to no purpose, however. The electric current was not strong enough to do the work.

Soon after this Mr. Hall was graduated from college, and in 1886 fitted up a laboratory in a shed at the rear of his father's house on East College Street. Thither he carried the apparatus loaned him from the laboratory, and continued his work, occasionally coming to speak of his progress, and to talk about the difficulties which arose at almost every step of his investigation. These difficulties, however, never quelled his enthusiasm nor disheartened him.

The essential features of Hall's invention may be presented briefly in his own words, spoken on the occasion of the Perkin Medal Award.[1]

I had studied something of thermo-chemistry, and gradually the idea formed itself in my mind that if I could get a solution of alumina in something which contained no water, and in a solvent which was chemically more stable than the alumina, this would probably give a bath from which aluminum could be obtained by electrolysis.

In February, 1886, I began to experiment on this plan. The first thing in which I tried to dissolve alumina for electrolysis was fluorspar, but I found that its fusing point was too high. I next made some magnesium fluoride, but found this also to have a rather high fusing point. I then took some cryolite, and found that it melted easily and in the molten condition dissolved alumina in large proportions. I rigged up a little electric battery—mostly borrowed from my professor of chemistry, Professor Jewett, of Oberlin College, where I had graduated the previous summer. I melted some cryolite in a clay crucible and dissolved alumina in it and passed an electric current through the molten mass for about two hours. When I poured out the melted mass I found no aluminum. Then it occurred to me that the operation might be interfered with by impurities, principally silica, dissolved from the clay crucible. I next made a carbon crucible, enclosed it in a clay crucible, and repeated the experiment with better success. After passing the current for about two hours I poured out the material and found a number of small globules of aluminum. I was then quite sure that I had discovered the process that I was after.

In the summer of 1888, after most discouraging efforts to secure business support of his work, Hall and his patent were taken into association with Captain Roy Hunt and other "capitalists" of extremely modest means as the "Pittsburgh Reduction Company." This name, a few years later, was changed to "The Aluminum Company of America."

Hall's commercial success brought infringement suits by the Cowles Electric Smelting and Aluminum Company of Lockport, N. Y., in 1893. It is to be noted that Hall never entered their employ until *after* his discovery and also that he gave the Cowles Company an option on his process, which they finally rejected. The Cowles people reduced aluminum oxide with carbon in the electric furnace but were forced to use copper to capture the aluminum. This was purely a high temperature reaction, not electrolytic, and produced only a copper-aluminum alloy. The temperature of reduction of aluminum oxide is close to the boiling point of the metal.

Judge Taft, later President Taft, decided in favor of Hall, in the U. S. Circuit Court of Northern Ohio. It was necessary in the trial that the date of Hall's discovery be set before the summer of 1886 and this Professor Jewett was able to do because he remembered clearly that he stood in his private laboratory in the north wing of old Cabinet Hall when the young discoverer rushed in with a few shining buttons in his hand and said "I've got it!" This north wing of Cabinet Hall was torn down in the summer of 1886 to make room for the south wing of the new Peters Hall.

It is time that the world look past the spectacular figure of every genius to find, in his shadowy background, unknown to the public, some inspiring teacher. Unfortunately, the genius may fear that tributes to the old master may detract from his own glory. On the contrary, nothing does a man more credit than gracious acknowledgment of his scholarly debts.

SCIENTIFIC EVENTS

PROGRAM OF THE AMERICAN WILD LIFE CONFERENCE

IRA N. GABRIELSON, newly appointed chief of the U. S. Biological Survey, outlined a proposal for a national program at the recent meeting of the North American Wild Life Conference. It is expected that the program to be worked out by the General Wild Life Federation, the organization formed by the conference, will be based on his suggestions. A summary of his requirements follows:

1. Land for the restoration and use of wild life. The Federal Government has a national responsibility to complete a migratory waterfowl program and, where necessary, to develop primary areas for the preservation of other wild life.

2. Closer cooperation between federal and state agencies. (a) By extending cooperative research and demonstration units now operating in nine states. (b) Federal

[1] See "The Perkin Medal Award," *J. Ind. Eng. Chem.*, 3, 143–51 (March, 1911).

cooperation with states even to financial aid, in developing state wild life management areas that will supplement the primary federal areas.

