by those who are alone qualified to render adequate judgment.

Like all other branches of the institution, the division of research associates has undergone a distinct evolution. Originally a division which gave rise to excessive and often unrealizable expectations, it has gradually become shorn of its extrinsic appendages and divested of its inheritances from occultism. In spite of these omnipresent obstacles to progress and to efficiency, this division has been highly productive from the beginning and continues to be one of the most important agencies of the institution for the promotion of learning. The main reason for the noteworthy success of this agency is very simple. It was stated in a recommendation concerning research associateships, in the report of the president for the year 1906, in these words:

> The limitation of eligibility for such positions to investigators of proved capacity for and of proved opportunity for research.

In the meantime, the number of those possessing such qualifications has increased much more rapidly than the resources of the institution (or than the resources of all research agencies combined) have increased to meet this and other growing financial needs. Not only has income failed to keep pace with worthy demands, but, as repeatedly pointed out hitherto, the purchasing capacity of income has steadily declined since the foundation of the institution. Thus it happens that now, just as the merits of the system of research associates have come to be generally recognized, it is essential to suspend extension of this system, and it may become essential to curtail to some extent the amounts of the grants hitherto made to those who have helped most to develop this remarkably effective division of the institution's activities.

It should be evident from the preceding paragraphs of this section of the report, as well as from numerous passages in previous reports, that the income of the institution is not only not equal to popular estimates, but that it is not equal even to the legitimate demands on it for research. This proposition is easily verified, although few people believe it and fewer still are willing to undertake the small arithmetical labor essential for its demonstration. On the other hand, it is admitted by everybody that the institution is not doing as much as it could, but the simple reasons for this obvious fact appear to be far from equally obvious. Whether it would be desirable, if practicable, to double, say, the endowment, and hence the income, of the institution is a question well worthy of consideration. But along with many reasons why it would be so desirable there might be adduced also many other reasons why it would not. This is, indeed, a fundamental question whose deliberate consideration should precede the next step. We possess as yet no well-defined and generally accepted theory of a research organization. The institution, plainly enough, stands somewhat in isolation. It would prosper better, probably, and be better understood, certainly, if it had more contemporaries with which to divide not only the vast fields of opportunity, but also the vast aggregate of fruitless labors imposed on those who should be preoccupied with the business of research. In the meantime, while no expansion is permissible under existing income, the current activities of the institution may continue without serious modification of plans or impairment of efficiency.

R. S. Woodward

SCIENTIFIC EVENTS

WIRELESS TELEGRAPH INSTALLATION AT THE UNIVERSITY OF CHICAGO

A notable addition to the equipment of the Ryerson Physical Laboratory at the Univer-

sity of Chicago has recently been made by the installation of wireless telegraph apparatus. The aerial will be stretched between the mast on Ryerson Laboratory and a similar one on Mitchell Tower, making available approximately a height of 140 feet and a length of 425 feet for the aerial conductor. This will consist of eight wires, each made of seven strands, which, including leads into the building, will require nearly six miles of phosphor bronze wire. The mounting and insulation will be most fully provided for in order to withstand a pull of three thousand pounds, which a heavy wind on ice-covered wires might produce; and also to make the electrical leakage negligibly small even when using the 20,000 volts which will be employed in transmission experiments.

The first transmitter will be of five kilowatts capacity, which will be sufficient for the present, though not suitable for transoceanic communication. The important parts of this apparatus are being made in the Ryerson Laboratory and already preliminary tests have shown that a high degree of efficiency will be attained.

All types of receiving instruments will be used and the excellent character of the aerial will make it possible to receive and experiment with the radiations from all the high-powered stations of the United States and with many of those of the European nations. Research work has already been started and arrangements made to carry on work in cooperation with another university as soon as the installation of the Ryerson apparatus is completed. Courses on the theory of wireless telegraphy and telephony coordinated with electrical measurements will be given during the coming summer quarter.

Associate Professor Carl Kinsley, of the department of physics at the University of Chicago, who prepared the substance of the foregoing statement, was for several years an electrical expert for the War Department and devised a wireless system, which was the first to be accepted by the United States government and is now in use by the San Francisco wireless station. Professor Kinsley has been connected with the University of Chicago for fifteen years.

THE LEASE OF THE TROPICAL BOTANICAL STATION AT CINCHONA

THE botanical station at Cinchona, in the Blue Mountains of Jamaica, formerly leased for ten years by the New York Botanical Garden, has now been leased by the Smithsonian Institution, on behalf of fourteen American botanists and botanical institutions that have contributed the rental. These botanists and institutions believe there is need in the American tropics of a counterpart of the famous Buitenzorg Garden in Java. They hope the opening of this laboratory at Cinchona may prove as stimulating to the development of botany in this country as the opportunities afforded at Buitenzorg have to the advance of this science in Europe.

The equipment available at the station consists of the residence, with its furnishings; of three laboratory buildings, two glass propagating houses and a garden of ten acres, containing scores of species of exotic shrubs and trees, besides many native plants from the highlands of Jamaica. The occupant of Cinchona is also free, within reasonable bounds, to study and collect plants over the many thousand acres of the whole Cinchona reservation, as well as in the neighboring valleys belonging to private owners. He will likewise be given every available facility for study at Hope Gardens, where he will find a herbarium, a library and an extensive collection of tropical plants. The same privilege will be his at Castleton Garden which contains a splendid collection of cycads, of palms, and of *Ficus* and other dicotyledonous trees.

The many different types of native vegetation accessible from Cinchona and from Hope, include a number of great ecological interest and numerous species of importance for the morphologist, cytologist and physiologist. The ecological types range from the tree ferns, epiphytes and water-soaked filmy ferns of the cool mountain forest to the hot, steaming woods of the lowlands of the north side at one extreme and to the dry savannahs and cactus deserts near Kingston at the other. Fuller