

Fig. 6.—Transformer core laminae.

from core to core will build up the end to one solid mass, when it should be inverted and the other end filled in the same manner. The ends of the cores should

be clamped between wooden or iron strips to prevent humming.

The connection between the primary coils should be such that the current will flow in opposite directions around the two cores. The secondary coils should be similarly connected.

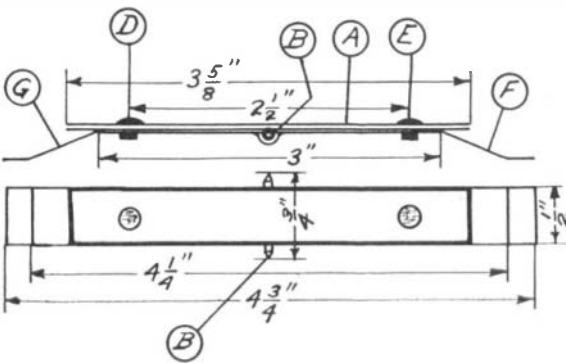


Fig. 5.—Armature details.

The connections between the transformer and the rectifier parts are clearly shown in Fig. 2.

When using for the first time, connect the battery to the direct-current terminals and turn on the primary alternating-current supply. Then adjust the contacts *J* and *K* to touch the armature contacts. It may be necessary occasionally to adjust the spring contacts *L* and *M*, to reduce sparking at points *J* and *K*. If this does not effect the sparking, it may be necessary to employ small condensers *S* connected between contacts *J* and

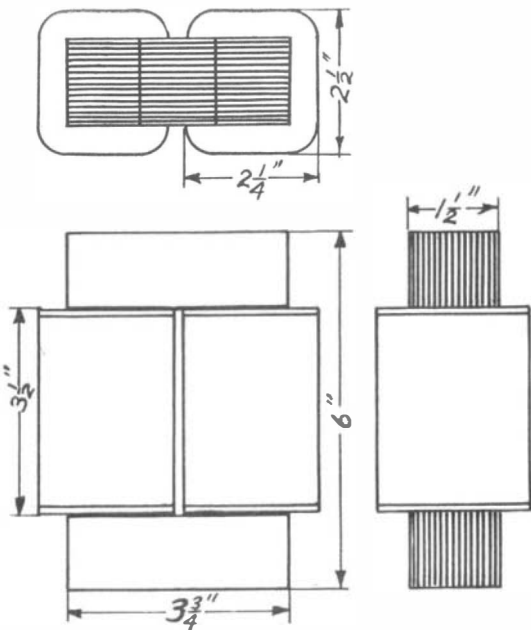


Fig. 7.—Assembled transformers.

*K*. Small telephone condensers may be used, one being connected on each side. A resistance should be provided to control the charging current.

This converter has the advantage that it will assume of its own accord, the correct polarity for battery charging, and should be found very useful.

### The New Internationalism in Agriculture

By H. C. Price

WHEN David Lubin of California laid before the King of Italy in 1905 his plan for the organization of an International Institute of Agriculture, his arguments were based principally upon the necessity of having such an organization in order to secure official and reliable statistics of the world's production of agricultural products. Mr. Lubin has been a very successful merchant in California and had dealt extensively in farm lands. He always had been a close student of economics and he saw that the fundamental problems of agriculture are not national problems, but world problems; that the progress of agriculture, the foundation of all other industries, determines the progress of the peoples of the world materially, intellectually, and morally; that the greatest problem facing every nation is to feed and clothe its people.

#### ORGANIZATION OF INSTITUTE.

Many propositions have been made and plans outlined for an international agricultural organization, but nothing tangible ever resulted from them until Mr. Lubin presented the matter to King Victor Emanuel III of Italy. Mr. Lubin's statement of the purpose of the organization was as follows: "The chief purpose of the International Institute of Agriculture is to remove the obstacles which now impede the operation of the law of supply and demand. This will be accomplished by the gathering, summarizing, and disseminating of information on the world's supply of the staples of agriculture, said information to be timely, available in form and to be composed mainly of (a) the stock on hand, and (b) the condition of the growing crop."

The King of Italy called a conference of representatives of the nations of the world in Rome, May, 1905, and as a result of their deliberations provisions were made for the establishment of a permanent International Institute of Agriculture, with headquarters in Rome. King Victor Emanuel showed not only his interest in the Institute by giving it his official support, but from his private fortune he built a magnificent building for its use, and contributes \$60,000 per year to its support, aside from the support given it by his government.

