

# Pulsating Earth May Change Quakes

*Geophysics*

A slow pulsation of the earth, causing it to get a little stouter, then a little thinner, may be the cause of a shift of the centers of earthquakes away from the equator during the twentieth century. This is the theory advanced by Prof. T. Terada and Dr. S. Miyabe of the Tokyo Imperial University, to explain a slow change in the latitude of earthquakes.

Successive earthquakes in Japan recently have shown a tendency to get farther and farther north, so the two investigators searched the records to see whether anything like this had occurred in the past. They found that during the sixteenth century earthquakes in Japan and Eurasia moved south, while those in South America moved northward, or, in other words, they all tended to approach the equator. About 1600 this tendency was reversed, and they receded from the equator. By 1700 the Eurasian earthquakes began to move southwards again, while those in South America began a new northward march shortly afterwards. About 1800 the reverse tendency again appeared. Approaching 1900, the Eurasian quakes again moved south and the South American ones north, but

just about 1900 they again went into reverse. Quakes in North America also moved approximately the same way as others in the northern hemisphere.

Two astronomers, Dr. E. W. Brown of Yale, and Dr. W. de Sitter of Leyden, Holland, have studied the unexpected shifts of the moon from its predicted positions, which might affect the position of the earthquakes, so Dr. Terada and Dr. Miyabe compared these curves with those for the earthquakes. Though there is a rough agreement, they think it more likely that the earth itself pulsates over a long period. The earth is not a perfect sphere, but bulges a little at the equator. This bulge might increase and decrease, think the Japanese scientists. The greatest stress would be produced in the middle latitudes, and would manifest itself as earthquakes, and in some way the pulsations might cause a shift in the centers of the earthquakes.

Such studies as these, teaching scientists how and where earthquakes occur, may eventually help them to predict earthquakes, and so reduce their danger.

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## Stone Age Men Had Files

*Engineering*

The file is by no means a modern tool, according to Dr. Otto Dick, German engineer of Esslingen-Wuerttemberg. Stone-age men had files closely resembling in shape the present-day triangular files, which they made out of flint by hacking rough places on the surface. These instruments served them in shaping articles of horn, bone and other materials.

As far back as 3000 B. C. there were copper files, which were succeeded first by bronze and then by iron. Until comparatively recent times all files were cut by hand; the German city of Nürnberg was especially noted for the skill of its file-makers.

In 1503 the many-sided genius Leonardo da Vinci invented a file-cutting machine. Other early inventors followed his example, but it was not until after the Industrial Revolution that machine manufacture of files became a practical art.

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A survey indicates that large families drink less milk per person than small families.

## Distemper Conquered

*Veterinary Medicine*

Dog-lovers all over the world will be overjoyed to hear that dogs can now be kept free from the terrible scourge of distemper which has in the past been responsible for such heavy losses.

Dr. G. W. Dunkin and Dr. P. P. Laidlaw, working at Mill Hill for the Medical Research Committee in co-operation with the Distemper Research Council in London, have carried out an investigation of the virus that causes distemper, and after prolonged research have been able to prepare a special vaccine which protects dogs from distemper. Over 1,000 animals have now been inoculated with this vaccine, and the results have been strikingly successful.

In this part of the work the investigators have had the cooperation of many masters of foxhounds. In the Warwickshire pack 44 inoculated hounds were exposed to infection and none took the disease; 91 uninoculated hounds that were kept with them took distemper and 49 died. In a kennel of Dandie Dinmonts, 52 puppies were inoculated and remained free from distemper.

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## NATURE RAMBLINGS

By FRANK THONE



*Chimney Swift*

Most of us call them chimney swallows, but to be meticulously accurate we should call them swifts. Swifts are related to the swallows, but differ enough to be put into a separate group. One striking distinction is that swifts are unable to perch on a wire or twig as swallows do; their feet are so constructed that they can rest only by clinging to a vertical surface, such as a wall, while they brace themselves with their tails, woodpecker-fashion.

The chimney swift offers an interesting example of how one animal can adapt its life habits to take advantage of opportunities offered by the invasion of a new species. When the white man, who from the bird's point of view, is just another neighbor animal, came to this country and put up tall, cavernous chimneys, the chimney swifts unanimously agreed that these beat hollow trees all hollow; and now no self-respecting swift will build in a tree if a chimney is to be had. It is only in the backwoods, where houses are few and factories fewer, that they still inhabit hollow trees. The change came early, too; more than a hundred years ago the pioneer American bird student, Audubon, noted it.

The chimney swift would be very much "up against it" if it had to build its nest on the vertical insides of chimneys with no more technical resources than those possessed by robins and wrens. But the bird secretes some sort of a gluey substance that hardens on contact with the air, and cements the structure of twigs together and holds it firmly to the bricks.

Like the swallows and the night-hawks, swifts are exclusively insect eaters and do all their feeding on the wing. Their beaks are short and insignificant, but their mouths are wide and gaping, so that with their high speed and maneuvering power they can nab their prey as neatly as any entomologist with his net.

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