at once that if we could get the red (anthocyan) on the primrose background, we should have a quite new and more rosy color. In the summer of 1912 we accordingly crossed the reds with *primulinus,* and obtained a quantity of seed. The *primulinus* was used as the seed plant. As orange was sure to be dominant over primrose (or absence of orange), we could not expect to see our new variety until the F_2 generation. In order to hasten matters, we raised the F_1 generation indoors during the winter, and got enough seed to produce quite a series of plants. The F_1 plants did not differ in any respect from the reds to which we were accustomed, all having a rich orange-yellow background. Some, especially in the larger series now growing in the garden, show extremely rich and deep red colors, so that we should take them for homozygous reds if we did not know otherwise. On July 16 the first of the F_2 plants came into flower, and we were pleased to see that the rays had an entirely new shade of color, wine red on a primrose background. The first one, probably heterozygous for red, was rather dilutely colored, but we now have plants showing rays of a very rich deep wine red, with variable primrose tips. This new variety may be named *vinosus.* It is certainly interesting to obtain in this way an entirely new color, which nevertheless is due entirely to the redistribution of previously known factors, and which could thus be predicted in advance. Up to the time of writing, 21 F_2 plants have bloomed, of which 12 are red (of the chestnut type, of several minor varieties, as suffused and bicolored), 8 are *vinosus,* and one is pure primrose like the grandmaternal ancestor. This exactly agrees with the theoretical expectation as regards the reds and the primrose, but we have so far twice as many *vinosus* as expected, and no plain orange-yellows, of which there should be three or four. Probably when all the plants are in bloom the result will agree more exactly with the expectation.[2]

[2] *Postscript.* A census taken August 9 gives 71 red (chestnut), 19 yellow, 25 vinous and 8 primrose. The theoretical expectation for this number is 69 red, 23 yellow, 23 vinous and 8 primrose.

We have obtained a number of other varieties, which will be fully described at some other time. One curious one, which I call *tortuosus,* has the apical half of the rays twisted, as though in curl-papers. We have this both in the plain orange yellow and rich chestnut red with yellow tips, in each case the disc being dark. Similar forms have been obtained at other times by horticulturists.

A collection of seeds shows extraordinary variability in form and color; it would hardly be too much to say that the seeds are less alike than the resulting plants. Thus the tall primrose (*primulinus*) has black or nearly black seeds, Sutton's double primrose has gray seeds streaked with white, while there is a strain of dwarf primrose with perfectly white seeds. Seeds from any one plant are practically uniform, and we do not find any evidence that the pollen used affects the appearance of the resulting seed.

T. D. A. COCKERELL
UNIVERSITY OF COLORADO,
BOULDER, COL.,
July 22, 1913

SOCIETIES AND ACADEMIES

THE BIOLOGICAL SOCIETY OF WASHINGTON

THE 512th meeting of the Biological Society of Washington was held in the assembly hall of the Cosmos Club, April 19, 1913, with Vice-president Hay in the chair and about 30 persons present.

Under the heading "Brief Notes and Exhibition of Specimens," Henry Talbott exhibited an unusually large tooth of the fossil shark, *Carcharodon megelodon* from South Carolina and by way of comparison the much smaller teeth of *Odontaspes* from Chesapeake Beach, Md., and made remarks on these sharks.

Wells W. Cooke made remarks on the spring migration, noting that the yellowthroat, redstart, wood thrush and catbird had arrived three days ahead of schedule time.