Practically all the nations of the world are represented in the Institute and make yearly contributions to its support, and are officially represented in its permanent committee, as shown by the following list:

Germany	New Zealand
Argentina	Mauritius
Austria	South African Union
Hungary	Greece
Belgium	Italy
Brazil	Eritrea and Italian Somaliland
Bulgaria	Japan
Chile	Luxemburg
China	Mexico
Costa Rica	Montenegro
Cuba	Nicaragua
Denmark	Norway
Ottoman Empire	Paraguay
Egypt	Holland
Ecuador	Peru
Spain	Persia
United States	Portugal

Ethiopia	Roumania
France	Russia
Algeria	Salvador
Tunis	San Marino
Great Britain and Ireland	Servia
Australia	Sweden
Canada	Switzerland
British India	Uruguay

#### THE WORK OF THE INSTITUTE.

The Institute was formally opened in May, 1908. In the beginning there were almost endless difficulties in getting its work established. In the matter of statistics, for example, scarcely any two nations used the same method of reporting their agricultural productions, and some nations had no crop-reporting systems whatever. The Institute, as it is now constituted, is the clearing house of the official agricultural statistics of the world. Each month the officers in charge of the statistical work of the various nations cable to the Institute by a specified day of the month their monthly crop report. The statisticians of the Institute from these reports make up the world's statistics for the month and cable them back to the respective nations. In this way absolutely official reports are made without any opportunity of private interests influencing them.

#### WORK OTHER THAN STATISTICAL.

Although the statistical work was the primary purpose for establishing the Institute, yet two other lines of work have been already established that promise to be almost as valuable as the statistical work. These lines of work are Plant Diseases and Agricultural Economics. Plant diseases know no national boundaries, and their control and eradication concern all nations. The Institute has a staff of scientists whose work is primarily to collect all information known and all that has been and is being accomplished in the control of plant diseases in the various countries, and each month a bulletin of about 250 pages is published, giving a summary of what is being done in the various countries in this line. Thus in this way this work is to the control of plant diseases what the Department of Statistics is to the statistical work of the various nations. It serves as a collecting and distributing agency, giving the benefit of what is accomplished in one nation to the other nations as soon as possible.

In agricultural economics the Institute thus far has been working on the problems of agricultural co-operation, insurance and credit. A monthly bulletin of 250 pages is published, in which official reports of what has been accomplished in the different nations in these lines, as well as reviews of the annual reports of the organizations themselves and current literature concerning them. Although these bulletins have been published less than three years there is already contained in them concerning these subjects more information than is found any place else. The bulletins not only serve in distributing information, but they are important agents in promoting the development of agricultural organizations along these lines.

#### A FACTORY IN AGRICULTURAL EDUCATION.

In the Institute is rapidly accumulating the literature of agriculture for all nations, and in the future it will offer opportunities for the special student in agriculture that cannot be equaled any place else. The library not only receives the official agricultural reports of the respective

governments, but also the more important agricultural works published. The same thing is true of the current literature, and the Institute now receives about 2,000 agricultural periodicals. These are reviewed and the subjects of the more important articles published in the monthly bulletins.

The official language of the Institute is French, but the Statistical bulletins are published in five languages—French, German, Italian, English and Spanish. The bulletins on Plant Diseases and Agricultural Economics thus far have been published in French, Italian and English.

#### OPPOSITION TO THE INSTITUTE.

Like every good thing, the Institute has had considerable opposition to overcome. Private interests that in the past have been concerned in furnishing world's estimates of agricultural crop production have been actively opposed to its work. In our own Congress members who were doubtless misinformed as to the real purposes and work of the Institute have opposed the small appropriations made for its support. They have charged that its work was all visionary and useless and that it simply served to furnish a lucrative position for a Government representative in Rome. But nothing could be further from the truth. Mr. Lubin, who has been the representative of the United States in the Permanent Committee of the Institute since its organization, is a man of fortune and has never accepted any salary or even his expenses for his services. Anyone who has seen the work the Institute is doing and has talked to the men working in it, cannot realize how any legislator, who is correctly informed, could be honestly opposed to the support of the Institute.

#### A FACTOR FOR INTERNATIONAL PEACE.

The work of the Institute is having a secondary effect in promoting the world's peace—an effect of no little importance. The late Wm. T. Stead, who had been so active in the World's Peace Movement, said that in his opinion the work of the International Institute of Agriculture was of no less importance than the Peace Conference of the Hague in promoting universal peace.

The Hon. David J. Foster, chairman of the American delegation to the General Assembly of the Institute, in May, 1911, touched upon this in an address to the Assembly in the following words:

"This delegation wishes to state to the Assembly the profound impression made on it by seeing gathered in this hall the representatives of all the nations of the earth, convened together not to discuss the interests of one country or of one people, but the economic interests of the whole human family.

"As the eminent delegate of Chile remarked in this morning's debate, the primary need of our civilization is to have at a fair price an abundant supply of the staples of agriculture, which are the daily bread and clothing of the people.

"The peoples of the earth pray every morning for their daily bread, and the problem which this Institute has to solve is to so regulate the relations between consumers and producers that this daily bread may be bought and sold at a price which will be fair to both.

"By solving this dual problem we shall strengthen the nations in their sovereignty, bind the world together in the new internationalism and hasten the dawn of the day of the lasting peace of God."