

*THE BIOLOGICAL SURVEY*¹

THE Biological Survey is quietly working for the good of our agricultural interests and is an excellent example of a government bureau which conducts original scientific research, the findings of which are of much practical utility. For more than twenty years it has studied the food habits of birds and mammals that are injurious or beneficial to agriculture, horticulture and forestry; has distributed illustrated bulletins on the subject and has labored to secure legislative protection for the beneficial species. The cotton-boll weevil, which has recently overspread the cotton belt of Texas and is steadily extending its range, is said to cause an annual loss of about \$3,000,000. The Biological Survey has ascertained and given wide publicity to the fact that at least forty-three kinds of birds prey upon this destructive insect. It has discovered that fifty-seven species of birds feed upon scale insects—dreaded enemies of the fruit-grower. It has shown that woodpeckers as a class, by destroying the larvæ of wood-boring insects, are so essential to tree life that it is doubtful if our forests could exist without them. It has shown that cuckoos and orioles are the natural enemies of the leaf-eating caterpillars that destroy our shade and fruit trees; that our quails and sparrows consume annually hundreds of tons of seeds of noxious weeds; that hawks and owls as a class (excepting the few that kill poultry and game birds) are markedly beneficial, spending their lives in catching grasshoppers, mice and other pests that prey upon the products of husbandry. It has conducted field experiments for the purpose of devising and perfecting simple methods of holding in check the hordes of destructive rodents—rats, mice, rabbits, gophers, prairie-dogs and ground-squirrels—which annually destroy crops worth many millions of dollars; and it has published practical directions for the destruction of wolves and coyotes on the stock ranges of the west, resulting during the last year in an estimated saving of cattle and sheep valued at upward of a million dollars.

¹President Roosevelt in his annual report to the congress.

It has inaugurated a system of inspection at the principal ports of entry on both Atlantic and Pacific coasts by means of which the introduction of noxious mammals and birds is prevented, thus keeping out the mon-goose and certain birds which are as much to be dreaded as the previously introduced English sparrow and the house rats and mice.

In the interest of game protection it has cooperated with local officials in every state in the union, has striven to promote uniform legislation in the several states, has rendered important service in enforcing the federal law regulating interstate traffic in game and has shown how game protection may be made to yield a large revenue to the state—a revenue amounting in the case of Illinois to \$128,000 in a single year.

The Biological Survey has explored the faunas and floras of America with reference to the distribution of animals and plants; it has defined and mapped the natural life areas—areas in which, by reason of prevailing climatic conditions, certain kinds of animals and plants occur—and has pointed out the adaptability of these areas to the cultivation of particular crops. The results of these investigations are not only of high educational value, but are worth each year to the progressive farmers of the country many times the cost of maintaining the survey, which, it may be added, is exceedingly small. I recommend to congress that this bureau, whose usefulness is seriously handicapped by lack of funds, be granted an appropriation in some degree commensurate with the importance of the work it is doing.

*FIELD MUSEUM OF NATURAL HISTORY*¹

THE Field Museum is open to the public from 9:00 A.M. until 4:00 P.M.; visitors within the museum may remain until half-past four. The badge of the association admits members to the museum during the meeting. The museum is situated in Jackson Park at the continuation of 57th Street; is five minutes'

¹Information for visitors attending the convocation week meeting.

walk from the Illinois Central Station, 57th Street, and ten minutes' walk from the University of Chicago.

The location of the offices of the building is as follows: the director's office is at the southeast corner of the South Court; anthropology, east end of East Court gallery; botany, north end of North Court gallery; geology, in halls 73 and 74; zoology, southwest corner of the West Court; the printing office is at the top of the west end of the West Court, and the section of photography, at the top of the east end of the East Court; the taxidermist's shop is at the northeast corner of the main structure, entrance to which is through hall 7.

The museum comprises four departments: Anthropology, Botany, Geology and Zoology.

The DEPARTMENT OF ANTHROPOLOGY occupies the entire eastern half of the building. It may be most easily visited by pursuing the following plan: On entering the museum at the main door one finds oneself in the North Court, where is installed the exhibits of classified archeology from Italy and prehistoric archeology from Europe. The most remarkable specimens in the court are to be found in the south end of the court, where are exhibited several interesting Etruscan tombs as well as the contents of several trench tombs, and the mural decorations of bronze bath tubs from the Villa of Bosce Reale on the east side. From the North Court one may pass through the reading room—hall 28—to hall 34, devoted exclusively to archeology. From hall 34 one should proceed to examine halls 30 and 31, and pass from hall 30 into the West Court where the collections illustrating the tribes of the Caddoan Stock may be seen in alcoves 1, 6, 7 and 8. From the West Court one may proceed to the South Court and examine the Tlingit collection in the alcoves on the east side and enter room 10, continuation of the Tlingit collection, and examine the collections of the northwest coast, which are found in halls 10, 11, 12, 13, 14, 15. Halls 16 and 17 represent the ethnology of the Hopi of Arizona and are of special interest on account of the life-sized reproduction of many important religious articles. From 17 one

