

# The Graphic Laboratory of Popular Science

By  
Dr. Thomas M. Beck



(Acme photo.)

## The Skunk as a Life Saver

THE skunk's defense against its enemies was long considered as useful for only the skunk. In recent years it has come to be a defense for man against dangerous and odorless gases. Some years ago there were a number of deaths resulting from the escape of a poisonous and nearly odorless refrigerant from leaky refrigerators. More recent was the disaster in Texas where a school building was blown up because no one had noticed the mild smell of the natural gas that was filling the building.

The characteristic smell of the skunk is due to the presence of a small amount of a sulphur compound known as butyl mercaptan. Sulphur itself is without odor. When an atom of sulphur is combined with two atoms

of hydrogen a gas, hydrogen sulphide, is formed. Every high school student who has taken chemistry remembers this gas because of its overpowering odor of rotten eggs.

When one of the hydrogen atoms of hydrogen sulphide is replaced by any of a number of groups of carbon and hydrogen atoms the resulting compounds are known as mercaptans. These compounds are more or less volatile liquids which resemble each other in possessing remarkably intense and frightful odors. For some reason the skunk makes use of a particular mercaptan, but all of the others smell just as bad.

The mixing of a mere trace of the vapor of one of the mercaptans with a poisonous or inflammable gas is sufficient to warn

people of its escape. Fortunately, butyl mercaptan does not have to be extracted from its animal source. All of the mercaptans can be prepared synthetically by the reaction of caustic soda and hydrogen sulphide with the chlorine derivatives of petroleum hydrocarbons.

The compounds are not without faults for this purpose. They react very slowly with metals, particularly iron, copper, and lead. Since most gas conduits are made of these metals or their alloys, the result is that the small amount of mercaptan originally present is removed to a considerable extent from the gas by combination with the metal with which it comes in contact.

The only competition that mercaptans have in this use as



(Chicago Academy of Science photo.)

At top: The New London, Tex., school blast in which hundreds died because of odorless gas. The skunk's unpleasant scent may prevent such tragedies.

warning agents against escaping gases is a compound known as acrolein. This vile substance is prepared by chemically removing water from glycerin. It is the pungent, acrid, and eye-irritating vapor whose presence makes the odor of scorched fats so unpleasant.

## Sweetening Wood to Halt Shrinkage



Sun Valley, Idaho, revives old wagon train days, when drying wooden wheels plagued the pioneers. (Acme photo.)

SUGAR is a hard, crystalline solid, but when we get it on our hands it makes them sticky. This is not the result of any property of pure sugar, but of the sugar solution which readily forms when the sugar comes in contact with traces of moisture. This solution is a concentrated one and resists evaporation with a tenacity shown by few other liquids.

Recent investigators at the Forest Products laboratory at Madison, Wis., have suggested an application of sugar that

makes use of this property. The shrinking and swelling of wood is due to its loss and absorption of water with the varying humidity of the air. By permeating the wood with a sugar solution these undesirable changes can be greatly reduced.

The penetration of the sugar is accomplished by applying it in a dilute solution and then subjecting the wood to a partial vacuum in order to draw the air out of the wood. The sugars tried were both cane and invert (a noncrystallizing type).



(Acme photo.)

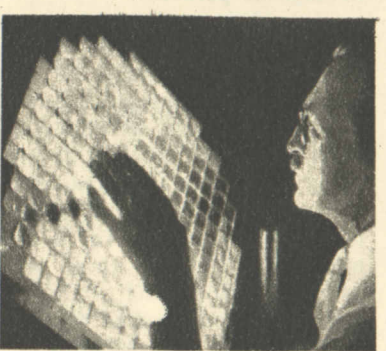
First step in refining sugar, which now has a new use.

## Putting a Stop Watch on the Earth

THERE is a lot of guessing involved in most estimates of the age of rocks or of the earth. There is one method, however, by which the age of a certain type of rock can be determined as accurately as if the rock had been timed through the ages by a perfect stop watch.

The usual type of element remains unchanged through the ages. Radioactive elements such as radium, on the other hand, steadily disintegrate into other elements. The rate of disintegration is such that a definite fraction of each variety of radioactive atoms will decompose in any particular time interval. Thus one-half of all of the radium atoms now present on earth will have disintegrated 1,700 years from now, one-half of the remainder will disintegrate during the next 1,700 years, and so on.

