

## PSYCHOLOGY

## Monkeys Use Concept

That animals can be taught to sort objects in a complex way may make possible new research of effects of brain injuries such as suffered by soldiers.

► A MONKEY trained to sort out objects by color in a complex way may open the way for new research on the functioning of various parts of the brain and on the effects of brain injuries such as those suffered by soldiers in the war.

This is the monkey's problem: To look at an assortment of red and blue objects—little flower pots, glass ash trays, skeins of wool, feathers, cups, thimbles and blocks—and to sort out all the blue objects when he is given a cue in the form of an uncolored ellipse-shaped block, or all the red objects when he is shown an uncolored triangular block.

You can do this, because you have a human brain, not a monkey's. Or, at least, you can do it provided you have not had certain kinds of brain injuries. It has not been supposed before that monkeys could be taught to do it.

This experiment in training a Rhesus monkey to use such an abstract concept as color and to respond to a symbol in much the same way as is done in some human intelligence tests, was conducted by Dr. Benjamin Weinstein in the University of Wisconsin's Primate Labora-

tory. Dr. Weinstein hopes that the accomplishment may make it possible to use monkeys in research that will throw new light on the effect of brain injuries that sometimes damage this ability in symbolic thinking.

Preliminary experiments make him think that it may some day be possible to teach the monkey, Corry, to respond to the spoken words "red" or "blue" instead of the triangle or ellipse.

Corry's achievement did not come overnight. It is the result of a long course of instruction in which he was first taught to match two objects similar in both color and form. Later he learned to pick all the objects of the same color as the one he was matching, regardless of variations in size and shape. He learned to pick all objects of one color even when they differed in brightness and saturation. Finally, in the last step of the instruction, he learned to pick out all the blue or all the red objects when the object that served as a signal to him was not itself colored.

Details are reported in *Genetic Psychology Monographs*.

*Science News Letter*, April 28, 1945

## GEOLOGY

## Oil from Borneo

► OIL from the wells of Borneo may soon fuel American planes and warships in the Chinese seas and the Philippine area, if MacArthur continues his progress from the Sulu islands into Borneo, to which this archipelago leads. Since the occupation of Borneo, Java and Sumatra by the Japs, these three islands have furnished Japan with most of its fighting fuel, the Borneo production being the most important. The tanker line to Japan has already been cut; now it is necessary to capture the wells.

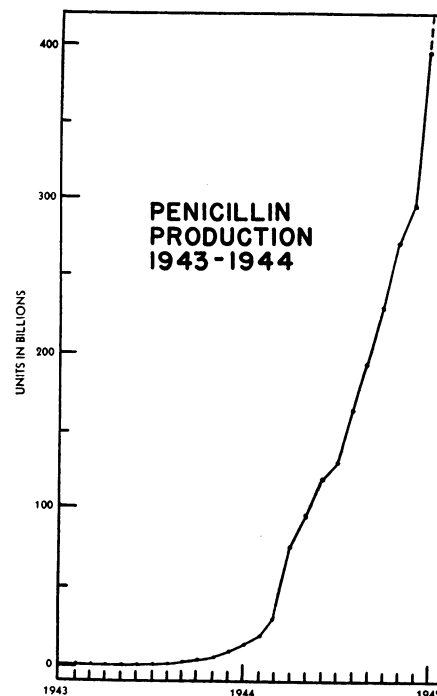
Borneo is the second largest island in the world, not counting Australia and Greenland. New Guinea is about 10% larger. Borneo is nearly as large as Texas and Louisiana together, with an area of approximately 300,000 square miles. North Borneo and Sarawak together constitute British North Borneo, two in-

dependent states. They contain about 82,000 square miles of territory and had a prewar population of approximately 800,000 persons, of whom less than a thousand were Europeans.

The rest of Borneo is a part of the Netherlands East Indies; its prewar population was over 2,000,000. North Borneo occupies the northern tip of the island and is the area adjacent to the Sulu archipelago. Sarawak occupies the entire northwest coast bordering on the South China sea.

Both parts of Borneo produce oil. British North Borneo produced nearly 777,000 tons of petroleum in 1939, and the Netherlands Borneo over 8,000,000 tons in 1938—figures for 1939 not being available.

Many other products of Borneo were essential items to Japan, although not as



**PENICILLIN CURVE**—Why your doctor can prescribe penicillin today whereas he could not, in most cases, a year ago is shown in this spectacular penicillin production curve prepared from War Production Board figures by the editor of the *Practical Pharmacy Edition of the Journal of the American Pharmaceutical Association*. The 1945 production will be triple or quadruple that of 1944, Fred J. Stock, chief of the drugs and cosmetics branch of WPB's chemical bureau, predicts in a report to the pharmaceutical journal.

essential to the Allies at the present time as the oil. The British area produced coal, copper, manganese, gold, iron and tin. Its principal non-metallic product was rubber. The Netherlands Borneo produced asphalt for paving, bauxite for aluminum, industrial and gem diamonds, manganese, phosphate rock for fertilizer and other uses, sulfur, silver and tin. For foods it raised much rice, and also sugar, coffee, tea and coconut products.

The island of Borneo is generally mountainous, without any very high elevations and few distinctive mountain ranges. Its climate is hot and damp, and it has a rainfall of about 150 inches a year. Improved highways are not plentiful. It has some fairly good ports.

*Science News Letter*, April 28, 1945

Shoulder blades of *bison* were used for hoes by some American Indians.