most like a plague. In its earlier stages it can usually be recognized by the light tint of the larvae, an ashy green, so different from the ordinary color that one may pick out the diseased worms at a glance. These soon become torpid, and commonly die in a few hours. After death, decomposition is peculiarly sudden and rapid. A pale individual, picked out in the evening while still active, at eight o'clock the following morning was dead, blackened, and almost deliquescent, the whole body being reduced to a semi-fluid condition. This Micrococcus multiplies rapidly in beef-broth, rendering the fluid turbid.

The cultures of these Micrococci are made by the most rigorous use of the modern methods of 'pure culture.'

Only M. bombycis has thus far been successfully used by Forbes for the infection of healthy larvae; but experiments with the other species are now in progress. Measures are also being taken to learn the length of life of these bacteria when kept in hermetically-sealed tubes, with the expectation that this will furnish a means of preserving and transporting them for practical use, if this should prove to be worth while.

Forbes is also experimenting with the various ferment-germs appearing spontaneously in organic infusions, and has noted the occasional appearance of large numbers of Saccharomyces in the intestines of unhealthy larvae, and of those whose food has been treated with fermenting vegetable infusions.

NOTES AND NEWS.

We deeply regret to announce the death of Dr. Hermann Müller, on Aug. 25. Next to Darwin, Müller has done the most to advance our knowledge of the mutual relations between plants and animals in one of its many phases. Some notice of his life and work will be given in a future number.

— The boundary-line between Guatemala and Mexico, which, as we announced last week, Mr. Miles Rock has been commissioned to locate, is about two hundred miles in length; and one or two years will be required to finish the work. Astronomical stations will be established along the line, and topographical and profile maps will be made to extend as far as time and means will permit. If possible, the longitude of Guatemala City will be determined telegraphically by connecting with some point on the coast occupied by the U. S. hydrographic party under Lieut.-Commander Davis.

Mr. Rock has also been commissioned by the Smithsonian institution to collect notes on anthropology in the country over which his survey extends, and to photograph whatever archeological ruins he may meet with during the progress of the survey. He sailed from New York on Oct. 1, in the steamer Acapulco.

— The annual report of the librarian of the public library of Cincinnati for the year ending June, 1883, has just been issued. The total number of volumes and pamphlets in the library is 149,750. "The average number of books loaned daily for home use has been 680. The average number delivered for use in the reading-room has been 379 per day." In tables showing the number of books issued for home use and for consultation are given percentages for various classes. Fiction heads the list with 81.4% in books for home use, and 28.3% in the reading-room. Science and arts are represented by only 2.9% for home use, but rise to 24.8% for books consulted at the library. The number of volumes of fiction circulated during the year was 167,678, and of science and arts only 5,928. In the consulting-room, however, 39,539 volumes of fiction were issued, and 33,916 volumes in science and arts. Though these figures show a marked preponderance in the circulation of fiction over science and arts, as indeed they do over every other class, the preponderance is perhaps more apparent than real. As the librarian says in his report, these percentages are often misleading. "They lead the public to believe that a much larger than a true proportion of the work of a library is in the distribution of books calculated to entertain rather than to instruct. Probably not more than one-sixth of the time devoted to a volume of history or of science is devoted to a novel by the average reader; and yet in these figures volumes of history and science count equally with volumes of fiction and juvenile literature."

In a table 'showing the number and the classes of books used during each month of the year,' we find some interesting figures. More books were used during the months of January and March than during any other two months of the year. In philology there was nearly a regular increase from month to month from July to January, and a decrease to June. In history, from 1,387 volumes in December, there was an increase to 1,818 in January, decrease to 1,385 in February, and increase again to 1,586 and 1,581 in March and April respectively. In geography and travels, March takes the lead with 1,006. In science and arts the increase is regular from July (2,558) to January (4,656), when the decrease commences; and in June we have 2,838. In the totals we find that nearly 40% of the books were used during the months of December, January, February, and March; while only about 28% were used during June, July, August, and September.

