along the median line. Thorax with a broad, brown, central stripe bordered with a rather well-defined silvery, slightly broader, lateral stripe containing a few brown blotches. Pleura rather thickly clothed with patches of silvery white scales.

These species will be characterized more fully in a Bulletin of the New York State Museum soon to be issued.

E. P. FELT,
D. B. YOUNG.

NOTES ON SOCIAL AND ECONOMIC SCIENCE.

AGRICULTURAL ECONOMICS.

INTEREST in agriculture, like that in commerce and industry, tends more and more to take upon itself an international character. The correlation of international experience and the comparison of experiments, tendencies and economic conditions is one of the most fruitful fields of research, not only to the economist, but equally so to the technical agriculturist and to the practical farmer. Consumers generally are interested to the extent to which prices are affected by the favorable or unfavorable harvests in any particular country or group of countries. Any country whose system of production or distribution remains too far behind in the progress of scientific and practical economics must sooner or later lose its capacity to compete in the world market. The same is true of any particular crop, unless it be favored by special natural advantages. Just at this time much attention is being given to the study of the comparative strength of nations and the leading national systems of productive efficiency. It is hoped, therefore, that the following more or less specific accounts of agricultural conditions in the several countries represented may be deemed of timely interest and value.

SCIENTIFIC AGRICULTURE IN JAPAN.

A RECENTLY returned writer from the far east calls attention to the fact which students of oriental civilizations have so long overlooked, namely, the extent to which the Japanese especially have accepted the truth that the natural sciences lie at the basis of the material development of nations. In its own way Japanese husbandry seems to have worked out much that the experiment station has accomplished in the west. This writer (Mr. Harold Bolce, in *Booklover's Magazine*) calls the Japanese, with their 19,000 square miles of arable land, the most remarkable agricultural nation the world has known. "If all the tillable acres of Japan were merged into one field," he says, "a man in an automobile, traveling at the rate of fifty miles an hour, could skirt the entire perimeter of arable Japan in eleven hours. Upon this narrow freehold Japan has reared a nation of imperial power, which is determined to enjoy commercial preeminence over the world of wealth and opportunity from Siberia to Siam, and already, by force of arms, is driving from the shores of Asia the greatest monarchy of Europe.

"The secret of the success of the little Daybreak Kingdom has been a mystery to many students of nations. Patriotism does not explain the riddle of its strength, neither can commerce, nor military equipment nor manufacturing skill. Western nations will fail fully to grasp the secret of the dynamic intensity of Japan to-day, and will dangerously underestimate the formidable possibilities of the Greater Japan (the Dai Nippon) of tomorrow, until they begin to study seriously the agricultural triumphs of that empire. For Japan, more scientifically than any other nation, past or present, has perfected the art of sending the roots of its civilization enduringly into the soil.

"Progressive experts of high authority throughout the orient now admit that in all the annals of agriculture there is nothing that ever approached the scientific skill of Sunrise husbandry. Patient diligence, with knowledge of the chemistry of soil and the physiology of plants, have yielded results that have astounded the most advanced agriculturists in western nations."

CHANGES IN BRITISH AGRICULTURAL POLICY.

THE progress of scientific agriculture in England increasingly takes the form of assistance in effecting the adaptation of the industry to such crops as do not compete with

foreign imports to such an extent as is the case with grain and provisions. British agriculture has always been slow to specialize, hence the time-honored rotation system has often persisted until returns disappeared. The resulting decline in values had most serious consequences, social, economic and political. It forced population into trade and industry, into cities and into the colonies, until the greatest drawback to successful agriculture is the scarcity of labor. This in turn has given rise to seasonal migrations of rural laborers to and from various sections of the British Isles. It has increased the burden of taxation on rural property, and with the decline of values and rural incomes, has materially lessened the revenue of the national treasury from this important source of public income. Finally, it has given rise to the most noteworthy political agitation since Cobden's time in the form of Mr. Joseph Chamberlain's campaign for the reorganization of the whole imperial fiscal system on a basis of preferential duties on trade between the mother country and the colonies, as against all other countries. Mr. Chamberlain has always regarded domestic agriculture as a neglected factor in British economic policy. His fiscal scheme has in view the restoration of this aspect of national enterprise, much as Germany and France do now, and also the development of colonial sources of food-stuff supplies, so as to decrease the degree of dependence on Russia, the United States and Argentina.

Below is a report on 'Decline in English Farm Values,' as transmitted by the United States Consul Mahin, of Nottingham, under date of July 12, 1904, relating primarily to Lincolnshire. While this locality has geographically a rather exceptional position on the east coast on account of its remoteness from large markets, it is nevertheless a representative rural county, and is in that respect typical of rural tendencies generally.

