



**OFFSHORE DRILLING UNIT**—Designed to operate in waters as deep as 100 feet, this mobile driller is now operating off the Texas coast. The drilling platform is on the right, with derrick, and the service platform, with a helicopter port, on the left. The two are towed separately to desired location where hydraulic jacks are used to force corner piles four feet in diameter into the ocean floor. The lower bulls are then filled with water and sunk to help the piling support the upper bulls. The two platforms are then connected by a narrow steel catwalk.

## CYTOLOGY

## Cigarette-Cancer Test

► A SETUP for what might be the crucial test in the cigarette-lung cancer controversy has been created at the Sloan-Kettering Institute of the Memorial Center for Cancer and Allied Diseases in New York.

The setup comes as close to being a human guinea pig for such tests as is ever likely to be possible. It consists of normal human lung tissue growing in laboratory animals, specifically rats and hamsters.

Chemicals from cigarette smoke, which cause cancer in mouse skin, will be tested on this new kind of human guinea pig, to see whether they cause cancer of human lungs.

The human lungs came from human embryos that had to be removed from the maternal bodies for other reasons. Growth of the tissue in the rats and hamsters in large enough amounts for tests was achieved by pre-treating the rats with X-rays and by treating both rats and hamsters with cortisone, adrenal gland hormone first famous for relief of arthritis.

Human lung cancers as well as normal human lung tissue can now be grown in laboratory animals. While the normal hu-

man lung tissue is being used to test for possible cancer-causing chemicals in cigarette smoke, the human lung cancer tissue in laboratory animals will be used to test possible lung cancer-stopping chemicals.

One such chemical already has been found, and two others have "very temporarily" restrained cancer of the lung in human patients. These two chemicals are nitrogen mustard and the related TEM, or triethylene melamine.

The cancer-stopping ability of these chemicals might be increased by X-rays and this is now under trial at Memorial.

Nine out of ten heavy smokers do not get lung cancer, Memorial's Board of Trustees points out in their report on the institution's research attack on the problem. But four out of five lung cancers are "estimated" to be due to smoking.

What makes the nine resistant? Memorial scientists suspect hormones and are now testing this point.

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One heavy bomber has as much power as nine locomotives.

## AERONAUTICS

## Russian Air Research Almost Equal to U. S.

► RUSSIA'S AIR research program has advanced "at a rate far in excess of all normal expectations" and today is almost equal to that of the Western powers.

"There is sufficient reason to assume that any aerotechnological gap which once existed between the U.S.S.R. and the Western powers is all but closed," Jack W. Rizika, currently working with the Massachusetts Institute of Technology department of mechanical engineering and the aircraft gas turbine division of the General Electric Company, reports in the Institute's *Technology Review* (Nov.).

The scientist attributes this sudden "catching up" in such fields as radar, turbojet engines and guided missiles to the fact that the Russians fell heir to the majority of German aeronautical experts, factories and working models at the end of World War II.

At that time, in his opinion, the Germans were far ahead of the rest of the world in air research and development.

The scientist states that the German Air Ministry and the U. S. Strategic Bombing Survey reported that over two-thirds of the German aircraft production facilities, at the end of the war, were located in the Soviet occupied territories and this represented production of 25,000 airplanes in 1944.

These same plants included 63% of the total German facilities for producing fighters and pursuit planes, 91% of the medium bomber production, almost 98% of the heavy bomber production and about 73% of production of all other types of aircraft.

Together with the German developments, designs and research data taken from their own occupied territory, the Russians received additional German data from verbatim interrogations made by the Western Allies of German scientists, and handed over to the Russians under the exchange of information agreements in force at the end of the war.

Mr. Rizika also reports that the Russians added to the over-all German data with information gathered from the systematic analysis of American equipment either given to Russia or forced down in Russian territory during the war, most notably the B-29.

"It cannot be denied that, technically, great advancements were made by the Soviets during the war years. However, though the advancements were great, the Soviet Union finished the war about five years behind the Americans, British and Germans; the Soviets had not developed radar, radio-controlled flying bombs, nor jet-propelled airplanes," the Massachusetts expert states.

However, he says, today's Russian aircraft compare favorably with modern American and British airplanes.

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