal life is more than a sideshow—it is related historically, psychologically, physically,