

study secured by these combined methods, it is to be hoped that we soon shall be as well acquainted with the surface-fauna off our coast as we now are with the bottom-fauna.

JAMES E. BENEDICT,  
*Resident naturalist of the Albatross.*

#### EARTHQUAKE OBSERVATIONS.

THE occurrence of an earthquake, although not such an uncommon event in this country as most people suppose, rarely finds observers alert enough to make observations which, when sifted of hearsay and ambiguity, contain facts of much value to science either as to quantity or quality. As a guide to the information desired, it would be well to bear in mind the list of questions adopted in the circular to be issued by the U. S. geological survey, as follows:—

1. Was an earthquake shock felt at your place on the day of \_\_\_\_\_, 18 \_\_\_\_? (A negative answer is as important as an affirmative one.)

2. At what hour, minute, and second of standard time was it felt?

3. How long did its perceptible motion continue?

4. Was it accompanied by any unusual noise? If so, describe it.

5. Was more than one shock felt? If so, how many?

6. Which of the following measures of intensity would best describe what happened in your vicinity? No. 1. Very light, noticed by a few persons, not generally felt; No. 2. Light, felt by the majority of persons, rattling windows and crockery; No. 3. Moderate, sufficient to set suspended objects, chandeliers, etc., swinging or to overthrow light objects; No. 4. Strong, sufficient to crack the plaster in houses or to throw down some bricks from chimneys; No. 5. Severe, overthrowing chimneys, and injuring the walls of houses.

7. Do you know of any other cause for what happened than an earthquake?

This list was proposed by Capt. C. E. Dutton, in charge of the division of volcanic geology, with the advice of Profs. C. G. Rockwood, T. C. Mendenhall, W. M. Davis, and H. M. Paul. A negative answer to the first question, from an observer near the disturbed region, is of course valuable as showing the limits of the disturbance. The second question, as to the time, is the most important of all; and an immediate comparison of the time-piece used, with standard time at the nearest railway-station or elsewhere, is particularly desirable.

Experiments are now being made as to the best form of seismoscope for the use of selected observers, while more refined observations with seismograph and chronograph can of course only be undertaken where there are special facilities, as at regular observatories, etc.

#### GEOGRAPHICAL NOTES.

**Uape Indians of the Amazon.**—We derive from Henri Coudreau some interesting notes on the ancient race of Amazonian Indians known as the Uapè. These people are generally below the average height of Europeans, and their complexion varies from light brown to something like a chocolate tint. Their hair is black and smooth; with rare exceptions, reddish or even blond. They possess a personal odor almost as strong and disagreeable as in some Africans, but which is not due to want of cleanliness, as they bathe several times a day. Though quiet in their manners, they are very independent in their habits, and when intoxicated, which often occurs, are insolent, violent, and cruel. They have religious and secular festivals called respectively 'cachiri' and 'dabucuri.' These consist chiefly of dancing and indulgence in intoxicating preparations of coca, wild hemp, and other herbs, and ceremonial tobacco-smoking. The cachiri-drink is made in a canoe-shaped wooden vessel, around which both sexes dance in a sort of procession, each individual putting his right hand on the shoulder of the person preceding him. The line is led by the chief singing, while the rest join in a refrain. They are deceitful and perfidious, and do not hesitate to use poison against enemies. The drug is extracted from a species of arum, and, in small doses, produces death by anaemia and innutrition after a month or two: strong doses produce immediate insanity. Their food comprises game, fish, fruits, and manioc-farina; they are very fond of several sorts of large ants. Their houses are built of wood, long, with a door at each end, thatched, and accommodating as many as fifteen families under one roof. They are generally dirty and ill-smelling. The furniture consists of hammocks, pottery, trunks of Brazilian manufacture, and a variety of odds and ends, beside their weapons, nets, and baskets. At one side is a small shed, where the farina is cooked on a hearth. There is often a small flotilla of canoes belonging to the inhabitants. These people make excellent canoes, some of which are large enough to seat thirty people, and sell readily for a handsome price at the Brazilian towns. The most singular of their industries is that by which they obtain salt. A plant grows in the district of Carurù, a stout herb

a foot and a half high, which is pulled up and burned, and the ashes leached with boiling water. On this an abundant scum arises, which is removed and dried. This is the salt which, white at first, afterward becomes grayish. It is a little bitter, but replaces ordinary salt for all purposes. It is curious that such uncivilized people should have discovered such a process.

