ago by Mr. Harold H. Hume, now assistant director of research of the Florida Experiment Station:

> The palm-trees here seem to be of a different species from the cabbage-tree; their straight trunks are sixty, eighty, or ninety feet high, with a beautiful taper, of a bright ash colour, until within six or seven feet of the top, where it is a fine green colour, crowned with an orb of rich green plumed leaves. I have measured the stem of these plumes fifteen feet in length, besides the plume, which is nearly of the same length.

The tall, symmetrical trunks, green at the top, and the "plumed" leaves leave no doubt that royal palms were seen, and the locality has been identified by Cooper and Small as Lake Dexter, a few miles northwest of De Land, about twenty miles inland from Daytona, in a latitude of 29°. The fact is significant, since a tropical designation is hardly to be denied to districts where royal palms were a feature of the native forest. In the Gulf-Stream climate of Bermuda, royal palms grow at 32°, the latitude of Charleston. The Florida peninsula is enclosed by the Gulf Stream, but denuded interior districts become dry and frosty.

Small suggests a warmer climate in the century before Bartram, but surface protection often determines the survival of a young palm or other tender plant. The royal palms are specialized to live as forest undergrowth during their early development, and do not begin to fruit until the trunk is twenty-five to thirty feet tall. Frosts may be worse from clearing more land in upper Florida, but at Indian River City royal palms have lived for many years, an African oil-palm (*Elaeis guineensis*) at Orlando and a Brazilian Acrocomia at Sanford. Ball and others found little difference in winter temperatures between the celery districts at Sanford and those near Sarasota, a hundred miles farther south.

The palms at Little River, hidden among mangroves in a brackish tidal swamp, were located by Munroe and shown to Sargent in 1885, though Cooper's lone palm of 1859 probably was an outlier of this group. Munroe planted "a number of these palms" in his garden at Coconut Grove in 1886, and published in "The Commodore's Story" a photograph taken in 1906 showing three mature palms forty to fifty feet tall.

Young Roystoneas in favorable places may attain twenty feet in six years from the seed, including two or three years before setting out, where seedlings are grown in pots. Transplanting from nurseries often results in root injuries and setbacks, with survivors permanently disfigured by short-jointed, narrow trunks. The lower joints often are six to nine inches long on normally developed royal palms, and the trunk at the base may exceed three feet in diameter.

Groves and shelter-belts of royal palms would greatly enhance the scenic beauty of Florida, instead of the few that are set along streets and roadways. Thousands of young palms are needlessly sacrificed every year, that in a few seasons would build their stately gray columns and spread their burnished emerald plumes. The seeds are scattered by the birds, and great numbers of seedlings spring up, only to be hoed out with the weeds, the first-season leaves being narrow and simple like coarse grasses. If the seedlings were recognized and protected, the royal palm might become an abundant tree over most of the peninsula, to judge from the varied habitats of the wild groups, fresh and brackish swamps, reef rocks and shell mounds. Fire control and irrigation are in prospect through adjustment of water levels by canals, roadways and embankments, so that a general forest cover may be restored eventually, of palms, rubber trees and other tropical vegetation.

Allied species of royal palms in the West Indies furnish building materials and have many domestic uses. Palm-groves are specially valued in pastures or farm-yards for cattle, pigs or poultry, the dried fruits of the Cuban species showing 18 per cent. of oil in Jamieson's analysis. Another use of palm-groves is for sheltering gardens or orchards against trade-winds and hurricanes. The royal palms reef down in severe storms by shedding their foliage, but the terminal bud is wrapped in the tough leaf-sheaths and the rigid trunks remain standing, even where coconut palms are destroyed.

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BUREAU OF PLANT INDUSTRY
U. S. DEPARTMENT OF AGRICULTURE

ON COLLEGE SCIENCE LABORATORIES, SCIENCE INSTRUCTION AND RESEARCH

A RECENT announcement that the committee on standards of the American Council on Education has withdrawn the council's "Statement of Principles and Standards of Accrediting Institutions," adopted in 1924, is of possibly more than passing interest to scientific men at large. It may recall the inertia of the latter group as a whole when the current procedures and requirements for accrediting college science laboratories were first adopted, in contrast, for example, with the alert attitude of the professional societies associated with the general field of English. The writer[1] has dealt elsewhere with some of the difficulties growing out of present accrediting systems so far as they concern the conditions under which science instruction is sometimes given but in particular with situations which militate against productive scholarship, adequate tenure provisions and other difficulties of the profession which may be involved.

