necessity for a division of labor has also made itself apparent in the interest of scientific research." Butlerow gave as his opinion that organic chemistry must be defined as the chemistry of the carbon compounds. After giving place to the definitions of the earlier writers Schorlemmer defines 'organic chemistry as the chemistry of the hydrocarbons and their derivatives.' He, however, recognized that it did not place a sharp boundary line between the inorganic and organic fields.

In the remaining chapters the further development of the organic field is traced with great care. The different views in regard to the constitution of benzene, the arrangement of atoms in space, geometrical isomerism, various striking syntheses in both the paraffin and aromatic series are clearly presented. In regard to the great revolution produced in calico-printing and in the manufacture of madder preparations by the synthesis of alizarin by Graebe and Liebermann, Schorlemmer writes "madder finds to-day only a very limited application in dyeing of wool. Twenty years ago the annual yield of madder was about 500,000 tons . . . . . when a friend of the author asked to see the madder plantations at Avignon he was told 'it is no longer grown, as it is now made by machinery.'"

The book closes with a chapter upon the unsolved problems. "If to-day we cannot make morphine, quinine, and similar bodies artificially, the time is near at hand . . . . If we cannot make quinine we have already found a partial substitute in antipyrine." Yes, in the language of Schorlemmer "organic chemistry advances with giants' steps. About fifty years ago only twelve hydrocarbons were known, and twelve years ago this number had increased to about 200. To-day we are acquainted with more than 400, and many of them, as well as their derivatives, have been carefully studied."

The little volume from which we have quoted is well constructed and replete with information for the student of chemistry. Its careful study will be well repaid. The editor and publishers deserve much credit for again presenting such a valuable work.

Edgar F. Smith.
University of Pennsylvania.

NOTES AND NEWS.

Milk in its Relations to Diphtheria.

Vladimirow, in the Second Part, Vol. III., of the *Archives des Sciences Biologiques publiées par L'Institut Impérial de médecine Expérimentale*, St. Petersburg, page 84, gives the results of some researches made by him in Nencki's laboratory on the effects of the diphtheria bacillus upon cows, and especially as to the possibility of producing in the cow, by subcutaneous injections of this organism, a disease which would result in the infection of the milk by the same organism, so that such milk might become a carrier of the germs to those who used it.

Dr. Klein, of London, has reported, as the result of such hypodermic injections, the production of an eruption upon the udder of the cow, in which eruption the diphtheria bacillus was found to exist.

These experiments were repeated by Dr. Abbott, of Philadelphia; but while he found that the injection produces disease, and even death, in the cow, there was no eruption in the udders, and no diphtheria bacillus in the milk. Vladimirow confirms the results obtained by Dr. Abbott. He found that if the diphtheria bacillus was introduced into the milk ducts of the teats upon one side of the udder of the cow, an inflammation was produced upon that side of the udder, and general fever occurred, which, in one case, produced death. The milk secreted by the injected half of the gland acquired a greenish tint, coagulated, contained pus, had an alkaline reaction, and contained less sugar and more albuminoids than the milk coming from the sound side of the gland. The di-

minution in the quantity of sugar was due to the decomposition of this substance by the diphtheria bacillus, with the production of lactic acid. The diphtheria bacilli only remained alive in the udder for a short time—from four to five days—and their number steadily diminished. Subcutaneous injections of cultures of the diphtheria bacillus in the cow produced a serious fever, with loss of appetite, etc., but there was no irritation on the udder, the milk did not change in its appearance and contained neither diphtheria bacilli nor the toxins due to these.

CONSUMPTION OF WINE AND BEER IN DIFFERENT COUNTRIES.

DURING the years 1886–90 the mean annual consumption of wine, stated as number of litres per head of population, was, in Spain, 115; in Greece, 109.5; in Bulgaria, 104.2; in Portugal, 95.6; in Italy, 95.2; in France, 94.4; in Switzerland, 60.7; in Roumania, 51.6; in Servia, 35.0; in Germany, 5.7; in Belgium, 3.2; in Holland, 2.2; and in Great Britain and Ireland, 1.7.

In 1890 average consumption of beer, stated as number of litres per head of population, was, in Belgium, 177.5; in Great Britain and Ireland, 136.2; in Germany, 105.8; in Denmark, 102.9; in the United States, 58.0; in Switzerland, 40.0; in Norway, 37.5; in Holland, 34.6; in France, 22.5; and in Italy, 0.9. (*Bulletin de l' Inst. internat. de Statistique*. VII. 2.e Sive. 1894. p. 309.)

MAGNETIC WAVES.

