Gold at Earth's Center?

(*Continued from page* 194)

earthquake waves to go around the surface and through the inside of the earth, much as sound waves do through the air, and the rate they travel depends on the substance they are traveling through. The denser, the faster.

Every time there is an earthquake there are two sorts of waves sent out through the earth. One travels around on the surface; the other takes a short cut through the inside, and if the point of origin and the point of final observation are both known, the path of the waves may be calculated through the earth and just how deep they went at the deepest. Then from their speed a calculation may be made as to the density of the interior.

From all these and other considerations it has been found that the earth probably exists as three principal layers, something like the skin, the meat and the pit of a peach. What we know as the outer crust is the skin. It probably extends to a depth of about 35 miles. Below this the meat of the fruit corresponds to a thick layer of rocks of somewhat different chemical composition from those on the earth's surface and resembling more that of the stony sort of meteorite. This layer extends downwards for about 1,800 miles. Then we come to the pit of the fruit, an inner metallic core some 4,400 miles in diameter, and from inferred observations of its density and properties, of about the density of iron or nickel-iron, although much more rigid. Unlike the fruit, these layers are thought to blend gradually with each other.

The question still more undecided is whether the inner pit, to complete the analogy, has a kernel of gold and other heavy metals right around the inner core. It is quite a safe question to guess about, for with the instruments at hand nobody can ever find out, and if they were to find the earth had a golden center, nobody could ever get the gold out.

The earth is a little more than 7,900 miles through at the equator, a few miles less at the poles, so that from any part of the surface to the center it is close to 4,000 miles. A tunnel that long through the outer crust of the earth would be a huge undertaking. To the center of the earth it would be an impossible one.

To begin with, before two miles deep was reached it would have become impossibly hot. The rocks in the lowest levels of the San Juan Del Rey mine, in Brazil, the deepest mine in the world, have a temperature of 117 degrees at a level of about a mile beneath the surface. The rate of increase varies in different parts of the earth, but averages about 50 degrees Fahrenheit for every mile of depth. At that rate the temperature at a depth of 50 miles would melt all the rocks.

Then there is the pressure existing at these great depths. At the center of the earth it is calculated to amount to 25,000 tons to the square inch, and long before that depth is attained it is so terrific that no sort of construction could withstand it.

So it looks as if we should have to remain in ignorance some time yet of just what is at the center of the earth.

There is, however, a possibility that we may some day find out what is in the center of the earth without the bother of attempting the impossible and trying to perform an explanatory operation. Science is just really beginning to learn the trick of seeing through things with invisible rays. The art is young.

Fifty years ago it would have been thought impossible that we could see the safety pin after the baby swallowed it. Now, by means of the X-ray, it is as commonplace as for babies to swallow pins. Perhaps in another 50 years we may be able to see the gold nugget Mother Earth swallowed when she was but an infant.

One interesting fact does appear, however, that confirms the opinions of many travelers in Europe. The Old World is sitting on a hotter part of the earth's crust than the New. Whereas, in central and western Europe the temperature rises one degree centigrade for every 32 meters of depth, it is necessary to go down 42 meters in most of America to get the same rise of temperature. Europe seems to be nearer the internal fires. Comments are superfluous.

How did the earth get that way? What makes it hot? How was it made?

Science used to say that all of what is now the space occupied by the solar system was once a vast nebula, a mass of exceedingly rare gases. It began to condense. So doing, it got hotter and hotter. It began to revolve as it condensed. As it revolved, a central core was formed. This became the sun, which was vastly larger than it is now. As it revolved it threw off masses of material which condensed to form planets. These in turn revolved, threw off satellites and condensed into solid bodies, or bodies

(*Just turn the page*)

BOTANY

Mexico's Giant Tree

Greater perhaps than any other single growing thing and reigning queen of the vegetable kingdom is a giant cypress tree in Santa Maria de Tule near Oaxaca in southern Mexico.

The tree is so old that it is the subject of many semi-religious myths, but it blooms vigorously every spring and drops its seeds in the fall. Hernando Cortez described it in a letter to his king 400 years ago, and Baron Humboldt in his famous scientific travels through Mexico in 1803 visited the famous cypress and is accused of having carved his name and sentiments on its bark.

Its great size has struck many with awe, and one colonial history claims it is 6,000 years old, or as old as the Flood, but Professor Conzatti of the Mexican Ministry of Education made a scientific study of the tree and its physical surroundings and gave it 2,000 years. This would make it a contemporary of Christ and of the famous Maya civilization which flourished there many centuries ago. The ancient Maya ruins of Mitla are but a few miles away.

The giant sabino or ahuehuete, as the tree is called in Oaxaca, rises to a height of 140 feet and has a trunk 110 feet around. Its top branches stretch 200 feet across, and its trunk is knotted and gnarled from age. The bark is cracked and rough, and roots stick out of the ground like elbows.

The tree is a close relative of the cypress of Florida and Louisiana, and like that member of the family, it requires a great deal of water. But the giant tree of Santa Maria is nearly a third of a mile from the nearest river, and even that is very low in the dry season. But Professor Conzatti solved the mystery of the water supply and found that the tree tapped the same water-bearing strata of earth five to eight feet under the ground that the villagers of Santa Maria did with their wells. Two other sabinos, believed to be child and grandchild of the great mother tree, grow nearby, and would be considered giants themselves if they stood alone. By measuring the rate of growth of other cypresses in the vicinity and studying certain of their characteristics, Prof. Conzatti was able to form an estimate of the age of this colossal tree.