3. Recognition of wild life values. Land management agencies, both public and private, should be brought to recognize the value of wild life and induced to provide for its needs so far as compatible with other uses.

4. Pollution of waters must be stopped or reduced to a non-destructive point.

5. Research on wild life problems should be extended to meet the new problems produced continually by modern developments. The results of this research should be freely available to all land administrators and wild life management agencies.

6. Closer coordination of the activities of federal land administrative agencies.

7. Basic protective legislation and regulations drawn to meet the needs of wild life, not merely the wishes of groups of special interests.

At the last session of the conference it was announced that a migratory-bird treaty between the United States and Mexico had been signed. The announcement was made by Juan Zinser, director of the Mexican National Game Commission, who said the treaty had been signed by Josephus Daniels, American Ambassador to Mexico, and General Eduardo Hay, Mexican Minister of Foreign Affairs. The provisions will come into force when the treaty is ratified by both countries and will remain in force for fifteen years, after which time it may be denounced by either country on twelve months' notice.

DU PONT FELLOWSHIPS FOR RESEARCH CHEMISTS

NOTING an increasing demand for research chemists, with a very definite shortage, and wishing to encourage more promising students in research work in the field of chemistry, E. I. du Pont de Nemours and Company has again appropriated sufficient funds to permit establishing fellowships in twelve leading universities and colleges for the academic year 1936–1937. The purpose of the plan is to give assistance to students wishing to pursue graduate work in research. The plan of these fellowships is very similar to the one the du Pont Company placed in operation many years ago but discontinued in 1932. At that time there was an excess of young research chemists with no offers of employment. As business conditions have improved, industrial research has been resumed with renewed interest, with the result that there is now keen competition for men of outstanding ability while the supply is becoming inadequate for the demand. These fellowships in the past have enabled young men to continue graduate work in chemistry who otherwise would have found it impossible to go on. Since the company first began these awards there have been granted 326 fellowships and 34 scholarships in 31 institutions, and, in addition, there was a national fellowship awarded at the Johns Hopkins University for a period of four years.

The appropriation for the resumption of the fellowships is $18,000, half of which is to cover the cost of continuing for the academic year 1936–1937 four post-doctorate fellowships in organic chemistry at $2,000 each, plus an additional $1,000 to cover the cost of extraordinary equipment that may be required in connection with the work of this group. The remaining $9,000 is to cover the cost of reestablishing twelve post-graduate fellowships at $750 each.

The objective of the post-doctorate fellowship is to provide trained assistants for a few of the younger professors of organic research to enable them to attack the more difficult type of problems, and to develop men who will be better qualified in research to continue their efforts in the academic field. The post-graduate fellowships, on the other hand, assist promising young men to obtain an education along the lines required by the chemical industry.

The awards have no restrictions other than that the work done under them shall be in the field of chemistry or chemical engineering, but the appointment of the fellowship must be approved by a member of the fellowship committee of the du Pont Company, after reviewing the qualifications of the appointee and the recommendation of the department of chemistry.

The twelve universities selected are as follows: For chemistry—University of Chicago, Cornell, Harvard, the Johns Hopkins, Ohio State, Princeton, Yale, Illinois, Minnesota, Wisconsin. For chemistry or chemical engineering—University of Michigan and Massachusetts Institute of Technology.

ALUMNI RESEARCH FOUNDATION OF THE UNIVERSITY OF WISCONSIN

A GRANT of $138,000 from the Wisconsin Alumni Research Foundation to aid research in the natural sciences at the University of Wisconsin was recently accepted by the State Board of Regents. The funds will support both old and new research projects. These projects, about eighty in number, are selected and approved by the University Research Committee. The foundation which provides the funds has no voice in the selection or in the policies to be followed in carrying out the research work.

"This grant," President Glenn Frank is reported to have said, "is another visible evidence of the very great contribution the Alumni Research Foundation is making to the future of the University of Wisconsin. By its accumulation of a permanent endowment for research, the foundation is providing an element of stability to the scientific future of the university that would otherwise be impossible. And in a dozen other