The final element formed by the radioactive decomposition of



(Tribune photo.)

Light from a small quantity of refined radium shines through a thick glass wall.

radium is lead of a certain atomic weight. Radium itself is a decomposition product of the element uranium. The rates at which uranium changes to radium and radium to lead are well known. Hence if a certain rock contains measurable amounts of uranium, radium, and radium-formed lead a competent mathematician can calcu-

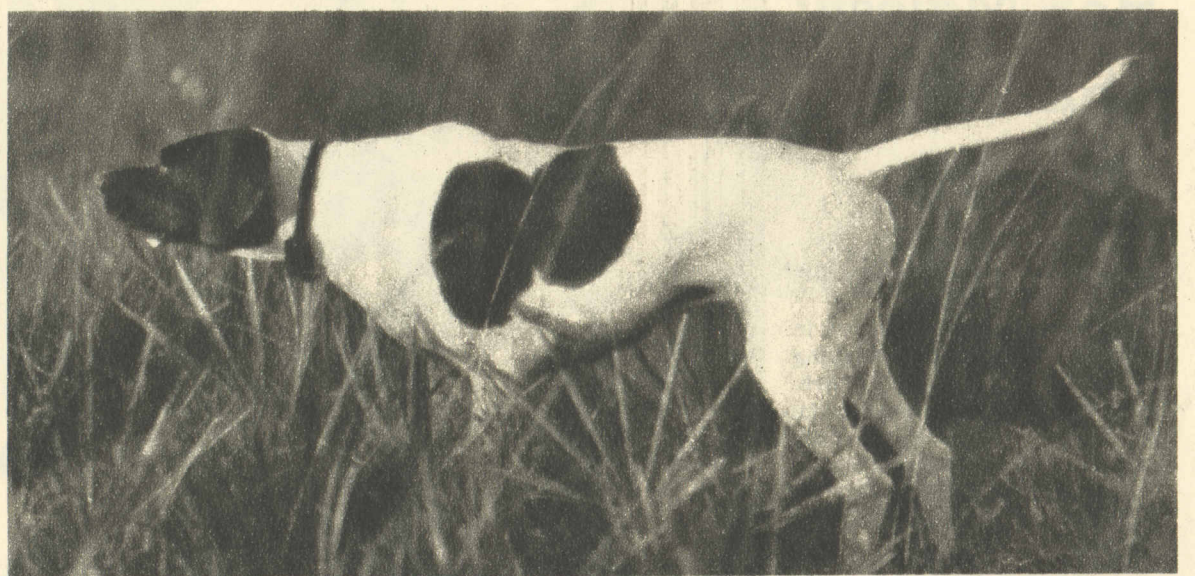
late the exact time that has elapsed since it contained only uranium. Calculations of this type give quite close results on the order of one and a half billion years. This is the age of the rock, and therefore a minimum age for the earth.

Confirmation of this figure has been obtained recently from the element potassium. Recent measurements of the rate of decomposition of its one radioactive isotope indicate a minimum age for the earth of 1,430,000,000 years.

Biologists are interested in this radioactive isotope of potassium. Calculations show that at the time the mighty forests that formed the coal deposits were growing there was about ten times as much radioactive potassium as there is today. It has been suggested that the lush plant growth of that time was a result of the tenfold radioactivity of potassium.

## Mostly About Dogs

By BOB BECKER



"The quail are right there in front," is the message this trim pointer is broadcasting by means of his beautiful point. The English pointer is one of the favorite gun dogs of American sportsmen and is widely used on upland game. This dog's name is Ace. He was photographed in the quail country near Punta Gorda, Fla. (Becker photo.)

## Spotlight Is Turned on Pointers

ALTHOUGH most true dog fanciers always are intrigued by the sight of a good looking, well behaved dog, irrespective of the breed, let the sportsman see a pointer, English setter, Irish setter, Gordon setter, or other pointing dog at this season of the year and you can be pretty sure that he is getting that extra thrill that comes only to the man who likes to go hunting.

