ing at the new Stockholm Concert House, presided over by ex-Admiral Arvid Lindman, head of the new Swedish Conservative Cabinet and chairman of the college board of directors; a banquet at the City Hall and a gala performance at the Royal Opera. These gatherings were attended by King Gustaf, Crown Prince Gustavus Adolphus and other members of the royal family, many Cabinet ministers and other government officials.

The Swedish College of Forestry, which has played an important rôle in the preservation of the national forests, was founded in 1828 by Israel Adolf af Stroem, called the Father of Swedish Reforestation. Ancient Swedish history is, however, replete with proofs of the care and interest that have always been lavished upon this form of natural wealth.

Royal letters dated 1284 and 1525 prohibited the cutting of certain trees, imposing severe penalties for violation. Another letter of 1647 commanded that for each felled oak or beech two other trees of the same kind should be planted. These orders were motivated by the need of timber for house and ship-building and because the forests served as shelter for valuable fur-bearing animals.

To-day the College of Forestry graduates annually a number of efficient and highly trained foresters who have received a thoroughly theoretical and practical education. The studies at the school in Stockholm, covering two and a half years, are preceded by a one-year course in the forests of the Omberg Mountain, in the central province of Ostergothland, or in Dalecarlia. Here the pupils are instructed in everything connected with trees and wild animals, such as timber cutting, drainage, stump pulling, charcoal burning, reforestation, tree counting, hunting and fishing. Sawmills, wood-pulp plants and timber floating are also studied.

These activities and other measures taken by the Swedish government to preserve the timber supply were described at the celebration. Particular stress was placed upon the national census of forests, a gigantic task now nearing completion, which has already given evidence that Sweden's forest reserves are considerably greater than previously had been assumed. The annual growth has been found to be greater than the cutting, so that at the present rate of exploitation Sweden's forest reserves will last indefinitely.

EXPEDITIONS OF THE FIELD MUSEUM OF NATURAL HISTORY

THE Field Museum of Natural History, Chicago, has sent out three zoological expeditions during the past few weeks.

The Harold White-John Coats Abyssinian Expedition, sponsored and led jointly by Harold A. White, of New York City, and John Coats, of Ayrshire, Scotland, has gone to Abyssinia to collect mammals and birds, a special objective being specimens of the reticulated giraffe for use in a group exhibit. C. J. Albrecht, of the museum staff; George Carey, of Baltimore, Md., and several other men are members of the expedition.

On November 10 the first contingent of the William V. Kelley-Roosevelts Expedition to Eastern Asia departed for a year or more of zoological collecting and exploration of little-known regions in French Indo-China, and territory northwest of Indo-China along the gorges of the Mekong River and abutting on the borders of Burma, Siam and Yunnan. William V. Kelley, a business man of Chicago, is sponsor of the expedition. The leaders are Colonel Theodore Roosevelt and Kermit Roosevelt. Suydam Cutting, of New York City, and Herbert Stevens are among those accompanying the Roosevelts. A second contingent, led by Harold Coolidge, Jr., of Boston, will sail on December 22. Other members of the second contingent are Dr. Josselyn Van Tyne, assistant curator of birds of the museum of zoology of the University of Michigan; Dr. Ralph E. Wheeler, of Cambridge, Massachusetts, and Russell W. Hendee, of Brooklyn, New York. After each division has accomplished its individual objectives, the two parties will join next June for further intensive work together.

The Crane Pacific Expedition of Field Museum, led by its sponsor, Cornelius Crane, of Chicago and Ipswich, Massachusetts, sailed on November 16, on Mr. Crane's yacht, *The Illyria,* to circumnavigate the Pacific Ocean, making zoological collections and investigations at many of the principal island groups of the south and western Pacific and at many places in Asia. The expedition's operations are expected to take about one year. Karl P. Schmidt, assistant curator of reptiles, is leader of the scientific section of the party. Among other members of the expedition are Dr. Albert W. Herre, curator of the museum of zoology at Stanford University; Dr. W. L. Moss, of the Harvard Medical School; a number of technical assistants, and several friends of Mr. Crane's.

SCIENTIFIC RESEARCH IN GOVERNMENT LABORATORIES

IN the Annual Report of the Secretary of Commerce Dr. Ray N. Hudson, assistant director of the Bureau of Standards, writes:

> That far-sighted leaders of industry recognized the dependence of their progress upon advances in science is evidenced by the increasing call upon government laboratories for cooperation in research.

