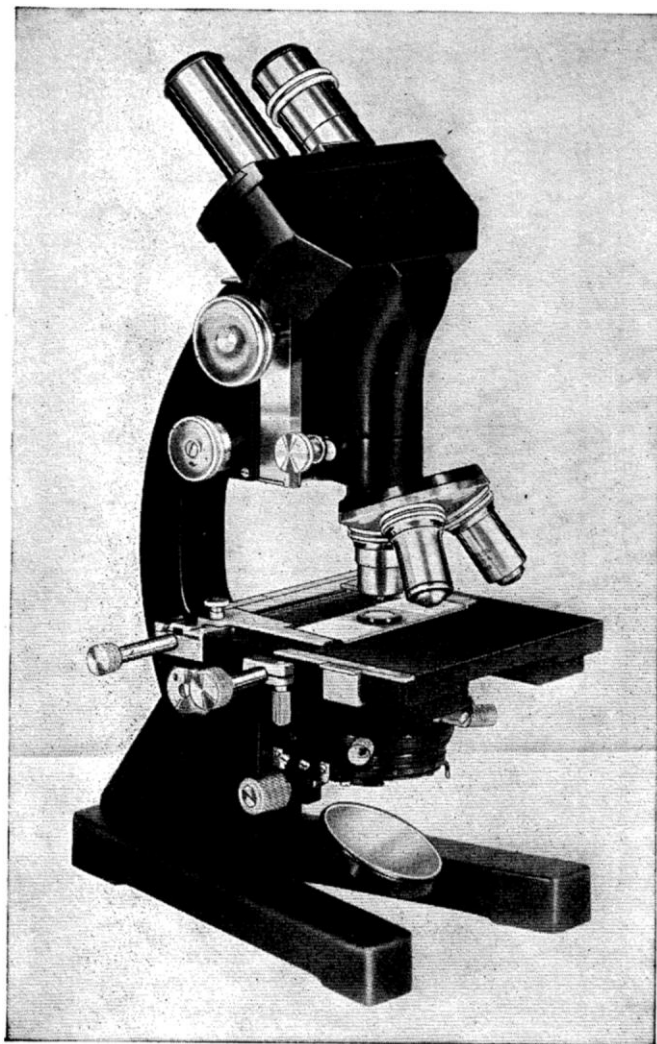


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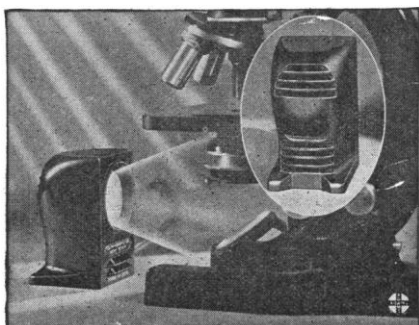
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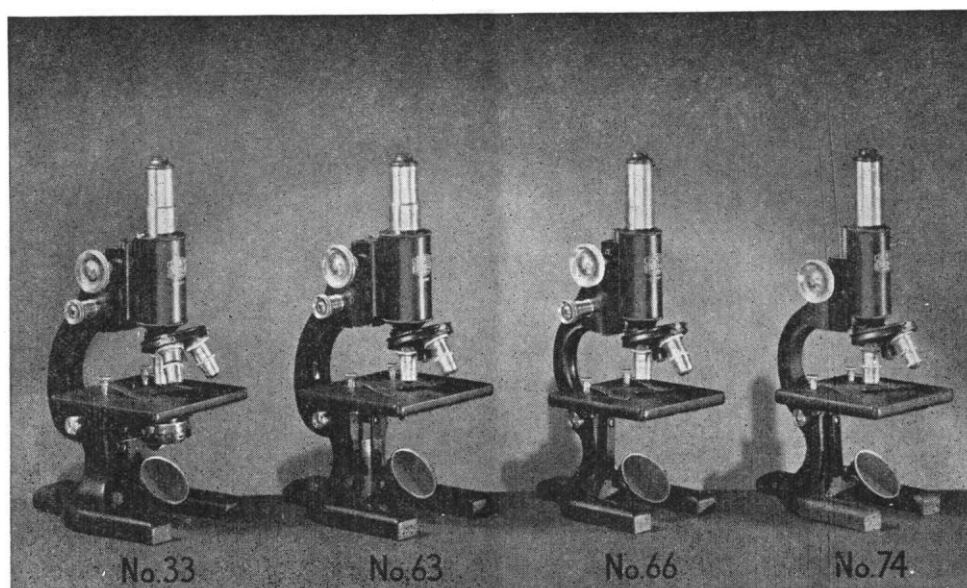
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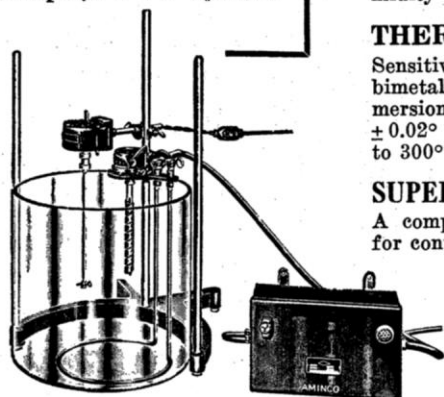
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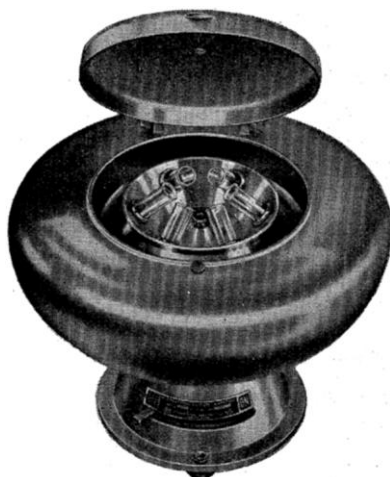
