

these for the orientation of their minute magnetic fields.

The rocks thus tested were once loose sediment that settled slowly on the bottoms of ancient seas, in geologic ages from 100,000,000 to 10,000,000 years ago. Any of the particles that happened to be of magnetic material naturally arranged themselves in line with the earth's magnetic field. But after the sediments had compacted and slowly hardened into stone, the orientation of the particles had to remain the same even when the earth's magnetic field shifted—and it never remains completely still. Thus the rocks held the his-

tory of the magnetic field at the time of their first deposition.

Correlation of all field data shows that the earth's magnetic field during the whole 100,000,000 years has on the average been north-and-south, but with cyclic swings of 30 or 40 degrees on either side of true geographic north. This jibes very well with similar determinations previously made on much younger geologic formations: glacial clay deposits in New England, aged between 15,000 and 20,000 years, and million-year-old ocean-bottom samples brought up by a core-taking gun.

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ENGINEERING

Mining Production High

➤ **ALTHOUGH** 1948 production from American mines forged ahead of the output of the previous year, full demands for certain metals were not met, partly due to domestic postwar requirements and partly due to the rehabilitation needs of war-scarred regions abroad.

The tonnage of minerals, metallic and otherwise, mined in 1948 exceeded that of 1947 by about 4%, according to a preliminary report just issued by the U. S. Bureau of Mines. The dollar value was 26% higher. Fuels made the most impressive gain of any mineral group, with the value of mineral fuels produced increasing some 30%, partly a reflection of the record quantity of petroleum extracted.

Steel and aluminum production in 1948 surpassed the previous year output, but the major nonferrous metals, copper, zinc and lead, lagged behind. Large gains in the quantity of bauxite for aluminum making and molybdenum for steel alloys were achieved, though both were produced at rates a third below 1944 figures. Mercury production was exceedingly low, 40% lower than in 1947 and the smallest since 1933.

Iron and steel production in 1948 was the third greatest in history with some 88,000,000 net tons of ingots and castings. It would have undoubtedly equalled the 1944 peak of 89,600,000 tons, the report states, except for the work stoppage at coal mines in April and, with lesser effects, shortages in transportation for coke and pig iron. Labor-management difficulties account in part also for the shortages in the output of copper, zinc and lead.

The United States was obliged to import nearly two-thirds of its bauxite needs during the year, but the achievement of a peacetime record aluminum production was made possible partly by a peacetime record output of domestic bauxite. Magnesium output was intentionally held low, awaiting wider consumer acquaintance with the advantageous properties of this metal.

Crude petroleum production increased 8% over 1947, and exceeded 2,000,000,000 barrels for the first time. Marketed produc-

tion of natural gas increased 10%. Coal production, both bituminous and anthracite, decreased, the first some 5% of the 1947 record output of 631,000,000 tons. The anthracite decrease was slight.

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ZOOLOGY

Young Rattlesnake Chokes To Death on Horned Toad

➤ **HORNED TOADS** aren't "pizen", but they can kill young rattlesnakes foolish enough to try to swallow them. Dr. Charles T. Vorhies of the University of Arizona tells of a recently born rattler that he found, choked to death on a small horned toad it had attempted to make a meal of. The spiny projections on the victim's head had pierced the snake's body wall. Deadlocked thus, both reptiles had perished.

Dr. Vorhies tells this story in establishing his point, that very young rattlesnakes are more apt to feed on lizards than on mice—for the horned toad, despite its popular name, is really a rather thick-bodied lizard. Slimmer lizards, with narrower skulls than those of mice, would slip more easily down the throats of the snakes, he believes.

Dr. Vorhies presents his discussion in the naturalists' journal, *COPEIA* (Dec. 31, 1948).

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PUBLIC HEALTH

Yellow Fever in Panama Would Be Worse in August

➤ **PUBLIC HEALTH** officials in Washington might be "a lot more worried" about the current yellow fever outbreak in Panama if it had occurred in August instead of January.

The disease, which at latest reports has killed six of its eight victims in the small town of Pacora, is carried by *Aedes* mosquitoes. We have plenty of them in this country. In the summer they extend as far

north as a line running from Philadelphia to Los Angeles. But in the winter the *Aedes* boundary line is the Gulf Coast and Florida. It would be easier to fight them in this small region if they picked up the infection than in midsummer when they extend so much farther.

The yellow fever mosquitoes in Panama nest in the tops of trees. Health authorities believe the victims were woodcutters who got infected from mosquitoes they brought down as they were felling trees. A reservoir of the infection exists in monkeys and the tree-nesting mosquitoes get it from them.

The vaccine which has been flown to Panama from the U. S. Public Health Service laboratories at Hamilton, Mont., is expected to check the spread of the disease. The vaccine's protective action takes effect in nine days and lasts four years. It is not curative, however.

No specific treatment for yellow fever is known. Health authorities doubt whether even the new antibiotics, aureomycin and chloromycetin, active against so many diseases, would be effective in this one. They have not so far been effective against diseases caused by viruses as small as the yellow fever virus.

A check of air travellers to this country from Panama is being made by U. S. Public Health Service foreign quarantine officials. Names and destinations of those leaving will be wired or phoned to this country and the travellers will be met at the port of entry for examination. Disinfection of aircraft for mosquitoes is being double-checked.

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WILDLIFE

Rabbits Are Starving Deer by Overbrowsing

➤ **RABBITS** are killing deer—by starvation—the U. S. Forest Service reported.

Hunters in the East may have to hunt rabbits if they want to go deer hunting, officials warned. This is because rabbits are eating shrubs, bushes and seedling trees faster than deer, and the latter starve in some cases.

The real problem, in some Appalachian mountain areas, is saving overbrowsed areas where deer are now starving. In these areas, the food plants disappear faster than they can grow. Hunters in some parts of Pennsylvania have been encouraged to bag female deer to reduce the deer population.

But a Forest Service experiment showed that rabbit hunting, rather than shooting deer, may be the answer. In an overbrowsed area, deer were excluded, while rabbits were fenced out in half the area. Only slight recovery was noted in the area where rabbits still fed, while rapid recovery of plants was found in the section in which both rabbits and deer were kept out.

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