

## World Research Up To U. S.

That scientific research in Europe, so long the basis for formulas on which many of our great American industries are founded, has received a great setback is the opinion expressed by Dr. Vernon Kellogg, Secretary of the National Research Council, who has just returned to Washington after several months abroad.

"Europe," said Dr. Kellogg, "has little money for anything but pressing immediate necessities. Germany, France and various other continental countries have for generations led the world in the study of pure science and as scientific research is international every nation, and, more particularly the United States, have profited by the results. Now, by reason of the financial condition of these countries, our source of supply of advanced scientific knowledge has been cut off and scientists must look to the United States to carry on this work which we have been content to leave to Europe in the past. If our industries expect to continue to advance in efficiency we must develop our own research in pure science just as during and after the war we developed sources of supply for many things that we had hitherto imported."

Dr. Kellogg, in addition to being Secretary of the National Research Council, is a trustee of the National Research Endowment of which Herbert Hoover, Secretary of Commerce, is the Chairman, and which is seeking a fund of \$20,000,000 to promote and encourage pure science research in this country.

While in Europe Dr. Kellogg visited many of the larger universities, research institutes, scientific libraries and bibliographic services. In almost every instance he was told bluntly that Europe had no money with which to continue the work of scientific research and that if the world's supply of scientific knowledge was to continue to flow it would have to come from America. Even the great industrial laboratories seem to have discontinued all except applied research.

"All human progress," said Dr. Kellogg, "is dependent in the last analysis on the result of the studies of the scientist. But research costs money; a lot of money, and the scientist, if he is to do his best work, cannot be hampered financially. Never before have we been faced with such an imperative need for funds with which to carry on this work and all because we have let Europe do it for us in the past."

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## Super-Sound Wrecks Blood Corpuscles

Death to lower, cold-blooded animals, and a marked break-down in the blood of higher forms, have been brought about by means of extremely short and rapid sound waves produced from electrically driven quartz crystals by Prof. R. W. Wood of Johns Hopkins University, who has described the experiments performed by himself and Alfred Loomis of Tuxedo Park, N. Y.

Waves of this character, produced by a different kind of apparatus, were being tried as submarine detectors in France during the World War, when it was noticed that fish in the testing tanks were sometimes killed. When peace brought time for quiet experimentation, Prof. Wood and Mr. Loomis went to work on the problem in the private laboratory which the latter had built on his estate near New York City.

It was found that the microscopic animals that swarm in stagnant water could be quickly killed by a short "raying" with these inaudible sound waves, and that small fish, after a few minutes of convulsive struggle, likewise gave up the ghost.

It was then decided to try the effects of the waves on blood, first outside of the body and then in a living animal.

"Our first experiments were made with human blood, much diluted with water in which a proper amount of salt had been dissolved," Prof. Wood reports. "The number of corpuscles in a cubic millimeter of this solution was determined with a blood-counter, and the solution subjected to the sound wave for a minute. The number of blood corpuscles was found to have been reduced by one half. Another minute's exposure reduced them by about one-third, and another minute by one-quarter, a number being reached at the end of ten minutes beyond which it was impossible to go, even with prolonged treatment. We had started out with 4,000,000 corpuscles, and ended up with 20,000. This decrease in the percentage destruction with increasing time, indicated that the corpuscles varied greatly in their ability to resist the destructive forces of the vibrations, the 20,000 which remained at the end being the tough ones, which would survive any length of treatment with waves of the intensity employed in the experiment."

"We now decided to try the experiment on a small, warm-blooded

animal, to see whether the blood corpuscles could be destroyed within the arteries and veins of the animal without other disastrous results. The subject of the experiment was a mouse, swimming about in a small vessel of water which was immersed in the oil bath above the quartz plate. To our surprise the mouse did not show the slightest objection to the treatment, which had appeared to cause the fish considerable annoyance. At the end of five minutes a small drop of blood was taken from the tip of the tail, and the corpuscles counted. A marked decrease in the number was found, and we continued the experiment for fifteen minutes, at the end of which time the mouse was removed from the bath and put back in the cage. He appeared much weakened and very dejected, and his blood count had fallen to nearly one-half of its normal value. At the end of half an hour, however, he appeared quite happy again, and was busy making his toilet with his fore paws.

"Blood counts made on the mouse on succeeding days showed that the return to normal was very rapid. This gives us a means of measuring the rate at which an otherwise healthy animal, in which a condition of extreme anæmia has been produced artificially by purely mechanical means, is able to manufacture and throw into the circulation new blood corpuscles."

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### AGRICULTURE—MEDICINE

## Fight Quinine Monopoly

South American countries are being urged to produce their own quinine. Malaria still remains such a problem in the Latin Americas that at the Pan American health conference held recently, a movement to encourage cinchona culture as a public health measure was formulated as a resolution to be put up to the different governments.

Though the cinchona tree, from the bark of which the malaria remedy is made, grows wild in Peru, Bolivia, Ecuador and Colombia, quinine is almost absolutely under the control of a Dutch East Indies monopoly. This organization regulates the price and output of the essential drug throughout the world. Cultivation of cinchona trees in the countries where they grow naturally would go far, it is thought, toward supplying the native population with more and cheaper quinine.

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