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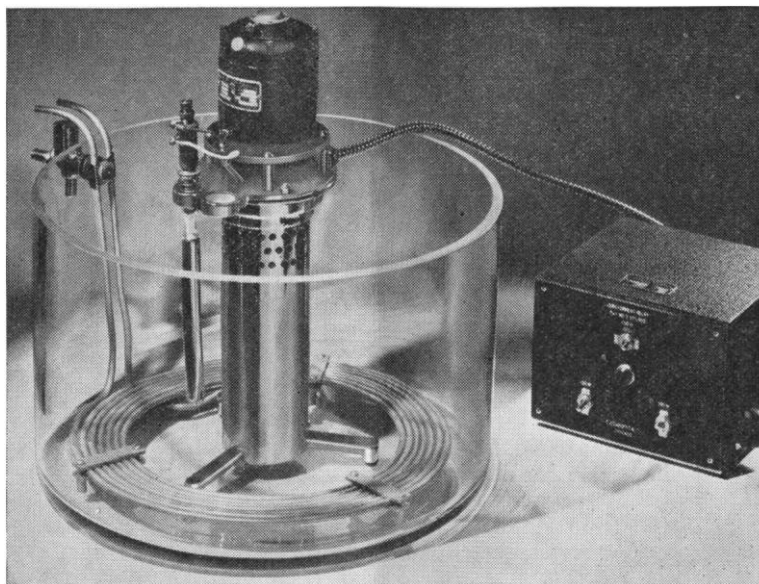
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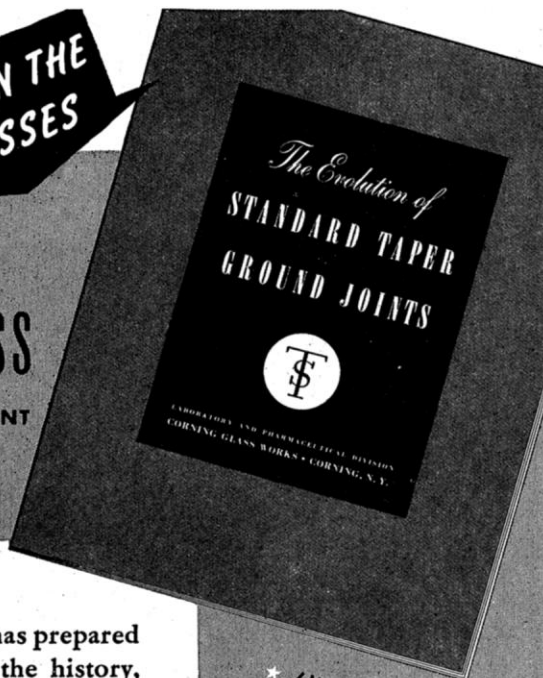
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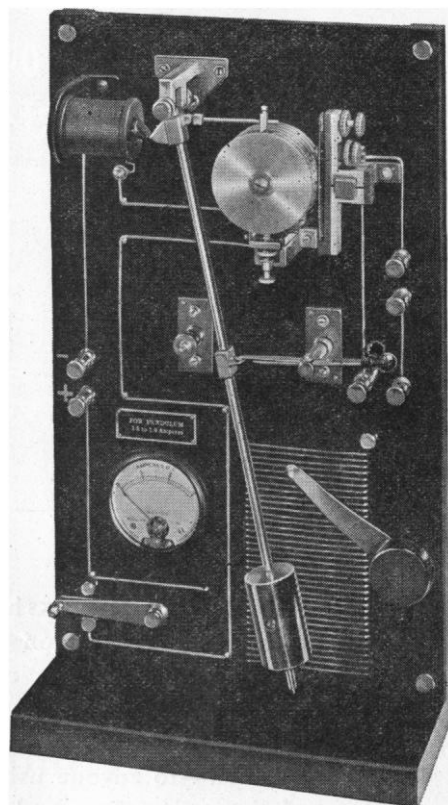
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THE NATION AND PETROLEUM GEOLOGY TO-DAY¹

