by Mr. Bert Cunningham, of the Durham, N. C., city schools, began an investigation of the plankton collections made by the U. S. Fisheries steamer *Fish Hawk* in the Chesapeake Bay region. Some thirty-odd collections were examined by the employment of methods which it is believed will furnish fairly accurate data concerning the numerical relations of all the important species as they vary according to depth, season and locality.

Dr. L. F. Shackell, of the University of Utah, continued his studies on the toxicities of various constituents of coal-tar creosote for the marine wood borer, *Limnoria*. Among the preparations tested were composite samples of tar bases of different boiling points, obtained through the courtesy of Mr. S. R. Church, of the Barrett Manufacturing Company. It was found that the bases were highly toxic for *Limnoria;* and that the toxicity increased with the rise of the boiling point—paralleling in this respect the results previously obtained for the tar acids.

Professor H. V. Wilson, of the University of North Carolina, spent a short time at the laboratory, continuing the study and identification of the "Albatross-Philippine Sponge Collection." Since but little work had previously been done on the sponges of the far east, it is not surprising that many of the forms proved to be undescribed.

Mrs. E. Bennet Decker, of Washington, D. C., again served as station artist. She prepared a number of illustrations of diatoms for Dr. Wolfe and made drawings and sketches for Dr. Kuntz and for the director.

Samuel F. Hildebrand,
Director

Bureau of Fisheries,
Washington, D. C.

PHILIPPE DE VILMORIN

With the death of Philippe Levêque de Vilmorin on June 30, genetics and horticulture lost a remarkable friend. His published work in both fields is valuable, but perhaps surpassed by his personal influence, which he owed largely to his position as head of the large and wealthy de Vilmorin family, and of the firm of Vilmorin, Andrieux & Co., of Paris, one of the most celebrated seed-growing and seed-selling establishments in the world.

The firm first appears in 1727 as a little seed store "*Aucoque de la bonne foy*" on the bank of the Seine, kept by one Pierre Geoffroy, whose daughter and heiress married the botanist Pierre d'Andrieux. A young botanist from Lorraine, Philippe-Victoire Levêque de Vilmorin, formed an intimacy with Andrieux, and in 1774 married his only daughter. Since then the firm has borne the name of the two families, although controlled wholly by the de Vilmorins. It has been handed on from father to son, and many of the family have contributed to agricultural science. The best known is Louis de Vilmorin (1816–1869), whose name is always connected with the sugar beet.

Of the early French contributors to genetics some, like Victor Lemoine, are known only as practical hybridizers; others have done purely theoretical work, as Jordan with his study of the nature of species, and Naudin with his observations on the segregation of characters in hybrids. Louis de Vilmorin is conspicuous in both classes. To theory he contributed the centgener method of breeding; to practical agriculture he contributed the sugar beet, whose saccharine content he raised from 10 per cent. to 18 per cent. by a carefully planned series of selections. Little improvement has been made in this beet since it left his farm.

He was succeeded by his son Henri, as head of the business and the family, and Philippe, who has just died, succeeded Henri in 1899. Philippe turned over the active management of the family business to his brother-in law, Comte d'Etienne, and gave the greater part of his own time to scientific research.

In horticulture he published studies of the beet-sugar industry of the United States, the culture of ginseng in Korea and Manchuria, and the tobaccos of commerce. He likewise edited three important publications of the firm: *Les Fleurs de Pleine Terre, Le Manuel de Floriculture,* and the *Hortus Vilmorinianus.*

The most important of his published work in genetics deals with wheat, but he also carried on a long series of dog-breeding experiments and, through the firm, made possible the researches of Hagedoorn, Meunissier, Mottet and other geneticists. He was largely responsible for the Fourth International Conference on Genetics, held in Paris in 1911. As secretary, he did most of the work connected with it; as financial guarantor, he furnished most of the funds needed for it. The large volume of *Proceedings*, which he edited and published at his own expense, is a fitting memorial to his zeal in the promotion of scientific research.

PAUL POPENOE

WASHINGTON, D. C.

SCIENTIFIC EVENTS

THE PRODUCTION OF IRON ORE AND PIG IRON IN 1916

THE iron ore mined in the United States in 1916 reached a total of 75,167,672 gross tons, the greatest annual output ever made. The shipments from the mines in 1916 were 77,870,553 gross tons, valued at $181,902,277. The quantity mined in 1916 was more than 19,600,000 tons greater than that mined in 1915. The increases in quantity and in value of iron ore shipped in 1916 amounted to about 40 and 80 per cent., respectively. The average value per ton at the mines in 1916 was $2.34, as against $1.83 in 1915. These figures, which were compiled under the direction of E. F. Burchard, of the United States Geological Survey, Department of the Interior, include for 1916 only iron ore containing less than 5 per cent. of manganese.

Iron ore was mined in 24 states in 1916 and 23 in 1915. Minnesota, Michigan and Alabama, which have for many years produced the largest quantities of iron ore, occupied in 1916 their accustomed places.

The Lake Superior district mined nearly 85 per cent. of the total ore in 1916 and the Birmingham district about 8 per cent. No other district except the Adirondack mined as much as 1,000,000 tons. The increase in production in 1916 was especially marked in the Adirondack and Chattanooga districts—54 and 55 per cent. respectively—but every district showed an increased output over that of 1915.

All the ranges in the Lake Superior district mined a larger quantity of iron ore in 1916 than in 1915, and the largest increases were in the Gogebic and Menominee ranges—54 and 43 per cent., respectively. The output of the Cuyuna range exceeded 1,500,000 tons for the first time.

There were 12 mines in the United States that produced more than 1,000,000 tons of iron ore each in 1916, five more than in 1915. First place in 1916 was held by the Hull-Rust mine, at Hibbing, Minn.; second place by the Red Mountain group, near Bessemer, Ala.; third place by the Fayal mine, at Eveleth, Minn., and fourth place by the Mahoning mine, at Hibbing, Minn. The production of these mines in 1916 was, respectively, 7,658,201, 2,899,588, 2,252,008 and 2,215,788 tons. The increase at the Hull-Rust was 232 per cent., making the production of this one mine more than one tenth of all the ore mined in the United States in 1916. These records illustrate the rapidity with which the rate of output of mines in the Lake Superior district may be increased. None but open-pit mines could be made to respond to demand to such a degree.

The production of pig iron, including ferro-alloys, was 39,434,797 gross tons in 1916, compared with 29,916,213 gross tons in 1915, an increase of 32 per cent., according to figures published by the American Iron and Steel Institute, February 24, 1917. The pig iron, exclusive of ferro-alloys, sold or used in 1915, according to reports of producers to the United States Geological Survey, amounted to 39,126,324 gross tons, valued at $663,478,118, compared with 30,384,486 gross tons, valued at $401,409,604 in 1915, a gain of 29 per cent. in quantity and 65 per cent. in value. The average price per ton at furnaces in 1916 as reported to the Survey was $16.96, compared with $13.21 in 1915, an increase of 28 per cent.

RESEARCH IN AERONAUTICS

THE report of the British Advisory Committee for Aeronautics for 1916–17 is sum-