tributions to the improvement of our native beach plum (*Prunus maritima*), or who, through the development of beach plum products, may have made contributions of social significance. It is planned to make the first awards in August, 1941. Those interested may secure additional information by communicating with the director, Arnold Arboretum, Jamaica Plain, Mass. The awards will be made by a special committee to be appointed later in the year.

UNDER the will of the late Sir Henry Head, the Royal Society is named as residuary legatee of his estate, which is valued at £144,588. It is provided that the money "shall be applied for the purpose of the advancement in England of the science of medicine in the widest sense." The will suggests that the fund, or part of it, might be used to establish professorships or similar posts or research scholarships in some branch of medical science.

THE J. T. Baker Chemical Company has announced that its Eastern fellowship for research in analytical chemistry is open for 1941–42. This fellowship is to encourage fundamental research in analytical chemistry. The recipient will receive $1,000 annually and will be expected to devote at least nine months to research in an institution conferring the Ph.D. or Sc.D. degree in chemistry in one of the New England states, New York, New Jersey, Pennsylvania, Delaware, Maryland or Virginia. The fellowship is awarded by a committee consisting of N. H. Furman, chairman, Princeton University; J. H. Yoe, secretary, University of Virginia; G. P. Baxter, Harvard University; H. A. Fales, Columbia University, and C. W. Mason, Cornell University.

WITH the approval of the United States Office of Education, Cornell University has opened a course in Mechanics and Elementary Design of Aircraft Structures in Buffalo in cooperation with the University of Buffalo. This course, supplementing one established on October 7 without Federal aid, is also given at the request of the Curtiss-Wright and Bell Aircraft Companies. Federal approval of the new course means that there will be no tuition charge, since the expenses will be assumed by the Government under the recent act appropriating funds for Engineering Training for National Defense. The course is designed to meet an urgent national defense need for men trained for junior engineering positions in the airplane industry. High-school graduates who have completed trigonometry and mechanical drawing are eligible to enrol. The course will comprise an intensive study of statics, mechanics of materials and elementary design, with special attention to design of details of aircraft structures. More than three hundred students are enrolled, according to Dr. Arthur S. Adams, professor of mechanics in the College of Engineering at Cornell and director of the Buffalo courses.

A NEW division of chemotherapy has been formed in the National Institute of Health of the U. S. Public Health Service to be under the direction of Dr. William H. Sebrell, Jr. The *Journal* of the American Medical Association states that the new unit will be concerned with research on sulfanilamide products and with new synthetic drugs with antimalarial properties to make the United States independent from the Dutch East Indies supply of quinine, new synthetic drugs to supplement the supplies of opiates and studies relating to aging and nutrition. The chemotherapy division will have quarters at the National Institute of Health in Bethesda, Md., in a laboratory building now being equipped. The building will also be the headquarters of the divisions of chemistry and zoology.

DISCUSSION

AN IMPORTANT FACTOR IN EVOLUTION

SEWELL WRIGHT in Julian Huxley's "The New Systematics" (Oxford, 1940, p. 174) says: "The one *systematic* effect of mutation seems to be a tendency towards degeneration (as may be seen from a casual survey of the effects of most of the *Drosophila* mutations)." I believe that this observation reveals an evolutionary factor of primary importance.

It has long been appreciated that most of the *Drosophila* mutations are degenerative. We have been told that such mutations are rapidly eliminated under natural conditions by selection, which waits upon the occasional favorable mutation to effect evolutionary change. On the other hand, taxonomists have long realized that an adaptive significance can not be attributed to most of the known taxonomic differences distinguishing species and genera. Taxonomists and comparative anatomists have likewise appreciated the great extent to which the evolutionary changes in related groups of organisms involve the simplification, fusion or loss of old parts, and how rarely new parts or more complicated parts come in. It is now possible to point out the connection between these several sets of facts.

As a result of the principle that the loss of genes from the chromosomal mechanism is more frequent than their addition, it follows that whenever evolutionary change is unrestricted by natural selection, a degeneration of structure is likely to result.

Not all degenerative change is, of course, non-adaptive. Frequently, structures of adaptive significance arise in this way, as when the anterior segments of the polychaete fused to form the arthropod head.

