

tained larger quantities of the plant food elements. Plants of the same species are known to vary in analysis and plants of different analyses in our experiments were found to have different water requirements. It appears that if the soil solution is weak the plant transpires more water in its attempt to make a normal growth. The larger number of stomata on the leaves of plants with high water requirements substantiate this.

The results of cultivation are a different plant growing in a different soil and requiring less water per unit of weight.

In the spring the soils of the humid regions of the United States contain plenty of water and it is general observation that the results of cultivation (higher moisture in the soil) do not show up until periods of dry weather come. In the fall there is again plenty of water, under all systems of soil management. It is the author's belief, based on experimental results, that proper cultivation throughout the season will allow the plants growing on good soils to make their growth on enough less moisture (early in the season) so that they can keep on growing during periods of dry weather on what may be called an accumulative moisture reserve.

The summary of the water requirement paper in the *Industrial Journal* follows:

The results of field and greenhouse experiments recorded in the following paper indicate that fertilization of a soil which responds to direct or indirect fertilizer treatment allows the plants to make their growth on a smaller amount of water and to have a different composition from what they otherwise would.

The same effect is produced by cultivation, which by opening up the soil increases bacterial activity, which in turn gives increased concentration of the soil solution.

Proper fertilization and cultivation minimize dangers to crops from drought injury in humid regions of the United States by having the plant go into the drought period with an accumulative reserve of soil moisture.

This work opens up the study of fertilization from the basis of water requirement.

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THE COPPER ESKIMOS

I RETURNED in the autumn of 1921 from six consecutive years in the arctic regions. Three of these were spent for purposes of geographic and ethnographic study among the Copper Eskimos. I am now engaged upon writing up the results of that investigation, but, as there is no prospect of getting this printed before at least one year, I want to make a preliminary announcement about certain results of my archeological and ethnological work.

Previous to 1912, the eastern known limit of pottery among the Eskimos was Point Barrow (cf. Murdock on the Point Barrow Eskimos). Stefansson's work of the years 1908-12 extended the known pottery area eastward some six or seven hundred miles to Cape Parry, and he found it there in the most ancient ruins, indicating that pottery has been used by the Eskimos for centuries and perhaps by the earliest Eskimos who occupied that country.

Jenness has published the results of his two years spent among the Copper Eskimos (*Report of the Canadian Arctic Expedition, 1913-1918*, Vol. XII, published by the Department of the Naval Service, Ottawa). In this he does not mention pottery, which would indicate that he found none to the east of Cape Parry. In excavating various sites I have found pottery fragments as far east as Point Agiak, just west of Gray's Bay, or about 80 miles east of the Coppermine. This extends the known pottery territory some 400 miles east beyond Stefansson's results. Like Stefansson, I found the pottery deep down, indicating that it had been in use probably several centuries ago and perhaps by the earliest Eskimos. The implements associated with the pottery were of undoubted Eskimo type.

Previous to 1910 houses of earth and wood had not been reported from the western arctic coast of Canada further east than Pierce Point. Stefansson in his journeys along the coast the spring of 1910 and again the summer of 1911 found the ruins of earth and wood houses as far east as one mile east of Crocker River. In an appendix to Jenness' report (cited above) we learn that since his return in 1916 Captain Joseph Bernard, who entered the Copper Es-

kimo country only a few months after Stefansson in 1910 (see *My Life with the Eskimo*, by V. Stefansson, p. 258) has reported finding the ruins of houses made of earth and wood on southwestern Victoria Island. Jenness concludes that this is a sporadic occurrence and attributes it to a visit from the western Eskimos. Thus Jenness evidently assumes that the people from whom the present Copper Eskimos are descended never had wooden houses.

In 1919 A. H. Anderson found earth and wood houses on Cape Krusenstern and at various places in Coronation Gulf. Lastly, I have (during the years of 1917-1921) found ruins of the type of earth and wood houses used in Alaska and the Mackenzie River at intervals along the shores of Coronation Gulf to the above-mentioned Point Agiak. I also have accurate Eskimo information about the location of a village of the same type on the coast of Melville Sound due south of Kent Peninsula. Thus we find houses of wood and earth as far east as West Longitude 107°. For reasons which I cannot go into here, I consider it likely that future investigations will show a continuation of this chain of ancient earth and wood dwellings most if not all the way to Atlantic and Hudson Bay waters.

As it seems to differ from that of some other investigators, I want to record here the opinion (based on my studies in Coronation Gulf) that the present Copper Eskimos, who have no pottery and use no wooden houses, are in the main at least descendants of the earlier inhabitants who used pottery and wooden houses. My view is that the present culture (characterized in part by stone pots instead of pottery, and snowhouses instead of wooden houses) has been gradually evolved partly because the previous culture was never as well suited to the local conditions as the present, and partly because the local conditions have changed somewhat. One important feature of the change has been the lessening importance and eventual abandonment of whaling. My work shows that whaling was formerly practiced in certain parts at least of the Copper Eskimo country.

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SCIENTIFIC EVENTS

THE BRITISH INSTITUTE OF PHYSICS

At the annual general meeting of the British Institute of Physics, held on May 23 in the rooms of The Royal Society, the following officers and board were elected to serve for the year beginning October 1, 1922: *President*, Sir J. J. Thomson; *past president*, Sir R. T. Glazebrook; *vice-presidents*, Sir Charles Parsons, Professor W. Eccles, Professor C. H. Lees, Mr. C. C. Paterson; *non-official members of the board*, Dr. R. S. Clay, Professor C. L. Fortescue, Professor A. Gray, Major E. O. Henrici, Sir J. E. Petavel, Dr. E. H. Rayner, Sir Napier Shaw, Mr. R. S. Whipple; *representatives of participating societies*—Physical Society, Mr. C. E. Phillips, Mr. F. E. Smith; Faraday Society, Mr. W. R. Cooper; Optical Society, Mr. John Guild; Röntgen Society, Dr. G. W. C. Kaye; Royal Microscopical Society, Mr. J. E. Barnard.

The annual report stated that there were 408 members of the institute at the end of the year, of whom 258 were fellows.

The institute is watching the possibility of establishing a central library for physics, although the financial difficulties in the way of its realization are stated to be considerable.

In the course of his presidential address Sir J. J. Thomson, after dealing with the project to establish a *Journal of Scientific Instruments*, spoke of the present depression in industry, but he made the reassuring statement that out of 67 students who graduated with distinction in physics and chemistry in 1921, 46 had obtained suitable positions, while 14 were doing research work. He hoped that the series of lectures on physics in industry which had been established would act to some extent as "refresher courses."

Speaking of the difficulties which the safeguarding of industries act had, in many instances, placed in the way of research, he characterized research itself as a "key industry" and he hoped that the government would put every facility in the way of research workers being able to obtain without delay the apparatus they required.