SOLVING WATER SHORTAGE —Here is shown the test pumping of one of the Ranney collectors. The test gave a yield of 9,800,000 gallons per day.

gravel to the collector pipes, and needs no further treatment. During the bombing of London, it was one water source which was safe from destruction or pollution. He installed a similar well in Lisbon, Portugal, and was negotiating to install a whole series of wells for the city of Paris when the job was called off because of the threat of war. When the tremendous Indiana Ordnance Works at Charlestown was built by the Du Pont Company in 1941, seven Ranney wells were sunk in a gravel bed near the bank of the Ohio River, and during production peaks they supplied as much as 64 millions of gallons of water a day—clean, pure water, despite the notorious pollution of the river. Experts say that it would have taken at least 70 conventional vertical wells to supply the amount of water. In the production of power alone, one third of all the water needed by the United States during the war was supplied by the Ranney wells, and dozens of chemical and distilling plants followed suit.

The goal of these big war plants was to get a lot of water fast for thirsty manufacturing jobs, but the Ranney well also has turned out to be an important tool for staggering the use of ground water throughout the year. For these wells are reversible —the perforated pipes which collect ground water so efficiently will also file away millions of gallons for future use. Then Seagram's Distillery put in Ranney wells near Louisville and during the winter months used the city's surplus of cold river water to recharge the deep reservoir. During the dry summer season it uses this reserve, which is all the more valuable for cooling jobs because of its low temperature.

The proved success of his well has not induced Ranney to rest on his laurels. The possibilities have only been scratched, he says. At an age when most men are retiring, Ranney is piling up airplane mileage to and from his home at Morro Bay, California, and sketching new ways to dig holes in the ground. His plan for "oil mining" is by no means dead, he maintains. Working for the Australian government during the recent war, Ranney supervised the sinking of a 1200-foot shaft in an oil field near Melbourne, and work is proceeding on drilling lateral holes from the bottom. As oil grows scarcer, his method will reclaim billions of "lost" petroleum from American oil fields, he predicts, and he is also eager to try it out in getting oil from the great Alberta tar sand deposits. He believes that his drilling methods can be used to burn coal underground in the production of commercial gas, and in laying cables and conduits under the surface without tearing up streets. And when people call him visionary, which they sometimes do, he just laughs and says, "This is where I came in."

This article was prepared for the SCIENCE NEWS LETTER *in cooperation with* The Reader's Digest. *It will appear shortly in that magazine.*

Science News Letter, June 4, 1949

MINERALOGY

Low-Grade Ore Deposits

➤ THE threatened exhaustion of rich metallic ores is creating a world-wide interest in low-grade deposits and in better methods of recovering the metals from them, the UNSCCUR, will be told at its session to be held at Lake Success, N. Y., this summer. UNSCCUR is short for the international organization, the United Nations Scientific Conference on the Conservation and Utilization of Resources.

Among important presentations will be a paper by R. W. Diamond, C. O. Swanson and B. P. Sutherland of the research board in Trail, B. C., of the Consolidated Mining and Smelting Company of Canada, Ltd. These mining experts will discuss new processes for the utilization of low-grade ores.

There are two types of ore deposits classed as low-grade, they will remind the international group. The first are simple ores of low metal content, and the second are complex ores containing a number of minerals. The recovery process depends upon the type.

In the first type, crushing and grinding form an important part of the total cost. The general trend has been towards larger sized units, together with the adoption of automatic controls and greater mechanism in the handling of materials. In the separation processes, gravity methods are especially suitable because they are inexpensive. Favorable results have been obtained from sink-and-float devices over a broad field. In addition, notable advances have been made in jigs, spirals, tables, flotation and magnetic separation.

The treatment of complex low grade ores covers a wider field because they can stand larger costs, the scientists stated. The use of induced superficial oxidation, a fluidized bed for roasting and calcination, controlled crystallization of mattes, improved reagents in flotation, and electrostatic separation are some of the advances recently made. Automatic sorting of ore by visual differences, reflectivity, fluorescence, and transparency to various radiations has interesting possibilities.

During the past few decades the mineral industry has made great progress, they said, and a good part of the progress has been achieved by industrial research and developing using, in co-operation, the advances made in individual lines of science and engineering to further the industry as a whole. In North America, at least, there has been a remarkable recognition of the mutual advantage gained by the free interchange of technical information between individuals and companies.

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Science Service Radio

➤ LISTEN in to a discussion on "Chemistry Tomorrow" on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p. m. EDST, Saturday, June 11. Prof. G. Rochow, Harvard University chemist, will be guest of Watson Davis, director of Science Service. Prof. Rochow, who just received the biennial Leo Hendrik Baekeland Award of the North Jersey Section of the American Chemical Society for his work in silicones, will predict how the U. S. could support a billion people living in earthenware houses and eating fats from coal, sugar from trees and proteins from yeast.

Science News Letter, June 4, 1949

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