6

generally a matter of pure accident. From early ages certain individuals have claimed the power of being able to locate such streams by aid of a forked twig from various trees, such as plum, cherry, hazel, etc. And it is undeniable that in many instances phenomenal wells have been struck by digging or drilling on sites selected by these "water diviners" in spite of previous failures in the locality. For many years scientists as a class have stoutly denied the possibility of there being any virtue in this method of locating water, but in recent years as the result of some investigation on the subject a considerable change has cone about, many not only admitting the possibility of the method being genuine, but actually expressing their belief in it. We understand the French Department of Agriculture has a staff of diviners, whose services are available on application. So also has the Department of Lands in Queensland, Australia.

Another method has come into vogue recently, viz., by using an instrument knowu as a water-finder, a photograph of which is shown in Fig. 2. This is an electrosugnetic instrument, patented by an English firm. In the lower compartment, according to the English letters patent, is a coil of fine iron wire about six inches long and five inches in diameter. The coil has no metallic core. The ends of the wire are free. The layers are separated by paraffin wax and interspersed occasionally by sheets of lead foil. In the upper chamber is a very slender delicate magnet five inches long turning ou a pivot at its centre. It is magnetized so as to have a north pole at each end, one being the least shade stronger than the other. This method of magnetizing the needle is patented. When preparing for a test the coil is set by a compass with axis north and south. The needle is then placed on the pivot and points in a northern and southern direction when it becomes steady. If no underground stream runs below, the needle will lie almost motionless, but if there is a stream underground then the needle will suddenly swing out to one side and then oscillate back and forth, the oscillations gradually diminishing in amplitude. It may come back to rest or may receive another impulse before doing so. There is no regularity of impulses either in time or strength.

The principle of the instrument apparently is not definitely established. Those who have studied it are pretty well agreed that the action is in some way due to fluctuations in the earth currents of electricity which follow the underground streams of water. Some believe that these fluctuations cause momentary changes in the magnetism of the cc.l, which disturb the magnetic equilibrium of the needle, causing the oscillations. The makers of the instrument claim that the oscillations are due to "earth air currents of electricity"-perhaps electric waves would be a better term-originating in the fluctuations of the electric current in the stream. And some even claim that there is no virtue in the instrument whatever. Water Supply Paper 416, U. S. Geological Survey, Washington, pages 23-25, concludes with this opinion: "In the present state of knowledge any claim that the oscillations of a magnetic needle indicate the occurrence of available ground water is purely speculative." If the author of this paper had resulted negatively his opi...ion would have carried more conviction. One thing is certain, the needle does oscillate in some locations and not in others-we have proven that over and over again by actual trial. And in India, under the direction of Dr. Harold H. Mann, Principal of the Poona Agricultural College, at least sixteen wells have been sunk c. sites selected by the instrument in the Trap-Region of Western India where water is proverbially hard to find, water being struck in every one of the sixteen, and Dr. Mann's conclusions, quoted from his

wa via cer

F

F

1

81 11

Ci h

-

C

.

tl

W

0

¥

d

-

be

n

b

e

ha

th

of

CE

W

th

th

It

su: res fre