

be replaced by special fuel injectors to handle the petroleum product, Mr. Mock declared.

Chief modifications of a standard engine are to direct the high "flash point" fuel, which has a density 15 per cent. greater than gasoline, toward hot parts of the cylinder so that it may be readily vaporized. Starting an engine powered by it is at present a difficulty, because of the need for vaporizing the fuel, but the type of ignition employed to start house furnaces may prove satisfactory, the Bendix engineer continued. Suitable injection pumps, control devices and

other accessories are already available to the engine manufacturers who may desire to go ahead with the development.

Use of the new fuel may at the same time help solve two cooling difficulties faced by engine designers, and lead to larger engine cylinders. Heat needed for vaporization can be absorbed from otherwise overheated exhaust valves and pistons. Cylinders and pistons large enough to make 18 cylinders do where 24 would now be required may thus be made possible, Mr. Mock pointed out.

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lic Health. Necessary appropriations, Dr. Rajchman said, have been voted by the French chamber of deputies and now await approval of the French Senate which is expected shortly. Unless grave complications arise in Europe, the school will probably be set up this year.

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TECHNOLOGY

Sterilizing Lamp Tenderizes Tough Hamburger Beef

MAKING a "poor man's filet mignon" out of tough hamburger beef is the newest feat of modern industrial science.

Germ-killing ultraviolet rays plus an application of air conditioning now make it possible to tenderize in a few days tough cuts of beef which formerly could be ripened only by weeks of "hanging." This method, worked out over a period of four years by scientists of the Mellon Institute for Industrial Research, enables the raising of all types of beef by one grade in the scale of ratings of palatability.

Trick of the method, devised by Dr. Marion D. Coulter, industrial fellow, is to use high temperature and humidity to bring about quickly the chemical enzyme reactions that turn the tough connective tissue in meat into a gelatinous material which is easy to bite through. It is the breakdown of the connective

PUBLIC HEALTH

Refugees and Air Raid Plans Bring Europe Health Problems

League Health Section Anticipates Coming Worries; International School for Advanced Study Planned

REFUGEES; plans of all European governments to move city dwellers to the country as protection against air raids; and nutrition are the most important European health problems now facing the Health Section of the League of Nations, Dr. Ludwig Rajchman, recently retired director, told members of the Pan American Medical Association.

The refugee health problem involves hundreds of thousands in Europe and millions in Asia, Dr. Rajchman said.

The Health Section of the League of Nations, he explained, can help European governments plan extension of sanitary and public health services in rural areas so as to prevent epidemics or other threats to health that might arise when large numbers of urban civilians are moved to the country. Such moves are already planned by all the governments as precautions against loss of life in the civilian population during air raids.

One function of the organization, he said, is to give governments advice of this sort on special health problems or in connection with formulation of health policies. Another purpose of the organization is to think out in advance problems which may come before the national health services and to be ready to advise on such problems.

As part of its activities, the League has decided to organize a conference on rural health for all the Americas, to be held in Mexico City before the end of the year.

In view of the importance of the League's work in bringing together public health leaders for round table discussions of present and future problems, the French government has offered to set up in Paris an International School of Advanced Study in Pub-



TENDERIZING RAYS

The germ-killing ultraviolet lamp above with air conditioning, cuts the time of the old fashioned "hanging" for making meat tender. Inspecting the device are its developers, Drs. Marion D. Coulter and H. C. Hentschler.

tissue in the slow hanging and ripening process which makes meat tender.

However, the high humidity and temperature also promote bacterial growth which normally would make the meat spoil before it became ripe. To cut down this action by microorganisms that cause decay, special ultraviolet lamps are used whose powerful, invisible rays kill these organisms. By the combination, therefore, quick ripening is obtained without spoiling.

The new development is most important to the meat packing industry, which now has large investments in buildings used for storing and slow ripening the better grades of meat. The process is so quick that there is no waste in the cut of beef as there is in hanging, where it is necessary to remove completely the final discolored outer layers and use only the ripened "heart." The use of high humidity saves loss of weight in the meat due to its loss of water during the customary ripening stage.

The new advance was made possible by joint research on the part of scientists of the Kroger Food Foundation, the Westinghouse Research Laboratories and Mellon Institute. Better meat for lower prices is the promise to the consumer.

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AERONAUTICS

New Air Corps Bombers Rated At Near 400 M.P.H.

