from which the first map of the region will be prepared. Observations of snowfall and temperatures will also throw light on the alimentation of the glacier and its many tributaries.

*Photographs of the Glaciers of Prince William Sound*

Observations of some 20 glaciers in College Fjord, Harriman Fjord and Columbia Bay constituted the second part of the work, which is a continuance of the study of the advance and recession of these glaciers with a view to determining their causes. Some glaciers appear to have receded as much as a quarter of a mile in a year, while others near-by seem to have advanced as great an amount.

In spite of great difficulty and some risk in forcing a frail row-boat through solid jams of icebergs, which threatened to crush it, this part of the expedition also was accomplished without accident.

## SPECIAL ARTICLES

### AN EARLY OBSERVATION ON THE RED SUNFLOWER

UNTIL the present month (November, 1914) I supposed that the red sunflower found at Boulder was the first of its kind ever seen by a botanist. I have, however, recently learned from Dr. David Griffiths, of the U. S. Department of Agriculture, that as long ago as 1892 he found a few plants of the wild annual sunflower on the Missouri River bottom in Potter County, South Dakota, having the rays marked at the base with maroon, about the same color as is seen in the dark forms of *Lepachys*. Again, in 1897, he saw in the Sundance region of Wyoming (probably within 15 or 20 miles of Sundance) a single plant having the rays maroon, with only a narrow fringe of yellow. Dr. Griffiths discussed the matter with Mr. T. A. Williams, who had also seen a plant somewhere, he thinks in the Bad Lands of South Dakota. It thus appears that the red sunflower has arisen independently as a "sport" in at least three widely separated places, a fact which may have a certain bearing on the suggestions of Professor Bateson regarding its nature. It is to be noted that the two cases reported by Dr. Griffiths represent different subvarieties, both different from the original Boulder one.

In *Botanical Gazette,* October, 1914, Professor E. C. Jeffrey has a very interesting article on the relation between hybridism and imperfection of pollen.[1] The various forms of red sunflowers which have been developed for horticultural purposes result from crossing the original wild sport of *Helianthus lenticularis* with various garden forms ascribed to *H. annuus*. Speaking broadly, these crosses, in all directions and through several generations, have been perfectly fertile, at least in the sense that they have produced abundant seed. Deficiency of pollen has however been common, especially in dark red varieties and doubles. My wife, who made the crosses, was sometimes unable to get pollen from some of the most beautiful plants, though she could obtain seed from these by using pollen from others. According to Dr. Jeffrey's criteria, this might seem to indicate that *H. lenticularis* and *annuus* are distinct species, although in this case it seems nearly certain the species *annuus* arose in cultivation. It is possible, of course, that the prairie sunflower, *H. lenticularis,* is a mixture of more or less different things. Thus we obtained seed of the wild Californian form, which appeared to be true *lenticularis,* but had the physiological peculiarity of remaining in flower after the Colorado plants were over. If, however, the present red sunflower of horticulture is in any sense a "crypthybrid," it certainly presents a very different case from the hybrids between it and the undoubtedly distinct species *H. cucumerifolius*. These latter hybrids, of various kinds according to the particular varieties used, are some of them very attractive. They can be produced in quantity as $F_1$ plants, but so far it has proved impracticable to get enough $F_2$ seed for horticultural purposes. The behavior here is much more like that usually expected of hybrids.

[1] With regard to *Sorbus,* which is specially cited by Dr. Jeffrey in illustration of his theory, it is to be noted that this genus was apparently producing hybrids in Miocene times. (*Amer. Jour. Science,* Jan., 1910, p. 76.)

A paper by Dr. G. H. Shull[2] on the apparent independence in inheritance of the stem and bud colors (anthocyan) in *Œnothera,* suggests a reference to the condition found in the new garden sunflower with wine-red on the rays. The more usual red (chestnut red, *i. e.,* red on orange) variety can nearly always be recognized in the seedling stage by the dark purple stems, a fact of utility in horticultural practise. To our surprise, when we came to raise the wine-red (red on primrose yellow) form in quantity, we found that the purple-stem character failed, in spite of the fact that the history of the plant indicated that it differed from the other red one in the yellow background, not at all in the anthocyan factor. Mr. Leonard Sutton, who grew the wine-red variety in England from our seed, also reports: "It is a remarkable fact, as you mention, that the purplish color is not shown in the stems of this new variety."[3] The question naturally arises, whether in such a case it is necessary to assume a splitting or complexity of the factor representing anthocyanin; whether it is not equally possible that some condition has arisen controlling the expression of the factor for red, that factor remaining genetically the same? In the course of breeding plants, we are doubtless too apt to assume that our recorded data represent the whole of the pertinent facts. It is evident that any given plant represents, in addition to the known "units," an assemblage of others which are unknown or merely suspected, while the known ones may have unknown properties. Thus, in spite of records and observations, the stage may be invaded at any moment by unnoticed *dramatis personæ,* and the development of the plot may belie the promise of the first acts.

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## A Remarkable Microsaur from the Coal Measures of Ohio

The Amphibia of the American Coal Measures as now known are represented by eighty-eight species, representing seventeen families and five orders. All of the species of *Branchiosauria* and all of the hitherto recognized *Microsauria* are uniform in the absence of an osseous carpus and tarsus. It is thus with considerable interest that we find an osseous tarsus in a microsaurian species from Linton, Ohio. The species was described many years ago by Cope[1] and it has not since been studied until Professor Grabau recently forwarded the type specimen to me from Columbia University where it forms a part of the geological collections.

*Ichthycanthus platypus,* referred by Cope to the Permian genus *Eryops,* is a small microsaur which in life probably did not attain a length of more than eight inches but was of a very active nature, as seems to be indicated by the scanty remains preserved, which consist of the posterior half of the body.

At first glance the specimen recalls a reptile, such as *Eosauravus Copei* Will., but closer examination reveals remarkable differences. The femur, in its well-ossified condition and the high degree of development of the trochanters, is typically reptilian; and there is nothing strikingly amphibian in the tibia and fibula. The tarsus, however, is reptilian with its central, and the distal row being composed of five elements. All of the elements are well ossified and articulate with phalanges which have a typical amphibian arrangement with the formula 2–2–3–3–2. The sharply clawed ungual phalanges add to the anomalous nature of the species.

The recognition of the exact nature of this species adds considerably to our knowledge of the diversity of structure among the Coal Measure Amphibia. Environmental conditions prior to the Coal Measures had effected a wide diversity of structure within the group. So early in the geologic history of the land vertebrates as the Pennsylvanic the Amphibia had assumed a variety of forms which had specialized into strictly aquatic, terrestrial, sub-terrestrial and arboreal. Specialization had extended to the loss of limbs, ribs and

[2] *Journal of Genetics,* June, 1914.

[3] Letter of September, 1914.

[1] Cope, E. D., 1877, *Proc. Amer. Phil. Soc.,* p. 574; 1888, *Trans. Amer. Phil. Soc.,* p. 289, Fig. 1.