Some 200 organizations have working relations with the Bureau of Standards, and nearly 1,000 industrial experts advise with it in its research programs.

The public values in this cooperation are reflected in estimated annual savings ranging from $1,000,000 for the perfection and adoption of the Stoddard solvent formula to $50,000,000 to the dental profession and the public, resulting from the improved technique for making gold inlays, whereby it is assured that the inlay will have form and size identical with the cavity.

Recently the bureau, which by law is the research arm of the department's aeronautic work, established the first radiobeacon for the first national airway. A lane of radio is in effect fixed in the air to a given destination. An indicator tells the pilot at all times whether he is on or off course, in what direction and how much.

Development of a reliable radio-communication system between the plane and the ground, and further perfection of some forty instruments, each telling some factor essential to perfect flight, are other achievements in this field.

The fixing of radio-frequency measurements with unprecedented precision through quartz blocks kept at constant temperature mark progress toward perfect radio reception. This advance makes possible the measured control of frequencies to within 1 or 2 parts in 100,000.

Through refined apparatus and method the properties of steam are being redetermined as the basis of a new era in the utilization of steam. Early results promise a new order of precision in steam research and engineering.

Electrical units may now be defined and realized in mechanical units more exactly than otherwise, thus enabling the basing of such electrical units upon their original definitions instead of upon values adopted as expedients. Fundamental researches in this field are giving all electrical measurements a simpler and more exact basis.

Measurement as a universal means of research and standards as the basis of applying service to industry are making notable headway. Shop and purchase standards are increasingly being based on measured data as to the needs to be met and less on opinion.

BEQUESTS OF THE LATE PAYNE WHITNEY

THE appraisal of the estate of the late Payne Whitney was made public on November 22. The value of the whole amounts to $194,328,514.

Among the public beneficiaries, New York Hospital, of which Mr. Whitney was vice-president, receives the largest gift of the total of nearly $60,000,000 left to charities, institutions and organizations. In the last two years before his death Mr. Whitney gave the hospital $1.367,056, while in his will he left thirty-three parts of the residuary estate, which had been divided into 300 parts, the bequest amounting to $18,632,176. The list of debts included $135,920 under an agreement made with the hospital in 1925 and $97,500 under a promise in 1927 to build a residence at Bloomingdale Hospital for the general psychiatric director.

New York Hospital will benefit further under the clause of the will giving forty-six parts of the residue, or $25,972,134, to the trustees, the elder and the junior Ledyard and Edward W. Sheldon, president of the United States Trust Company, to apply the principal or income "for the furtherance or development of such charitable, benevolent, hospital, infirmary, public educational, scientific, literary, library or research purposes as said trustees shall in their absolute discretion determine to be in the public interest." The testator, however, suggested that "it would be agreeable" to him if the trustees used the fund "for the aid or development of such of the above enumerated purposes as I have been interested in during my lifetime."

The trustees submitted to Deputy Commissioner Stephenson a statement of their decision as to this fund, in which they said they had "carefully considered" the best means of disposing of the forty-six parts in order to carry out Mr. Whitney's intentions as expressed in his will. They were close friends of the testator, they said, and were "much impressed" by his suggestion that the fund should be used to aid the organizations in which he was interested during his lifetime. Because Mr. Whitney died "suddenly and unexpectedly" only a short time after his will was made, the trustees said they believed that before his death he "had not become interested in any institutions other than those to which he specifically gave some of the shares of the residue."

"After full consideration of the matter," said the trustees, "we have decided that the capital shall be distributed among the New York Hospital, Cornell University, for the maintenance and support of Cornell Medical College; the New York Public Library, Astor, Lenox and Tilden Foundations; the Groton School, Yale University and the Nassau Hospital."

The shares left under the will to these organizations, other than New York Hospital, were appraised as follows: New York Public Library, $6,210,725; Cornell University, $2,823,657; Yale University, $2,823,-657; Groton School, $1,129,272 and Nassau Hospital, which got only one share, $564,611.

The trustees said in their statement that they would determine later the manner in which the capital of the $25,972,124 fund should be distributed "among some or all of the institutions."

SCIENTIFIC NOTES AND NEWS

THE National Academy of Sciences has awarded its Daniel Giraud Elliott medal for the "most meritorious work in zoology or paleontology" to Professor Edmund B. Wilson, of Columbia University, for the third edition of his "The Cell in Development and Heredity." The Comstock prize for the most impor-