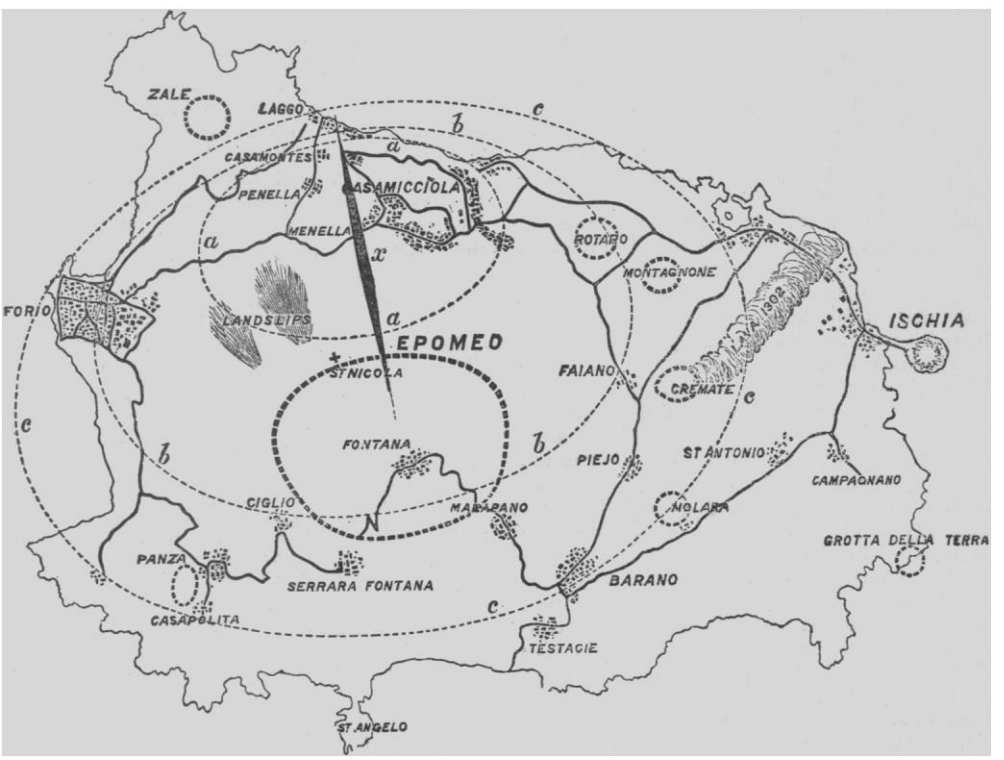
— The latest news from the French deep-sea explorations on the Talisman is comprised in a letter from M. Alph. Milne-Edwards, at Teneriffe. Every thing had worked in a satisfactory manner. Many soundings had been made off the coast of Morocco, and interesting profiles of the bottom thereby developed. Bottom and water specimens were simultaneously obtained, and the work was even carried on at night by the aid of electric lights. Considerable zoölogical collections had been made, and the professor was especially devoting himself to the study of their distribution in depth. The character of the fauna already enabled a tolerable estimation of the depth to be made from an examination of the animals contained in any particular haul of the dredge. By the use of extremely large nets, better luck had been secured in the capture of deep-sea fishes than had

previously attended their efforts, and a large number of specimens had been obtained. On leaving the Canaries, the expedition would proceed to the Cape Verde Islands, and thence along the so little known African coast.

— Mr. H. J. Johnston-Levis publishes the accompanying map of Ischia (scale 1 : 80,000) in *Nature*, with some further account of the recent earthquake. In company with Prof. P. Franco of Naples, he travelled over the whole island without detecting any sign of volcanic action. If isoseismal lines are drawn over the injured districts, we find, he says, "that they assume the form of elongated ellipsoids, whose major axes run nearly east and west." In the surface. The rupturing of this plate-like fissure was apparently greatest at a point nearly midway between its extremities." The ancient eruptive centres and craters are marked on the map in dotted circles.

— Ensign S. J. Brown, U. S. navy, has been elected professor of mathematics in the navy, and assigned to duty at the Naval observatory in Washington.