passes into hall 18 devoted to ethnology of the tribes of the plains. The East Court may next be visited by passing through hall 12. The East Court is devoted exclusively to archeology, the alcoves on the south being devoted to South American archeology, those on the north side to North American archeology. The cases in the center of the court are devoted to Mexican and North American archeology. In alcove 83 of this court is to be found the remarkable collection from Hope-well group of earth works in Ross Co., Ohio. Of special interest are the implements and ornaments of copper and meteoric iron, carvings in bone, stone and mica; large obsidian knives of unusual size, and a cache of over 7,000 flint implements of rough form. In this court is also found a remarkable series of large carvings from the North Pacific Coast, chiefly from Haidas and Kwakiutl, and from the East Court one enters through alcove 82 to hall 3, devoted to the ethnology of the Columbia River tribes, of special importance being a series of stone carvings from near The Dales; hall 4 is devoted to the Eskimo, hall 5 to Arapaho and Cheyenne and hall 6 to the Non Pueblo of the southwest. Passing through hall 9 one enters hall 8, containing the prehistoric collections from Arizona and New Mexico. To the east of hall 8 is the East Annex, temporarily closed to the public, but admission will be given those especially interested. In this section is being installed the ethnological collections from Asia, Africa and the Islands of the Pacific. The provision and assignment of halls is as follows: Halls 37, 38, 39, 40 and 55—Indonesia; 54—Polynesia; 53—Melanesia and Micronesia; 52, 51 and 50—Africa; 56, 57, 58 and 41—Asia; 49—Physical Anthropology. A temporary exhibition of skulls and skeletons, illustrating certain phases of anthropology, are to be found on the south side of the gallery of the East Court. From the East Court, or from hall 8, one returns to the North Court, passing through hall 9, which is devoted to the archeology of Egypt. This collection contains a large number of interesting and well-preserved coffins, a large series of mortuary stellæ, an interesting mortuary cedar boat about 4,500

years old, many large pieces of bronze, and a very rare sistrum. Objects of gold or those containing precious stones, including those from Peru, Bolivia, Ecuador, Columbia, Italy, Egypt and India, are found in hall No. 32, which may be entered from the West Court.

The DEPARTMENT OF BOTANY occupies the galleries of the North, South, East and West Courts of the main building and may be reached by any of the four flights of stairs near the central rotunda, or by the stairs at one side of the east and west main doorways. The department is now being reinstalled. The old geographic arrangement, established in the beginning, is being replaced as rapidly as possible by a consecutive, systematic series; the early installation being on that account in a more or less chaotic and depleted state need not be visited.

The visitor should ascend the left stairway at the rotunda and on reaching the top of the stairs bear to the right to the transept gallery. Case I. begins the systematic installation with the Pines (9 cases), followed to the right by the Cycads, Typhaceæ, etc. The grasses (15½ cases) begin with a very interesting series of bamboos (3 cases) and end with a complete illustration of maize in all its forms and products (the door at this point leads to the herbarium). Bear to the right past the Cyperaceæ and the Palmæ (11 cases), noting the large and interesting series devoted to the Cocomnut; again to the right, following through the various orders (9 cases); to the Oaks (3 cases). Pass through the archway ahead containing the Moraceæ, etc. (5 cases) and bear to the right across the transept (6 cases Linaceæ). Bear again to the right through the archway (3 cases Urticaceæ) and turn to the right across the transept (Leguminosæ—5 cases), noting the large amount of products and interesting fruits of this order to the Laurels and Sumacs at the end of the transept. Again bear to the right through the transept arch to the Rubiaceæ, noting the complete installation of coffee, and still bear to the right along the transept (11 cases) to the Malvaceæ (4 cases), noting the exhaustive installation of cotton, illustrating its history and uses. To the right are two cases: the

Tiliaceæ to Oleaceæ, then turn to the left to view the 7 cases, so far installed, containing the dendrological series, noting particularly the very exhaustive illustration of the timber products of Japan.

The curator's office and the herbarium are immediately above the main entrance to the museum. The most interesting feature of the herbarium, beyond its valuable collections of 250,000 sheets, is the systematic catalogue of every collection composing it. It is probably the only herbarium extant in which the series of plants of any collector can be reassembled for study at any time.