[1] *Science Education*, 19: 1, 1–5, February, 1935. Paper presented before Section Q—Education, American Association for the Advancement of Science, Atlantic City, N. J., December 27, 1932.

It seems fortunate that in the past a few groups of scientific men have been led to take an interest in accrediting procedures, as a consequence, most likely, of the professional problems which they encountered. Valuable results were accomplished by the science faculties at the Universities of Iowa and Missouri, the latter in conjunction with their colleagues in other liberal arts institutions of that state. Additionally, certain other state universities,[2] notably Illinois, Iowa and South Dakota, were led to formulate more specific criteria for "standard liberal arts colleges" in their regions, a procedure in which their science faculties have cooperated.

Included among the bodies which have manifested an active interest in problems associated with the accrediting process is the Academy of Science of Virginia, and doubtless the names of other organizations will occur to the reader. The *Journal of Chemical Education* performs an important service in a field which is basically related to the topic under consideration, while there has been recent evidence of increased interest in the problems of teaching biological science. Lately, there has been notice of the formation of an association for research in science teaching. Last, and quite important, have been the notable contributions towards the standardization of secondary science, its equipment and facilities for instruction by professional associations of scientists working on that level; these have already had their effect upon the teaching of science in higher education. All will grant, therefore, that conditions affecting science teaching in the colleges have changed in recent years.

Despite the preceding, however, one is forced to admit that many scientists have remained indifferent towards these matters. Indeed, it recalls accusations concerning the attitude of this group as a whole toward the social maladjustments said to have grown out of scientific research. One will readily grant that the indefinite specifications as to the equipment and facilities for science instruction, which are characteristic of the requirements of the regional accrediting associations, are workable, given properly qualified personnel and adequate financial resources. Unfortunately, as regards the questions at issue, human failure on one part or the other in the past has reduced these problems in some cases to a purely "administrative" status, which may throw it and research as well into the lap of local politics. It thus seems, and especially in view of the prevailing pre-professional requirements, that a logical way to advance science is to take all practicable measures which would insure its uniformly good teaching, regardless of any particular philosophy involved in accreditment. This, of course, would be the safest antecedent for productive work in those institutions which are lacking in any such atmosphere, such as many of the small colleges. Again, if for any reason greater uniformity in the quality of science teaching on the higher levels is desirable, then the interests of the smaller institutions become important, for they greatly outnumber the larger ones where many of the problems related to accreditment have been more or less satisfactorily solved.

Under the conditions which have been described, could leadership in matters involving the accreditment of science laboratories be conceived as a function of the American Association for the Advancement of Science and as a responsibility to be delegated to its various affiliated societies along the lines of their interests? In view of the encouragement received in this matter by organizations of secondary science teachers, there seems to be no reason why such cooperation would not be welcomed by those entrusted with the accreditment of higher institutions. Certainly, if American men of science have no interest in such questions, others who may not fully appreciate the scientific viewpoint and the considerations it endeavors to meet may decide in some cases for them. Such a procedure may result in additional professional problems and in conditions less tolerable for scientific men.

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[2] Ella B. Ratcliffe, *Bull.*, 1934, No. 16, U. S. Department of the Interior, Office of Education, Government Printing Office, Washington, 1934.

CAUSES OF EROSION ON THE BOISE RIVER WATERSHED

RESULTS of a recent study of erosion on a portion of the Boise River Watershed in Idaho should be of interest to all conservation workers. The study was conducted by the U. S. Forest Service on 371,313 acres of the most critical part of the mountainous watershed, which furnishes the entire water supply for 355,000 acres of irrigated lands in the Boise valley.

Accelerated erosion is in progress on nearly two thirds of the portion of the watershed examined. Outstanding relationships of several factors to erosion on the area are as follows:

Gradient. The amount and severity of erosion varied directly with gradient up to approximately 35 per cent.

Aspect. The causes of erosion were mostly operative on southern exposures.

Soil. The loss of litter and organic matter through the removal of the topsoil reduced resistance of soils to erosion.

Plant Cover. Erosion conditions differed sharply on various plant types. Weed and grass areas in particular suffered severely, apparently because they were previously most disturbed by rodents and livestock grazing.