basins of geysers and hot springs like Yellowstone's.

The crater of Katmai is very large. Its circumference, says Robert F. Griggs, who headed the expeditions which explored the entire area, is 8.4 miles, measured along the highest point of the rim.

The area is 4.6 miles. The precipitous abyss, which does not extend to the rim of the southwest side, is somewhat shorter, measuring 2.6 miles in length, 7.6 miles in circumference, and 4.2 square miles in area. The milky blue lake at the bottom is 1.4 miles long and nine tenths of a mile wide, with an area of 1.1 square miles. The little cresent-shaped island in the lake measures 400 feet from point to point. The precipice from the lake to the highest point of the rim is 3,700 feet.

Mr. Griggs estimates the capacity of the hole at 4,500,000,000 cubic yards. If this hole were filled with water, there would be enough to supply New York City for 1,635 days. The great eruption blew out 11,000,000,000 cubic yards of material, more than forty times the amount removed in the construction of the Panama Canal.

AGRICULTURAL PRODUCTION IN THE UNITED STATES

How American farmers responded to the food needs of the United States and the countries with which it was associated in the war is described in detail in the annual report of the Secretary of Agriculture, David F. Houston, just made public.

For wheat and other leading cereals and for potatoes, tobacco and cotton, farmers in 1918 planted 289,000,000 acres, an increase over the preceding record year of 5,600,000. It is especially noteworthy, the secretary points out that, while the acreage planted in wheat in 1917 was slightly less than for the record year of 1915, it exceeded the five-year average (1910–14) by 7,000,000; that the acreage planted in 1918 exceeded the previous record by 3,500,000; and that the indications are that the acreage planted during the current fall season will considerably exceed that of any preceding fall planting.

Notwithstanding adverse climatic conditions in 1917, especially for wheat, and in 1918 especially for corn, the secretary reports that only 1915 has exceeded either 1917 or 1918 in the aggregate yield of wheat and other leading cereals.

"The estimated total for 1917," he explains, "was 5,796,000,000 bushels and for 1918, 5,638,000,000 bushels, a decrease of approximately 160,000,000 bushels. But the conclusion would be unwarranted that the available supplies for human food or the aggregate nutritive value will be less in 1918 than in 1917. Fortunately, the wheat production for the current year—918,920,000 bushels—is greatly in excess of that for each of the preceding two years, 650,828,000 in 1917, and 636,318,000 in 1916, and is next to the record wheat crop of the nation. The estimated corn crop, 2,749,000,000 bushels, exceeds the five-year pre-war average by 17,000,000 bushels, is 3.4 per cent. above the average in quality and greatly superior to that of 1917."

Turning to live stock, the secretary notes that the number of pounds of beef for 1918 is given at 8,500,000,000 pounds, as against 6,079,000,000 for 1914, the year preceding the European war; and that the total for 1918 of beef pork and mutton is given at 19,495,000,000 pounds, as against 15,587,000,000 pounds for 1914.

On the basis of prices that have recently prevailed, the secretary says, the value of all crops produced in 1918 and of live stock on farms on January 1, including horses, mules, cattle, sheep, swine and poultry, is estimated to be $24,700,000,000, compared with $21,325,000,000 for 1917 and $11,700,000,000, the annual average in the five-year period 1910 to 1914. This greatly increased financial showing, the secretary explains, does not mean that the nation is better off to that extent, or that its real wealth has advanced in that proportion. Considering merely the domestic relations, the true state is indicated rather in terms of real commodities. The increased values, however, do reveal that monetary returns to the farmers have increased proportionately with those of other groups of producers in the nation and that their purchasing power has kept pace in the rising scale of prices.

Yields in 1918 of the major food crops were as follows, according to unrevised estimates: 2,749,198,000 bushels of corn; 918,920,000 bushels of wheat; 1,535,297,000 bushels of oats; 236,505,000 bushels of barley; 76,687,000 bushels of rye; 18,370,000 bushels of buckwheat; 41,918,000 bushels of rice; 61,182,000 bushels of kafirs; 390,101,000 bushels of Irish potatoes; 88,114,000 bushels of sweet potatoes; 17,802,000 bushels of commercial beans; 40,185,000 bushels of peaches; 10,342,000 bushels of pears; 197,360,000 bushels of apples; 6,549,000 tons of sugar beets; 29,757,000 gallons of sorghum sirup; 52,617,000 bushels of peanuts.

The estimated 1918 production of all the cereals, 5,638,077,000 bushels, compares with 5,796,332,000 bushels in 1917, and 4,883,819,000 bushels, the annual average in the five-year period 1910–14. On January 1, 1918, it is estimated there were on American farms 21,563,000 horses, compared with an average of 20,430,000 in the five years 1910–14; 4,824,000 mules, compared with 4,346,000; 23,284,000 milch cows, compared with 20,676,000; 43,546,000 other cattle, compared with 38,000,000; 48,900,000 sheep (an increase, for the first time in many years, over the preceding year), compared with 51,929,000; 71,374,000 swine, compared with 61,865,000.

The estimated 1918 production of beef, 8,500,000,000 pounds, compares with 7,384,007,000 pounds in 1917; 10,500,000,000 pounds of pork compared with 8,450,148,000; 495,000,000 pounds of mutton and goat meat compared with 491,205,000; 8,429,000,000 gallons of milk produced in 1918 was 141,000,000 pounds more than the 1917 production; 299,921,000 pounds of wool, 18,029,000 pounds more than 1917; 1,921,000,000 dozens of eggs, 37,000,000 dozens more; 589,000,000 head of poultry, 11,000,000 more.

THE EDWARD K. WARREN FOUNDATION AND TWO WILD LIFE RESERVATIONS IN MICHIGAN

IT will be of interest to zoologists and botanists, particularly ecologists and those interested in the fauna and flora of the Middle West, to learn what two areas in southwestern Michigan have been set aside as wild life preserves. The tracts comprise 300 acres (150 or more of the original forest) situated two and a half miles north of Three Oaks, in Chickaming Township, Berrien County, and over 250 acres in the sand dune region on the shore of Lake Michigan, in Lake Township, two miles north of Sawyer, in Berrien County.

The forest is a remnant of the original beech-maple forest of southern Michigan. It has never been cut or burned over and many of the trees are splendid specimens, fifty to seventy feet in height to the first limb, and from two to four feet in circumference. The Galien River flows through the forest for about one and one half miles and there are numerous springs.

The sand dune tract has a frontage on Lake Michigan of about 3,000 feet. It includes probably the highest dunes in the State of Michigan, the largest of which are from two hundred to three hundred feet in height. Much of the tract is wild and with little doubt the original vegetation prevails in most places.

The preserves have been established by Mr. and Mrs. Edward K. Warren, of Three Oaks, Michigan, and are incorporated in the "Edward K. Warren Foundation," which also includes the Chamberlain Memorial Museum at Three Oaks, founded in 1915 and opened to the public in 1916.

The forest has been in Mr. Warren's possession for forty years, and has been preserved by him for its great natural beauty, and both tracts have been set aside that future generations may have an example of the primitive floral and fauna conditions in southern Michigan, that nature lovers may find here many of the animals and plants which are being exterminated elsewhere, and that students of biology may have available a place where they can study native animals and plants in their natural habitats. Some of the sand dune area has been more recently acquired, and it is typical of the good judgment and foresight of Mr. Warren that this area includes the best developed dunes and is the least disturbed tract in the sand dune region.

The Museum of Zoology of the University of