— Thouar writes from La Paz, under date of May 31 last, that in his search for Crevaux he had arrived by the way of Tacna, across the Cordilleras, on the 28th. The Bolivian government, by Sig. A. Quijarro, minister of foreign affairs, had shown great interest in the plans, and desire to assist to the extent of its power. An expeditionary corps had been



first isoseismal area, *a*, *a*, destruction was total; in the second, *b*, *b*, many houses are fallen, and the rest will require rebuilding; in the third, *c*, *c*, they were severely fissured; the fourth, in which houses were only very slightly fissured, not only includes the whole island, but must extend into the sea some distance. "From a careful examination of observed azimuths and angles of emergence, all point to a plate-shaped focus, whose strike extends in a line from Fontana, just west of Menella, to near the beach at Lacco. The plane of this fissure is probably roughly perpendicular to the surface, but may slightly dip towards the east, as the isoseismals are slightly nearer on the eastern side of the seismic vertical, which, as a necessity, is not represented by a point, but a line on the

equipped, and directed to march on Teyo, the Toba capital, which it is designed to occupy while part of the force descends the right bank of the Pilcomayo to Ascension. This expedition should have left Caiza in the month of June last, while, on the 3d, Thouar intended to start for Caripari, *viâ* Oruro, Potosi, Sucre, and Tarija.

— Endeavors have been made during the past session of the English parliament to obtain such amendments of the Factory acts as would protect not only the overworked and overheated workers in the bake-houses, but those desperate men who face certain death by poisoning in the manufacture of white lead. No act of parliament, however, will be of any real use until some improved process makes safety as

cheap as danger. Lately, with this object in view, Prof. C. Gardner has perfected an invention through which, by electrical energy and the cheap production of carbonic acid, applied through a special apparatus, in combination with the necessary acid vapor at the proper temperature, the formation of white lead of the purest color and best quality is rapidly and cheaply carried out in closed chambers; the lead resting upon shelves, which are lifted out when converted, and emptied, without any dust being raised, into a combination of machinery closed in, from which it comes forth as white paint ground ready for the market, or, if required, as dry powder. In either case the dangerous operations of the 'white bed,' and washing and stoving, are completely done away with, and no opportunity is given for the dust to enter the air, or touch the persons of the workers.

— Mr. G. Brown Goode, U. S. commissioner to the fisheries exhibition, sailed from London for the United States on the 19th ult.

— The summer station of the U. S. fish-commission at Wood's Holl, Mass., will remain open until about the 20th of this month, at which time the commissioner will return to Washington.

— Dr. R. W. Shufeldt, U.S.A., who was engaged in making collections in Louisiana, has been released from duty on account of ill health.

— Mr. Robert Ridgway has left his duties at the national museum for the present on account of ill health, and is recruiting in New York.

— Dr. Charles Rau has in preparation a monographic work upon prehistoric fishing-implements. It will be published as one of the Smithsonian Contributions to knowledge.

— Professor Lester F. Ward has returned from the west. He reports having thoroughly explored about seventeen hundred miles of the Missouri River.

— The very prevalent idea that aniline dyes have poisonous properties has inspired the German chemist, Dr. Grandhomme, to investigate the subject as illustrated in the coal-tar color-works of Messrs. Lucius and Brüning at Höchst-on-the-Main. Nowhere else could these researches have been conducted in so satisfactory a manner, as the Höchst color-works employ six hundred and seventy-two men in the actual manufacture of the colors, exclusive of their large staff of mechanics and laboratory assistants. One regulation provides that no workman shall enter any other department than his own; so that the works offer an excellent field for accurate observation. The following results were obtained by Dr. Grandhomme from personal observation, and the tables of accident and illness kept in the works. Nitrobenzol is known to be poisonous, yet symptoms of nitrobenzol-poisoning only appeared in the cases of illness reported in that department during four years. Aniline is unquestionably poisonous; yet, out of one hundred and seventy-one cases of illness in that department, only eighteen were due to aniline: none were fatal, and the average duration of the illness was one and one-half days. Magentas made by the arsenic process, and duly purified, are recognized as poisons; but the symptoms recorded are those produced by arsenic, which, in some inferior magentas, exists in the proportion of even eight per cent. No illness caused by pure magenta was recorded at Höchst, and aniline no more exists in the finished magenta than manure exists in wheat. In the department where blue colors were made, only one case of aniline-poisoning was recorded; none in the violet and green departments. A special disease appeared in the eosine department, causing extreme perspirations from the pores of the hands, but not among the men employed in packing the finished colors. No special disease was noted in the naphthol and alizarine departments. The use of alcohol was found to reduce the power of the constitution to bear the action of aniline: so no alcoholic drinks were allowed in the Höchst works, and no men addicted to drinking admitted.