By HUGH D. MISER

U. S. GEOLOGICAL SURVEY

OUR nation is entrusted with a rich heritage of abundant petroleum. The annual output of this essential mineral fuel may be expressed in barrels and dollars, but to offer a fitting measure of its importance would require an appraisal of the service of petroleum in terms of human welfare and progress.

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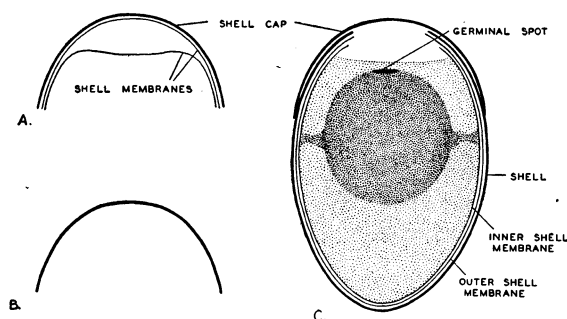
States comes from petroleum. Also, crude petroleum provides the plentiful supply of lubricants that has made possible our machine age.

The modern petroleum industry dates from the drilling of the Drake well in Pennsylvania in 1859 and, although the industry now encircles the earth, our country leads in the development of the industry and it produces and consumes three fifths of the world's oil. Also, our known oil reserves are equal to those of the rest of the world.

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The value of our petroleum output for 1938 expressed in dollars is one third the value of the entire annual mineral production of the United States. The next mineral product in point of value is coal, the next is natural gas, and then follows iron. Further

¹ Address of the vice-president and chairman of the section on Geology and Geography, American Association for the Advancement of Science, Columbus, Ohio, December 27, 1939. Published by permission of the director of the Geological Survey, United States Department of the Interior.



Figs. A, B and C

the limits of the air cell in that region. After cleaning the eggshell with cotton moistened with alcohol, the outline of the air cell is marked with pencil. With tweezers a small opening is made above the air cell, and by careful chipping, pieces of shell and membrane are removed to make a circular opening somewhat smaller in diameter than the air cell beneath. With sterile tweezers the inner shell membrane is next removed to the same extent, leaving the albumen exposed. (See Fig. C.) The previously prepared shell cap is now placed over the opening and the egg is ready for incubation. The shell cap is not sealed in any way.

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The incidence of infection of embryos has been extremely low, considering the fact that the shell cap is simply laid over the eggshell opening and may be removed daily for observation of the embryo. The overlapping margin of the eggshell and its cap is apparently an effective barrier to bacteria. The porous shell of the cap apparently permits adequate gaseous exchange between the living embryo and the exterior, yet prevents excessive desiccation.

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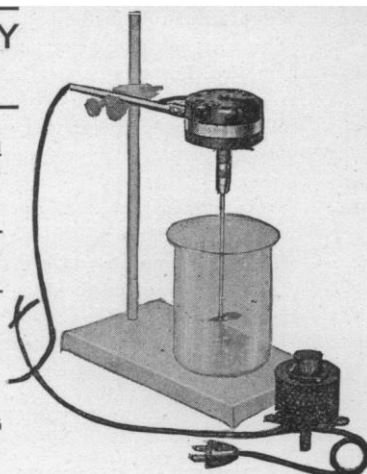
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