



Try It on Two Dogs

**C**ONTROLS, to a scientist, do not mean devices whereby a mechanism or an animal is guided or compelled to a certain course, like the motorman's

control box on a streetcar or the reins of a horse. In the scientific sense, the word is used in a special way. It means duplicate experimental objects subjected to exactly the same set of conditions, except for the one thing under investigation. The scientist might say, "Try it on two dogs first—but don't do anything to one of the dogs."

To take a specific example: Suppose you had a new plant extract suspected of being highly poisonous to rats, and hence valuable as a rodent exterminator. The first impulse would be to try it on a rat—or better still, on a half-a-dozen rats, or maybe a hundred of them. If they die, you conclude the stuff killed them.

But the biologist wouldn't accept your results. He would ask, where are your controls? He would repeat the experiment, in perhaps exactly the same way, but with the important difference that alongside the rats getting the suspected poison would be another batch—rats of the same ancestry for choice—getting

the same kind of food and water, living in the same cages, sharing the same life-conditions all along the line, except that they would not get the presumed poison.

If the first batch of rats all died and the controls all survived, there would then be reason to believe that the new substance was poisonous. In the absence of controls, the animals might have died of the poison—or again there might have been a sudden epidemic that swept the cages, or a leak of carbon monoxide gas from a faulty furnace, or some other unknown lethal agent that would falsify the results, leaving you deceived. Hence the importance of controls.

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RESOURCES

**Peru Hopes To Increase Tanning Extract Exports**

**W**ITH Eastern Hemisphere sources hampered by the war, the United States is looking southward for the raw materials needed for tanning its growing Army's footwear.

Smiling hopefully under U. S. gaze is Peru, where the wild tara bush grows, and whose coastline is on the wrong side of the continent for Nazi submarines. Already tara from Peru has replaced sumac from Italy, balonia from Greece and myrobalams from India in tanning blends, used in this country.

Exports from Peru have risen rapidly in late years—490 tons in 1939 and nearly three times that amount in 1941, largely to the United States. It is now urged that plantations of tara be established on thousands of uncultivated acres along the west coast of Peru.

Tara grows wild along the semi-arid foothills of the west coast. It bears a long pod filled with seeds. Pod and pulp which surround the seeds have a tannin content of 50% to 60%. This is even higher than that found in sumac. Tara is further desirable because it imparts little color to the leather when used in treatment.

U. S. Department of Commerce economists feel that if Peru will develop her production facilities, she will find a rich and permanent market in the United States. The tanning business in this country in 1939—the last peacetime year—was greater than in all of Europe, including the United Kingdom.

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Marks of *raindrops* have been found in rocks millions of years old.

**Message to TEACHERS**

Science advances—12 months of the year. This is true even more this year because science advances at an accelerated pace during War time. It is just as important to keep informed on science as it is on the various battle fronts of the world.

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