

experiment stations in Hawaii, the Philippine Islands and Porto Rico.

The secretary discusses the subject of irrigation at considerable length, giving strong reasons for a general study of the whole subject. He points out the wide difference in laws and methods prevailing in the different states dependent upon irrigation, and states that most important rivers have streams supplying irrigation to half a dozen states. Inevitably, under these circumstances, differences will arise calling for legislation by congress, which should, therefore, be put in possession of all the facts affecting this important subject as early as possible. It is not possible, he declares, at the present time for the owner of an irrigated farm to know just what his rights are, and he propounds, as a problem calling for early solution, whether the control of this element of production is to be left to the states or whether it will have to be assumed by the general government. Reviewing at length the work that will have to be done in acquiring information on this subject, the secretary lays stress upon the difficulties encountered in finding properly qualified persons to assist in the work. He also points out that the usefulness of this investigation is by no means limited to the arid region, but that irrigation could be profitably employed in large areas in the Eastern and Southern states.

For the fiscal year ending June 30, 1899, congress appropriated for the department of agriculture \$2,829,702. By the same act \$720,000 was provided for the 48 agricultural experiment stations. The total expenditures for the year ended June 30, 1899, amounted to \$2,797,173.49. The unexpended balances were covered into the treasury.

From a study of the imports of Denmark, especially of American grains and oil cake, he concludes strongly against a policy which sterilizes our lands at the same time that it supplies other countries with the means of producing meats and dairy products for foreign markets which we could ourselves supply. He points out that the Danish farmer, with the help thus received from this country, supplies British markets with 33 million dollars' worth of these products yearly.

The secretary earnestly denounces the methods by which our former flourishing cheese export trade was destroyed and his own efforts at extending the demand for American butter in foreign markets are being interfered with. He attributes such methods to the lack of a system of export inspection to guard our reputation from practices of unscrupulous dealers. He indorses such inspection of dairy products for export under authorization of congress, and points out that this policy has been indorsed by national and state dairy organizations, commercial bodies, and

individual exporters throughout the country.

Mr. Wilson reviews at some length the subject of seed distribution. He warmly defends such distribution in so far as it adheres to the original intention of congress, which was to search for and gather in various localities of the Old World useful seeds and plants to be distributed in the United States to the several regions where they would be most likely to succeed. The department is at present endeavoring to bring back the practice as much as possible to this original intention, a large per cent of the \$130,000 appropriated being now spent in securing, importing and distributing rare and useful seeds and plants. He candidly admits the existence of a strong feeling against the seed distribution, and declares his own conviction that in so far as the distribution by the department competes with the sales of seedsmen, distributing the same kinds of seeds with no experimental feature or intelligent direction beyond what is provided by dealers, it is questionable. But the importation and distribution of the best quality of sugar beet seed, of drought and rust resisting grains, of improved grasses, specially adapted to certain soils and conditions, all such and many other measures of like character, he declares to be justifiable and wise—"the introduction of these and many other seeds and plants being beyond the ability of private individuals to compass."

The tea growing experiments in South Carolina are commended and their intelligent prosecution advocated. The interesting fact is noted that the tea gardens at Summerville produced 3,600 pounds of tea the past season. Irrigation experiments, improvement of varieties by importation and by hybridization, are indicated as important steps to be studied.

In regard to public lands, the secretary deplores the ill results of injudicious grazing due to the indifference of the occupiers under the present system. He advocates leasing in large areas and for a sufficient time to invite improvement, and suggests that the revenue from such leases might be turned over to the states for educational purposes or irrigation.

The secretary concludes his report with important recommendations on a variety of subjects.

Of the abandoned farms of New England he says that they are not abandoned on account of sterility; that they will be studied by the soil physicist, agrostologist, and the forester, and the valuable suggestions resulting from their studies will be distributed throughout New England.

He urges that means be adopted to produce in Porto Rico, Hawaii, and the Philippines many of the tropical plants which this country now imports to the extent of \$200,000 annually—more than

four times as much as the total exports of the islands in question.

Our imports of oranges, lemons, coconuts, bananas, and especially coffee, of which in 1898 we imported over \$65,000,000 worth, could, in large part, be produced in Porto Rico. The secretary especially recommends experiments in the production of India rubber, for which we are now largely dependent upon Brazil. The import of India rubber and gutta-percha in 1898 exceeded in value \$26,000,000, of which three-fifths came from Brazil. After discussing at some length the methods of collection and treatment and the character of the Brazilian product he indicates one tree in particular, known as the Ceara, as likely to be the first to produce an important addition to the natural supply of India rubber. He adds: "The feasibility of cultivating this plant in the Philippines should be very carefully investigated."

The Turkestan alfalfa introduced by the department is warmly commended as successfully withstanding drought and cold. It is proposed to distribute it widely over the arid West, to be thoroughly tested, and its introduction spoken of as likely to add millions of dollars to the annual hay product of the country.

A valuable rice has also been introduced from Japan. It possesses a high milling quality and is highly superior to the domestic product, and should it succeed in Louisiana hundreds and thousands of dollars will be added yearly to the rice-growing industry.

In connection with the subject of native drug plants, coöperative work is proposed by the department and the Pan-American congress in a technical and scientific investigation of these plants; \$10,000 is asked for to enable the department to undertake this work. The great increase of cotton imports from Egypt, averaging in value for the past three years nearly 3¼ million dollars, lends importance to the experiments so far made with the Egyptian cotton seed imported by the department in 1894. While a further trial is needed, hope is expressed that with proper management it will become well established in the United States.

Mr. Wilson makes a most urgent plea for the erection on the department grounds of new laboratory buildings as a substitute for the numerous and inconvenient buildings, mostly dwelling houses, now occupied for laboratory purposes at a cost of \$10,000 a year. He has caused plans to be prepared of fire-proof structures providing an increase of floor space over the present accommodations and in every way more suitable and economical, to cost, approximately \$200,000.

The concluding portion of the report is devoted to a discussion of agricultural education. The secretary holds that in