— In Namaqua-land, South Africa, no rain has fallen since Aug. 15, 1881, and plants, animals, and men are dying of drought and starvation. Wheat and seeds have been sent by the Cape Colony, and a relief committee has been formed.

— Tillo has determined the total length of navigable rivers in European Russia, which is only 72,000 kilometres for that vast territory, a deficiency due to the dryness of the climate.

RECENT BOOKS AND PAMPHLETS.

Bacharach, M. Abriss der geschichte der potentialtheorie. Göttingen, *Vandenbroeck & Ruprecht*, 1883. 3+78 p. 8°.

Birnbaum, K. Die prüfung der nahrungsmittel und gebrauchs-gegenstände im grossherzogthum Baden und die resultate einiger in der mit dem chemischen laboratorium des polytechnikums in Karlsruhe verbundenen prüfungs station ausgeführten untersuchungen. Karlsruhe, *Braun*, 1883. 8+119 p., 1 pl. 8°.

Brass, A. Biologische studien. theil i.: Die organisation der thierischen zelle. heft i. Halle, *Strien*, 1883. 8+80 p., 4 pl. 8°.

Claus, C. Fragment einer monographie des platins und der platinametalle, 1865-83. Leipzig, *Voss*, 1883. 5+92 p. 8°.

Handwörterbuch der chemie. Herausgegeben von Prof. Dr. Ladenburg unter mitwirkung von Dr. Berend, Dr. Biedermann, Prof. Dr. Drechsel, etc. band i. Breslau, *Trewendt*, 1883. 8+712 p., illustr. 8°.

Hopkins, Louisa Parsons. Handbook of the earth: natural methods in geography. Boston, *Lee & Shepard*, 1883. 78 p. 24°.

Kaempfer, D. Ueber die messung electrischer kräfte mittelst des electrischen flugrads. (Inaug. diss.) Berlin, *Friedländer*, 1883. 36 p. 8°.

Löwe, O. Ueber die regulären und Poinsot'schen körper und ihre inhalts bestimmung vermittelst determinanten. München, *Rieger*, 1883. 28 p., 1 pl. 8°.

Merkmal, das verlorene, des winkel-begriffes eine folge der fortschreitenden bewegung auf dem gebiete der geometrischen formenlehre nach wesentlichen ideen und neuen gesichtspunkten. Teschen, *Cotula*, 1883. 23 p. 8°.

Petzoldt, K. Petrographische studien an basaltgesteinen der Rhön. (Inaug. diss.) Halle, *Tausch*, 1883. 48 p. 8°.

Samuels, E. A. Our northern and eastern birds. New York, *Worthington*, 1883. 600 p., illustr. 8°.

Schmitz, F. Die vegetation des meeres. Bonn, *Strauss*, 1883. 21 p. 8°.

Smoke abatement committee, 1882, report of. With reports of the jurors of the exhibition at South Kensington, and of the testing engineer, to which are added the official reports on the Manchester exhibition. London, *Smith, Elder, & Co.*, 1883. 14+193 p., 76 pl. 4°.

Taugermann, J. D. Licht, harmonie und kraft. Eine naturwissenschaftlich-philosophische studie. Leipzig, *Mutze*, 1883. 70 p. 8°.

Tischner, A. The sun changes its position in space, therefore it cannot be regarded as being 'in a condition of rest.' Leipzig, *Fork*, 1883. 37 p. 12°.