Under normal conditions natural selection confines degenerative changes to minor body features, as details of sculpture or color pattern, but under abnormal conditions more profound changes are likely to occur. Cave conditions, as Wright himself mentions, are a case in point. In a normal environment selection tends to keep up to par the light receptive and light protective mechanisms, *i.e.,* the visual and pigmentation systems. In caves, on the other hand, such factors are relaxed so that these systems degenerate. Tactile organs, however, such an antennae and long body-setae, are encouraged, at least in the ground beetles, so that these structures thrive and are maintained in a high degree of development. Similarly explained are the degenerative changes that occur in sedentary and parasitic animals in general and the occasional loss of wings by birds and insects in certain insular environments. Darwin took account of the more extreme of these degenerative changes under the heading of the effect of disuse. But we have long realized that "disuse" in itself has no influence on the hereditary mechanism. It is merely evidence that the parts in question are no longer useful to the organism. They are, accordingly, no longer maintained by natural selection and so are subject to degenerative modification.

The picture that we get of evolution is somewhat as follows: Mutations constitute the basic material. The upbuilding of the complexity of organic function and structure and the thoroughgoing adaptation that all organisms exhibit are the product of natural selection. The detailed specific and generic differences are largely the result of differential mutational effects in partially or completely isolated populations. Selection effects a continuous influence, keeping the organism and its parts up to a certain par and preserving characters of adaptive significance as they occur. There are, however, always important portions of every organism over which selection effects no influence, and these are subject to degenerative changes in accordance with the principle that the loss of genes is more frequent than their gain. Still unexplained, perhaps, are certain so-called orthogenetic changes, like the suture system of ammonites, but the principle of degenerative evolution in the absence of continued selective control seems to be an important factor in understanding plant and animal diversity.

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LINNÆUS ON THE NATURAL HISTORY OF MAN

DR. HRDLIČKA'S communication in SCIENCE for December 27, 1940, containing a passage from a letter written by Linnæus in 1747 on the similarity of man and the apes reminded me of a note I made a few years ago in reading Linnæus' "Tour in Lapland." In his journal of this tour, under date of July 11, 1732, Linnæus wrote, "If we contemplate the characters of our teeth, hands, fingers, and toes, it is impossible not to perceive how very nearly we are related to Baboons and Monkeys, the wild men of the woods." Thus we find Linnæus at the age of twenty-five and nearly fifteen years before his letter of February 14, 1747, to Gmelin, perceiving a close relationship between man and the monkeys. My quotation is from page 331 of the first volume of *"Lachesis Lapponica,* or A Tour in Lapland, Now First Published from the Original Manuscript Journal of the Celebrated Linnæus; by James Edward Smith, M.D., F.R.S., President of the Linnæan Society" (London, 1811). The editor's preface says that the original was written in Swedish intermixed with Latin, that a literal translation of the Swedish was made by "Mr. Charles Troilius, a young gentleman in the mercantile line, resident in London," and that he himself put the matter into its final English form. Though we have no assurance of the absolute literalness of the translation of the particular sentence I have quoted, there seems to be no reason to doubt that it expresses fairly what Linnæus wrote in his journal.

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THE SOYBEAN IN CHINA

IN your issue of January 24, 1941 (Vol. 93, No. 2404), in a report on "the soybean crop in the United States" by A. W. von Struve, I find the assertion: "The first record of the plant is in the writings of Emperor Shang Nung of China in 2838 B.C."

Elmer D. Merrill and Egbert H. Walker ("Bibliography of Eastern Asiatic Botany," 1938, p. 556) call Shên-nung (not Shang Nung) "an early mythical Chinese ruler," H. A. Giles ("Chinese Biographical Dictionary," 1898, No. 1,695) "a legendary emperor," and B. Laufer, more correctly ("Beginnings of Porcelain," 1917, p. 160) "the culture hero, who, as implied by his name, 'Divine Husbandman,' was regarded as the father of agriculture and discoverer of the healing properties of plants."

No one knows just when the herbal attributed to him was compiled, but it probably was not before the Christian era. Philip K. Reynolds and Mrs. C. Y. Fang (*Harvard Journal of Asiatic Studies,* V, 2, June,