When crisp October days prevail, when frost is on the "punkins" and the foliage is ablaze with yellows and reds, the pointing dogs come into their own. In addition to these dogs kept only for hunting there are many others given long months of training for the field trials, which are tests of the animals' bird-finding and bird-handling ability, stamina, and general all-around bird sense.

Pointers, those workmanlike dogs which are used extensively in many parts of the quail and pheasant country, are liked by thousands of sportsmen. In Florida and Georgia we hunt almost exclusively behind pointers. Last season we had as high as seven of them in the field at one time. On the last day of the Florida quail season Joe, our hunting guide, turned out all of



(Becker photo.)

When a handsome setter points with a quail in its mouth it always gives the sportsman an added thrill. This setter, Pal, retrieved a bird and then pointed another quail on its way in with the retrieve.

example, there are the Irish setter; the German short-haired pointer, which seems to be winning more friends every season, and the much-neglected Gordon setter. All have admirable working qualities. We have seen the Gordon setter do a dandy job on pheasants. But you see mighty few of these handsome dogs in the field.

The origin of the pointer is not clear. The theory that it originally came from Spain has been shattered in recent years. Now it is generally conceded that pointers came into use in the British Isles and on the continent of Europe about the same time. However, to the English goes the credit for developing the English pointer. As for the pointer's lineage, there isn't much doubt that several breeds have helped make the English pointer as we have him today.

the spaniels; they can do their work, but they also can come into the home and make affectionate, loyal companions. But at this season of the year they would rather be afield than at home. This is their big season. The stubblefields, cornfields, hedgerows, and other cover which have birds are calling these bird dogs. They easily and rightfully step into the spotlight to go on point and thrill the sportsman.

## DOG NOTES

The number of mongrel dogs which city dwellers abandon in the country sometimes causes considerable trouble to suburbs near large cities.

Evidently dog owners in cities have trouble with their pets, let them out of their cars near outlying communities, hoping that some one will find them. This rarely happens, however, and the result is that the abandoned dogs live in any way they can.

Although man has erected memorials and written epitaphs to practically every animal from the cow to the caterpillar, undoubtedly the dog has been more honored than any other animal in the world.

While many authors and poets have favorite dogs that they celebrated in their writings, no one appeared more convinced of the value of his dog than Lord Byron. The final lines in Byron's farewell to his dog Boatswain, whose monument is at Newstead abbey, England, are:

To mark a friend's remains these stones arise;  
I never knew but one—and here he lies.

There are few things quite as appealing as a real companionship between a child and a dog. This is more attractive when the child learns how to command obedience from the dog and handle it expertly. The children's handling classes in dog shows offer boys and girls opportunities to demonstrate their ability to handle dogs. Long a supporter of children's handling classes, this department offers prizes for those classes in the Western Specialty Clubs association dog show. It will be held this year in Chicago, Nov. 21 and 22. There will be handsome cups for the winning boys and girls.



(Tribune photo.)

The Irish setter is another popular member of the setter family. It has lots of style and a real personality. This dog is Champion San of Innesfree.

them at one time just for the fun of seeing how they would back each other on a point. On one find six of the seven dogs gathered around the one that located the small covey—all of his partners honoring his point.

Which should I get, a pointer or a setter? This question invariably puzzles the prospective buyer of a pointing breed. The answer is easy—get the one you like the best! Both setters and pointers have individual qualities which appeal to different people. Both will find plenty of game. Both make delightful companion dogs in the home.

We hunt over both setters and pointers every season, and everywhere we go on our hunting trips we run into this rivalry between setter and pointer owners—a rivalry that most often finds its outlet in the field trials held every fall and winter.

There are several other breeds to consider for hunting. For

Certainly the foxhound was used in cross-breeding. And students of dog history are pretty sure that both the bloodhound and the greyhound had a share in the development.

The pointer today is trim, graceful, fast, keen in competition, and with a nose that makes him a real bird dog. He's every inch a gun dog—a specialist with the ability to concentrate on his job and cover the ground. Withal he is neat and clean around the house, and affectionate, too.

That is one of the fine points about the pointing breeds and



• For attractive offers of dogs, turn to the Dogs, Cats, Birds, and Poultry columns in the want ad section of today's Tribune.

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