The excessive importation of food products from foreign countries, the report states, is charged with direct responsibility for a great decrease in the value of farm lands in this county. Recent investigations of values of agricultural land in Lincolnshire disclose an extraordinary decline; possibly, however, not typical of all England, for it is believed that in the county named the depression is particularly acute. It is stated that in some instances persons who a few years ago invested their all in land, and also mortgaged it to raise money to complete the payments, find now on attempting to sell that they can not get even the amounts advanced on the mortgages.

Many instances of remarkable decreases in value are given. In one case where a farm of 315 acres, which cost $74,000, was offered at auction the highest bid was $20,000. The owner of an estate which cost him nearly $300,000 is now vainly trying to sell it for just one half of that price. An estate of 628 acres, which sold in 1901 for $110,000, was in May of this year valued for probate at only $43,000. In comparison with years in the distant past the situation appears no better. A farm of 134 acres, purchased in 1881 for $30,000, sold for only $15,000 in 1901, and would probably bring even less to-day. Thirty-four acres, costing $8,000 in 1860, recently sold for $2,500. A tract of 103 acres brought over $30,000 in 1828, and a mortgage for $25,000 was placed on it; this year, in April, it sold for less than $14,000. But the severest phase is the decline in the values of small farms of from 30 to 100 acres, the property of persons who can least afford the loss they suffer. Many cases are given where sales were for one half and even one third the purchase price, and often the selling price failed to cover the mortgage given upon the property.

Rent rolls are also suffering. Instances are cited where they have decreased one half and more. In one case a renter of a farm increased his holdings by leasing an adjoining tract of the same size, and he now pays less rent for the two than formerly for the one farm. In these cases the chief sufferers are those who can best afford the loss.

The cases cited are all in Lincolnshire. The great depression there has caused the farmers to look about for other sources of revenue than those which are so disastrously affected by foreign imports, and just now many are turning to strawberries. Fields hitherto covered with small-grain crops are this year devoted to strawberries. The daily yield of the county is estimated at 250 long tons. Special trains are necessary to carry the berries to market—two or three a day, of 30 to 35 cars, each car holding nearly 1,000 six-pound baskets of the fruit.

Flowers are also being cultivated in Lincolnshire to a greater extent than ever before. Whole fields, in some cases extending as far as the eye can reach, are devoted entirely to flowers. They are packed in boxes, and it is said that the ship-

ment of 10 tons a day is not an unusual record at a single railway station.

Celery and carrots are also being grown in Lincolnshire to an extent never before thought of. The former yields $150 to $300 to the acre, while small grain yields only $40 to $50. But unfortunately, only a certain character of soil is favorable to celery culture, or the temptation would be to turn Lincolnshire into one vast celery bed. Much attention is also given to carrots in the attempt to retrieve losses due to the flood of imports. An acre will produce from 15 to 25 tons, at $10 a ton. The process of seeding is novel. The farmer mixes sand with his carrot seed, to prevent its being too thickly sown and thus being in large part wasted. A field, then, somewhat resembles a desert, across which the wind would whirl clouds of sand did not the farmer slightly ridge and then roll the field, checking the wind's effect.

Whether the experiment of substituting strawberries, celery and carrots for small grain, and in some cases for dairy products, will sensibly relieve the distress in Lincolnshire is a question which may not be answered for several years.

These developments raise the question whether agriculture in the eastern portion of the United States could not profit by Lincolnshire's experience. New England and the west are related much as Lincolnshire is to foreign competition. Specialization in non-competitive products has, with the progress of trucking in the south and of dairying in the west, possibly narrower limits than formerly. Nevertheless, the trucking seasons are not simultaneous, comparing the north with the south. Likewise there are lines of production in which the east may successfully compete with the west. Here is a line of inquiry on the subject of sectional farm policy in which much might be learned by collating the experience of other countries and studying in detail the local conditions, with a view to defining what might be called non-competitive spheres of production. Have the state and federal departments of agriculture given adequate attention to this phase of the subject?

THE AGRICULTURAL POLICY OF GERMANY.

The Contemporary Review has an exposition of the present trend of Germany's economic discussion in relation to agriculture, the history of which discussion the author, Edward Bernstein, traces from List's time (1789–1846) down to the present.* List was a German-American, it is well to recall, who was associated with the beginnings of the anthracite coal industry, afterwards was vice-consul of the United States in Germany and earlier (1817–1819) professor of political economy in Tübingen University. He died by his own hand in 1846. His great work, 'The National System of Political Economy,' was born, so to speak, out of his American experience, and was intended to put into scientific outline the policy which should guide the economic development of this country and Germany in their relations to Great Britain, then nearing the zenith of her industrial ascendency.