The regular program consisted of a communication by C. D. Marsh, entitled "Stock Poisoning by Larkspur." He stated that ranchmen of the west had long claimed losses of stock due to larkspur, and on scientific inquiry had found their observations correct, and that the monetary loss was considerable. Although larkspur occurs in other parts of the world, it apparently only causes trouble in the western United States. The average

mortality in affected areas of the west is from 3 to 5 per cent., but as many as 20 head out of a herd of 200 have been fatally poisoned in twenty-four hours. The low larkspur appears to be always dangerous, but the tall only becomes poisonous in August after the fruit matures. The poison is a cumulative one and requires from 3 to 10 per cent. of the animal's body weight of larkspur plant to cause death or alarming symptoms. The symptoms consist of general discomfort, nausea, constipation, a characteristic arching of the back and sudden collapse, followed by partial recovery and a repetition of similar attacks, and if the case is a fatal one, to end in respiratory paralysis and death by asphyxia. Animals do not become immune to the poison. Horses may be experimentally poisoned, but when feeding on the range do not eat into a patch of larkspur enough to consume a toxic quantity. Sheep are naturally immune to the poison and may be fed a continuous diet of little else than larkspur without showing any symptoms. The cowboy's treatment of the disease is bleeding, but the proportion of recoveries by this method is not greater than in natural recovery. Rational treatment consists in placing the poisoned animal on sloping ground with the head upward so that the abdominal viscera fall back from the thoracic organs. Drug treatment consists of eserine, pilocarpine and strychnine administered hypodermically. Under this method 96 per cent. of poisoned animals recover. Alcohol is also effective, but less practical. The paper was profusely ilustrated by excellent lantern slides, showing the larkspur in detail and on ranges, and numerous animals in various stages of poisoning. The paper was discussed by Messrs. Bailey, Weed, Hitchcock, Gill, Lyon and others.

THE 513th regular meeting of the Biological Society of Washington was held in the assembly hall of the Cosmos Club May 3, 1913, at 8 P.M., with President Nelson in the chair and 56 persons present.

Under the heading "Brief Notes and Exhibition of Specimens," Dr. H. M. Smith called attention to a large whale shark captured during the past year in Florida waters. It originally measured 38 feet in length, but as now mounted, 45 feet; it is being exhibited as a curiosity. Pictures of this shark were exhibited and extracts from a letter by the captor read. Dr. Smith's remarks were discussed by the chair and by Dr. Gill.

The regular program consisted of two communications by Dr. C. Hart Merriam and one by Edmund Heller.

I. "The Remarkable Extinct Fauna of Southern California revealed in the Asphalt Deposits near Los Angeles." Dr. Merriam remarked that asphalt had been known in this region to the Indians for thousands of years and was mentioned by the early Spanish padres. Although remains of animals in the asphalt deposits had been known since about the middle of the last century they have only lately been extensively studied by Dr. J. C. Merriam, of the University of California. The viscous asphalt appears to have acted as a natural trap, first entangling certain birds and mammals, and then these captured animals acting as bait to larger predatory forms. The remains may be roughly divided into three groups: (1) birds, some still existing, but mostly extinct, among them, hawks, 8 genera of eagles, vultures, including both North and South American condors, a condor-like bird, *Teratornis* of huge size, owls, ravens, herons, a peacock; (2) small mammals, as spermophiles, kangaroo rats, etc., and small carnivorous forms as weasels, skunks, badgers, bobcats, gray foxes; (3) large mammals, as deer, antelopes, buffaloes, elephants, mastodons, glyptodons, and large predatory forms, as wolves, mountain lions, giant lions, saber-toothed tigers and bears. Often several individuals of carnivorous forms, as giant wolves, saber-toothed tigers are associated with a single large ruminant. Discussed by Messrs. Gill, Hay and others.

II. "Notes on the Big Bears of North America." The speaker commented on the lack of adequate material for a systematic study of these bears. The black bear and allied forms he regarded as constituting a distinct genus from the brown and grizzly bears belonging to the genus *Ursus*, about 40 forms of which could be recognized as inhabiting the North American continent and adjacent islands.

III. "Distribution of Game Animals in Africa." Mr. Heller spoke of the life zones and areas of East Africa, illustrating the subject with maps, views of topography and characteristic mammals. The following areas, based mainly upon watersheds, were recognized: West Nile, East Nile, Uganda, East African, Abyssinian; and these life zones: Congo Forest, Tropical, Nyika, Highland Veldt, Highland Forest.

M. W. LYON, JR.,
Recording Secretary pro tem.