THREE new attack bombers now being started through exhaustive U. S. Army Air Corps tests are reported unofficially to have top speeds close to 400 miles an hour, higher than is claimed for any other bombardment aircraft in the world.

Small ships with big engines all, they are the deadliest aerial weapons ever placed in the Air Corps' hands. Their mission is attacking ground troops, as well as general bombardment duties near front lines. Two of the designs have high wings so that the machine gunners can see better the troops they are strafing.

They are the first American bombers with smooth-as-satin outside finish. All rivets are countersunk, to add to the planes' speed by cutting drag. All three, submitted by the Stearman Aircraft Company, the Glenn L. Martin Company and North American Aviation, Inc., for competitive testing by the Air Corps, have been designed with high speed, quantity production in mind.

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PHYSICS

Mechanical Model Shows How Electric Waves "Look"

A MECHANICAL model which helps you to visualize unseeable electrical waves has been invented by C. F. Wagner of the Westinghouse Electric and Manufacturing Company. With the device a surge of electrical current lasting only one ten-thousandth of a second can be prolonged to five or ten seconds, time enough for engineers to study the wave pattern.

One major usefulness of the machine is to study what happens in a transmission line when a lightning bolt strikes it. It is possible to show how a lightning arrester on such a line acts as "a dam" to hold back the abnormal voltage and permit only a safe amount to continue through the wires.

The working model is made possible because there is found to be a close, analogy between inductance, capacitance and resistance in an electrical system and mass, spring resilience and damping elements in a mechanical model.

Applying this knowledge, Mr. Wagner has produced what looks like a

long xylophone, consisting of 56 long narrow aluminum arms mounted at their center of gravity on hardened steel bearings. A flat spring is mounted rigidly to each arm and the free end of the arm is attached to the adjacent arm. When the first arm is oscillated, it transmits its motion to the next arm, and so on, and produces effectively a wave type of transmission.

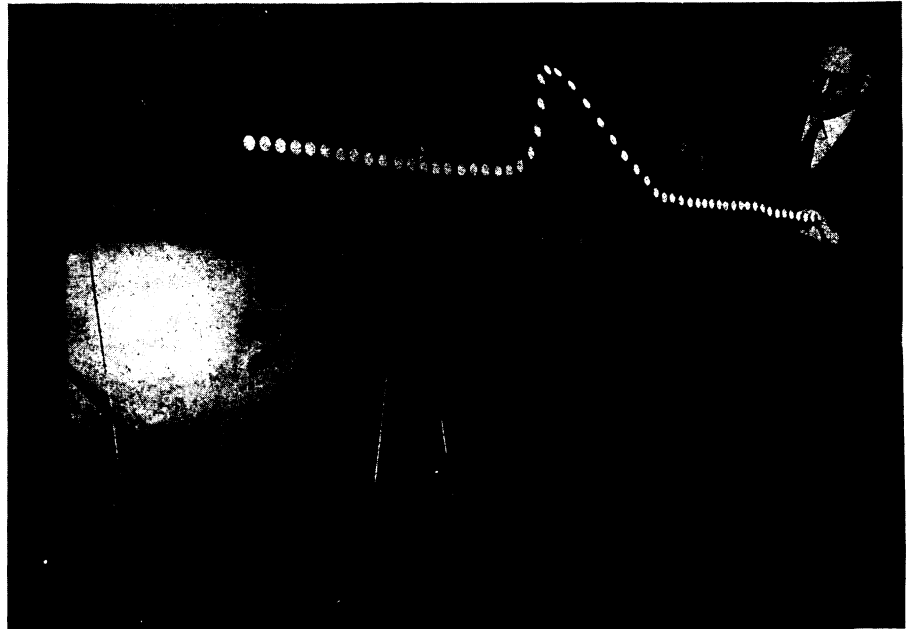
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ENGINEERING

Undertake Standardization Of Airplane and Motor Parts

PRINCIPAL aeronautical organizations have taken steps at a meeting to standardize airplane parts commonly used throughout the world, the American Standards Association announced. The work will be carried out by the International Standards Association. Plane and engine parts and fuel specifications will be chiefly affected.

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THEY LOOK LIKE THIS

This mechanical model helps visualize transmission of electrical waves. C. F. Wagner of the Westinghouse Company demonstrates his device that looks like a xylophone but which gives a picture pattern of wave transmission. Engineers are able to demonstrate little-understood electrical properties of transmission lines with the device, including the action of lightning strikes on the line.