**The newly discovered affluent of the Kongo.**—The river traversed by Lieutenant Wissmann, to which reference was made in a late number of *Science* (vii., 160), proves, as we suspected, to be one long indicated on the charts, partly under the name of Ikelemba. It is called by Wissmann the Kassai, and at different points is named the Zaïre, the Maneme, and the Kwa. It receives near its mouth the waters of the Kwango and the drainage of Lake Leopold II. It has a navigable length of about four hundred miles through a rich region with many probably navigable branches. Hippopotami were very abundant, in some places obstructing canoe navigation; eighty-two were counted in one herd. The mouth of the Kassai does not indicate the importance of the stream, which is probably the reason why it has not sooner been explored. According to Lieutenant Wissmann, the commercial future of the whole Kongo state depends upon the construction of a railway from Vivi to the upper Kongo valley.

#### PARIS LETTER.

SINCE my preceding letter, some very interesting facts have been made known in different sittings of the Academy of sciences or other learned societies. But I must begin by repairing an omission in my last letter, and mention Professor Verneuil's paper concerning phthisis. As it is generally conceded at present that phthisis is a parasitical disease, M. Verneuil proposes that a fund be especially raised for the purpose of studying the *Bacillus tuberculosis*, to try and find out some scientific and methodical way of fighting this microbe. M. Verneuil's letter has been published in the *Gazette hebdomadaire* and in many other papers; but I do not think that much money has been yet raised. M. Verneuil is no micrographer, and has never studied any bacillus or bacterium. His idea is a very good one, but he is not the man, nor does his name carry the weight necessary to make the idea work a long way in the world.

At the last meeting of the Société de psychologie physiologique, I listened to an interesting note by MM. Richet, Ferrari, and Hericourt, concerning the way in which the handwriting varies according to the suggested mental states of hypnotized persons. For instance, if such a person is

told that he is Napoleon, and asked to write a letter, he writes one, in a handwriting entirely different from his own, in which a graphologist easily recognizes the signs of a certain mental state which is generally supposed to have been that of Napoleon; when told that he is a miser, he writes in a close, short, economical handwriting, in the way misers write, according to graphologists; as a peasant, he writes in a drawing, ugly hand. The conclusion drawn by these gentlemen is, that graphology is a real science, and that its main features are correct, generally speaking. After all, there is nothing wonderful in the fact that handwriting can be and is influenced by the mental state, as is the case in physiognomy, attitude, and movements. The papers of MM. Richet, Ferrari, and Hericourt, will be published in the *Revue philosophique*, and their experiments are being continued.

A fortnight ago, the Société géologique began a series of conferences, to be held now and then at the ordinary meetings of the society. The opening address was made by M. A. de Lapparent, the well-known author of a very good book on geology, a text-book for French students. The subject was 'The form of the earth,' and M. de Lapparent communicated very interesting facts on the question. The most important, which is also the one that contributes the most to give to the earth a very irregular form, is the attraction which continents and even islands exert on water, as they do on the pendulum, resulting, as has been proved and measured, in an accumulation of sea-waters around continents. Thus the continents are all situated at the tops of hills of water; and to go from Europe to America, the ship has first to go down hill, then to cross a valley, and finally to climb another hill. Of course, this is an exaggerated figure; but, if the world were flat instead of round, the case would be exactly such as I have just said, for it has been calculated by some that between two continents the sea-level, in the middle, may be a thousand metres below the level the sea ought to have, and would have if there were no continents to attract it. As a curious and interesting confirmation of this attraction of seas by continents, it has been noticed that when Vesuvius is in eruption, and consequently when the mountain itself is denser on account of ascending and issuing lavas, the sea-level of Naples rises in a sufficiently well-marked manner.

M. de Lapparent, who does not think that there is any great motion in continents, and does not much believe in the sinking of some and the emersion of others, tries to explain the fact frequently met with, of sea-level and sea-beaches standing many hundreds of feet above the actual sea-level, in the following manner. Suppose a