AT a late meeting of the Mathematico-Physical Club in Cambridge, Mass., Professor Dolbear showed that magnetic waves produced by the vibrations of a magnet making two thousand vibrations per second could easily be heard by listening to a magnetic telephone held in the neighborhood without any employment of its coil. The inductive action of the waves upon the magnet of the telephone being direct instead of being first transformed into an electric current as in the common way of using it. Two sympathetic tuning forks may, if magnetized, react in the same way as they will from sound vibrations and one make the other vibrate through a thick wall, thus showing that such walls are transparent to magnetic waves. The reactions show that the periodic change of form due to vibration changes the strength of the magnetic field at the same rate. A few turns of wire about the bend of a U magnet may have the ends fastened to a telephone circuit, when, if the magnet be struck so as to produce a sound, it will give so loud a sound in the telephone as to probably surprise one who has not tried the experiment before.

ANATOMY.

THE *Bibliographie Anatomique* begins its third year with the announcement of increased success. It is to be enlarged to make room for a greater number of original articles, and at the same time the subscription is to be raised from seven and a-half to ten francs. This excellent publication gives a current classified list of all anatomical articles published in French, and differs from other similar journals in adding brief *resumés* of all the more important articles. In practice it covers quite thoroughly the field of vertebrate morphology, and it may therefore be recommended for the support of American investigators.

CARNIVOROUS PLANTS.

PROFESSOR THOMAS MEEHAN, in an article on *Darlingtonia Californica* in the January issue of *Meehan's Monthly*, notes that the so-called carnivorous plants are just as able to get their food from the earth as other plants do, and that the animal food which they undoubtedly consume through their foliage can only be looked upon as a gastronomic luxury in no way to be classed among the necessaries of life.

TOADS ON THE SEASHORE.

During a vacation recently spent at Cape May, New Jersey, I was much interested in observing the habits of the toads on the seashore. Between the 'board-walk' and high-water mark is a narrow belt of uneven sand, dotted with tufts of beach-grass and raised here and there into miniature 'dunes.' Here the toads congregate in considerable numbers, and as evening draws on they may be seen hopping about in quest of food. As they were not to be seen during the heat of the day, I became interested to know where they concealed themselves. A short search revealed their whereabouts. Like so many of the small animals of the contiguous waters, they bury themselves in the sand for concealment. Upon looking attentively over the surfaces of the little dunes, one saw here and there a pair of bright eyes, not unlike the sand in color and as fixed as gems in a rock. It was only necessary to touch the sand in the immediate vicinity of the eyes, when a toad would hop out and tumble clumsily over the hummocks in endeavors to escape.

Whether the toads captured any prey while concealed in the sand I was unable to discover, but I should think it improbable, as their mouths were usually beneath the surface and there would be little chance for them to shoot out their tongues.

Frederick W. True.

GENERAL.

Professor Arthur Cayley, the eminent mathematician, died at Cambridge, England, on January 26, at the age of seventy-four.

John S. Burdon-Sanderson, M. A., Fellow of Magdalen College, and Waynflete Professor of Physiology, has been appointed Regius Professor of Medicine, at Oxford, in place of Sir Henry W. Acland, Bart., Christ Church, resigned. Professor Burdon-Sanderson continues to direct the lectures and practical instructions in the Department of Physiology, with the assistance of Dr. Haldane and Mr. Pembrey.

Applications for the table at the Biological Laboratory of Cold Spring Harbor, maintained by the American Association should be sent to Professor W. H. Conn, Wesleyan University, Middletown, Conn., or to Professor F. W. Hooper, Brooklyn Institute of Arts and Sciences, Brooklyn, N. Y.

The Johns Hopkins University Circular for January consists of scientific notes on work done at the University. It includes a reprint from the *Journal of Geology* of Professor Brooks' paper, *On the Origin of the Oldest Fossils and the Discovery of the Bottom of the Ocean*, and a reprint from *Natural Science* of a review of Professor Brooks' monograph, *The Genus Salpa*. It also contains notes in chemistry, astronomy and botany.

The French Minister of Education, M. Leygues, has opened the new buildings for the scientific departments of the Sorbonne.

The list of books for sale issued by Bernard Quaritch in January includes many valuable works in natural history, especially in botany and ornithology.

SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES.

Biological Section : January 14, 1895.

Notes on Neurological methods and exhibition of photo-micrographs.

A paper on *The Use of Formalin in Golgi's method* was read by Mr. O. S. Strong. The writer found that formalin (40% solution of formaldehyde) may be used (instead of osmic acid) mixed with potassium bichromate. Pieces of adult brain were placed in the following: Potassium bichromate (3½%–5%) 100 volumes + formalin 2½ to 5 vol. During several days or more the tis-