The collections of the DEPARTMENT OF GEOLOGY occupy chiefly the West Annex of the building. They may be reached from the West Court or by turning to the right upon entering the building and passing through the reading room and hall 34. From the West Court, hall 32, containing a remarkable collection of gems and jewels, should be noted. The next six halls passing westward are devoted to paleontology. These are arranged in stratigraphic order, passing from Paleozoic to Genozoic. Hall 33 contains the Paleozoic fossils, also series illustrating the mode of origin of fossils and comparative forms. Hall 35 is at present closed. Hall 36, devoted to Mesozoic fossils, contains, among other notable specimens, the largest skull of Triceratops, a great horned lizard, that is known. A femur of Brachiosaurus, also shown here, is probably the largest single bone ever discovered. In hall 59 may be noted an excellent series of Ichthyosaurus remains, one of the most perfect skeletons of a flying lizard ever discovered, and a representative series of White River mammals. The problematic Dæmonelix is shown in hall 60, and in hall 61 the extensive series of Titanotherium remains and a complete skeleton of Promerycochoerus are worthy of especial note.

The next hall, 62, contains the collection of meteorites, which is one of the largest in the world. It contains representatives of 300 falls, some of them complete. Perhaps the most important specimen is the meteorite of Long Island, Kansas, over 1,100 pounds of which are shown and which is the largest

single stone meteorite known. The two following halls, 63 and 64, are devoted to the systematic mineral collection. The mode of installation employed here is especially designed with a view to the best display of the specimens and to permit a study of their more minute features. The larger specimens are shown in the wall cases. Series of special importance are the quartzes, calcites, barites and wulfenites. The radioactive minerals are illustrated by specimens and photographs. Several hundred specimens of cut gems and ornamental stones are shown in hall 64.

The Hall of Structural Geology, hall 65, contains a case illustrating cave formations and cave life, the cave formations being mounted in natural positions. The specimens of ripple marks, septaria and concretions shown in this hall are of special interest. Hall 66, devoted to lithological collections, is at present undergoing reinstallation, as is also the adjoining hall, 67. Clays, soils, sands and cements occupy hall 68, the different varieties being fully illustrated and their technical varieties shown. The large plate glass map in hall 69 shows the distribution of coal in the United States. Varieties of coals and hydrocarbons occupy hall 70, and petroleum in its varieties, origin and uses is shown in hall 71. Ores of the precious metals and lead in typical occurrences from various localities of the world are shown in hall 72. The statistical column in the West Dome shows the bulk of the different products of the mines of the United States for each second of time during the year of the World's Columbian Exposition. The ores of the base metals in great variety and completeness occupy hall 79. The specimens of Arkansas zinc, ore and Canadian nickel ore here shown are of remarkable size. Returning through the West Dome, halls 76 and 77, devoted to geographical exhibits, will be reached, the collections consisting chiefly of a series of relief maps illustrating important geographical and geological regions. Hall 78 contains collections of salts, abrasive, refractory materials, etc., gathered with a view to their economic uses and interest. The curator's office and the chemical and paleontological laboratories are located in the south-

west corner of the Annex, and can be reached from hall 76. Material, which may be desired to be studied, in addition to that exhibited, may be seen in part in these laboratories and in part is stored in the exhibition halls.

To visit the DEPARTMENT OF ZOOLOGY one should pass through the North Court to the rotunda and turn to the right to the West Court, which contains many groups of large mammals mounted by Mr. C. E. Akeley. Among the most important of these are the following: the hunting leopard, Beisa antelope, Swayne's hartbeest, orang-outang, striped hyena, and great koodoo, spotted hyena and Waller's gazelle. From the West Court one may pass to the South Court, which contains additional groups mounted by Mr. Akeley, the most important being that of the white-tailed, or Virginia, deer, which is probably unique. The South Court also contains a group of mountain sheep and polar bears. The court also contains the collection of Mollusca, which represents fairly well the subject of conchology. From the South Court one passes into hall 19, which, with hall 20, contains the systematic collection of Mammalia. Hall 22 is devoted to fishes and reptiles. Hall 23 and the adjoining alcove 97 of the East Court is devoted to the osteological collection consisting of mounted skeletons of over 225 species. Hall 24 is devoted to sponges, jelly fish, corals, etc. Halls 25 and 26 are occupied by mounted birds, there being represented about 550 species; the arrangement is systematic. Hall 27 is devoted exclusively to Illinois birds and their eggs. The study collection of birds, numbering about 40,000 specimens, is in the gallery of hall 27. The storage collections in entomology number about 70,000 specimens and are to be found in the gallery of the South Court, which also contains the study collections comprising about 20,000 specimens, representing all the most important species of North American mammals.

NORTHWESTERN UNIVERSITY

THE departments of Northwestern are widely scattered and therefore fail to make the impression they would if they were all together. The College of Liberal Arts, the

Science

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