



Rugged Individualist

SOMETIMES animals, like boys, get the wrong nicknames.

"Doormat" is one of the nicknames tossed at the badger. It has all the deceptive seeming appropriateness of a nickname, for the animal is squat, and broad, and very shaggy. But let no one presume upon appearances, and try to use the badger for what he seems to be. He is such a doormat as might appropriately bear the motto displayed on the famous Colonial battle-flag: "Don't tread on me!" Against a world that makes fun of his short legs, his waddling frame, his uncouth hairiness, the badger remains permanently in arms. He is the most dour citizen of the forest.

In pioneer days, and to a certain extent to this day, in rural communities where badgers may still be captured, badger-baiting was considered a rare sport. To be sure, it was esteemed so mainly by the more loutish section of the male populace, which gets more fun out of seeing others fight than it gets out of indulging in strenuous contests of its own. A good, solid, heavy male badger was matched against a pack of such dogs as could be induced to face it, and left to fight it out to the death. The odds were usually arranged in favor of the dogs, and they had to be pretty heavy, too; for the badger has a neat way of biting a dog's forepaw that effectually cripples at the first onset, and a dog once so bitten is more than twice shy. And the long, thick hair on the badger's back pretty effectually protected it against attack from above.

One canine enemy the badger has a right to fear, and that the least likely-looking of dogs—the long, trundling, mild-mannered comical-looking dachshund. The Old-World badger is known in German as *Dachs*, and this short-legged, long-jawed breed of dogs were

originally called into existence specifically for the purpose of routing the badger out of its den and doing battle with it in the open. You never can tell from a "Dutchman's" legs whether he will run or fight.

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## ENGINEERING

## Vibration of Liners Being Studied in England

A RESEARCH on the causes of ship vibration—such as the quivering noticed by passengers on the "Normandie," which went back to dry dock for remedial measures—is being carried on at the National Physical Laboratory, Teddington, England.

The research depends on large numbers of tests conducted with a "vibrograph" designed by Dr. F. H. Todd, of the marine testing section of the Laboratory. The vibrograph consists of a highly sensitive pivoted beam, similar to that of a high-precision balance, mounted in conjunction with a mechanical timing device.

Dr. Todd has already been commissioned to ascertain secretly the causes of vibration of several well-known liners and also of a large number of smaller vessels.

Trouble is tracked to its source by taking the "vibrograph" to a variety of points on the ship and there measuring both the amplitude and the frequency of the vibration. From these observations a chart is prepared showing what are the predominating characteristics of the disturbance, and so pointing to its cause.

As one example, if the frequency of the vibration is equal to three times the speed of the ship's propeller shafts (in revolutions per minute), and the propellers have three blades, it follows that the fault lies in the main engine drive, and that it could probably be rectified by the substitution of a four-blade propeller.

There is at least one "natural frequency of vibration" appropriate to any such steel structure as a ship, and a large liner normally has three or more different "natural frequencies." If the main engines, or any auxiliary engine, happens to produce a frequency of vibration the same as one of the "natural" frequencies, there is bound to be trouble. Unfortunately there are not yet enough data for the designers of a large liner to be able to forecast what the various natural frequencies will be, and it is towards the providing of such data that Dr. Todd's research is directed.

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## CHEMISTRY

## Distillery Produces "Dry Ice" From Waste Gases

WASTE gases of fermentation are turned into solid carbon dioxide, or "dry ice," by machinery recently installed by the New England Alcohol Co., of Everett, Mass.

Liquid carbon dioxide is also produced by "washing," deodorizing, and purifying fermentation gas until it is completely colorless, odorless, and tasteless and ready to put life into carbonated beverages such as ginger-ale, sarsaparilla, and plain soda water.

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## RADIO

Tuesday, July 23, 3:30 p. m., E.S.T.

THE SCIENCE OF STUDYING HUMAN BEINGS, by Dr. Harvey N. Davis, President, Stevens Institute of Technology.

Tuesday, July 30, 3:30 p. m., E.S.T.

HEALTH HINTS FOR HOT WEATHER, by Dr. Robert Olesen, U. S. Public Health Service.

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