The commercial policy of the United States is now at the turning of the ways, and recurrence to List's famous theory of educational duties, *i. e.,* that protective duties must be confined to educating the manufacturing classes of the country up to the standard of their advanced competitors, is eminently timely. For Germany, List advocated an *agricultur-manufactur-Staat,* an economic system best represented by the home market idea. In List's time this meant duties on manufactured imports; now it means duties on agricultural products. Germany is becoming more and more a manufacturing country—*ein export industrie Staat.* The protection of agriculture, it is held by such professors as Wagner and Oldenburg, is necessary for broadening and deepening the domestic basis of the industrial structure, which would otherwise be dependent on the exigencies of the foreign market, with great danger to the state, especially in time of war.

The real motive for this policy in the economic thought of Germany lies deeper than the question of markets. The secret is sociological, and has its root in the fear that, with the urban growth of population, the decreased income value of landed estates and of agriculture generally, the landed nobility and with them the rural voter, must disappear from the social constitution of national society, leaving the control of the machinery of the state and

* 'German Professors and Protectionism,' *Contemporary Review,* July 1, 1904.

the execution of the mission of the empire, to the two warring camps of the capitalist class on the one hand and the social democracy on the other. The growth of industrial as against rural population means progress of these two powers. Hence higher duties on agricultural imports are required to maintain the balance of class power, capitalist, wage-class and agrarian. One may read here the effort of the privileged classes of German society to equalize more nearly these three economic classes as the three points which must determine the plane of well being of the privileged interests. The truth seems to be that Wagner's alarms are ill-founded. The landed gentry's estates, those of the 'gentleman farmer' who spends much of his time and substance away from his estates entrusted to second hands, comprise the weak spot in German agriculture. It is not protection so much as a deeper sense of economic responsibility, on the part of this class, that German agriculture needs. "The demonstration that the German peasantry can not exist with prices as they are is extremely specious. In some districts they may groan under hardships, but in others they do pretty well. Growing towns and increasing industrial districts furnish splendid markets for them; it is in the mainly agricultural and not in the mainly industrial districts that the agricultural population decreases. The tide of immigration is strongest where the big estates for the landed gentry and semi-feudal nobility prevail."

John Franklin Crowell.

COOPERATION IN SOLAR RESEARCH.

At its last annual meeting, the National Academy of Sciences appointed a committee on solar research, consisting of George E. Hale, chairman, W. W. Campbell, S. P. Langley, A. A. Michelson and C. A. Young. At the invitation of this committee, various societies in Europe and the United States have appointed similar committees as follows:

England—Committee of the Royal Society: The president of the Royal Society (Sir William Huggins), the Astronomer Royal (Mr. W. H. M. Christie), Sir Norman Lockyer, Professor A. Schuster, Mr. H. F. Newall. *Committee of the Royal Astronomical Society:* The president of the Royal Astronomical Society (Professor H. H. Turner), with others to be appointed. Professor Turner, with others not yet named, will represent the two societies at the conference of delegates.

France—Committee of the Société Française de Physique: M. Henri Poincaré, M. Charles Fabry, M. A. Perot, and others not yet named. The views of the French spectroscopists on the question of standard wave-lengths are being ascertained by the committee, and MM. Fabry and Perot have been requested to prepare a memoir on the subject for presentation to the conference of delegates, where the society will be represented by M. Poincaré and others.

Germany—Committee of the Deutsche Physikalische Gesellschaft: Professor Ebert, Kayser, Kreusler, Lummer, Pringsheim, Runge, Straubel, Wilsing. The names of delegates have not yet been announced. Professor Kayser is preparing a memoir for the conference on the subject of standard wave-lengths.

Holland—Committee of the Royal Academy of Sciences, Amsterdam: Professors Kapteyn and Julius. Professor Kapteyn will represent the academy at the conference of delegates.

Italy—Committee of the Societa degli Spettroscopisti Italiani: Professor Tacchini, Professor Riccò, and others to be appointed. Professor Riccò will represent the society at the conference.

Russia—Director Backlund will probably attend the conference as the representative of Russia. Committees of the Russian societies will be appointed later.

United States—Committee of the National Academy of Sciences: Professor W. W. Campbell, George E. Hale, A. A. Michelson, S. P. Langley, C. A. Young. *Committee of the American Physical Society:* Professors J. S. Ames, Henry Crew, Percival Lewis, C. E. Mendenhall, E. F. Nichols. *Committee of the Astronomical and Astrophysical Society of America:* Professors E. B. Frost, C. G. Abbott, L. A. Bauer, C. D. Perrine, F. L. O. Wadsworth.

Other societies which were invited to appoint committees have not yet been heard from.

Conference of Delegates.—The conference of delegates will meet in St. Louis on Thursday, September 22, in conjunction with the International Congress of Arts and Science. Members of the committees who expect to attend the conference are requested to notify the undersigned.