Pantarbes (40) and *Rhamphomyia* (41), and that the cross-vein marked *m — cu* in *Leptis* (*Am. Nat.*, 32; 337, fig. 30) does not exist in the hymenoptera, but is obliterated by the coalescence of the above-mentioned veins; M_4 is Cu_1, and Cu_1 is Cu_2; the cross-vein marked *m — cu* is not homologous with the one so marked in *Leptis*, but belongs to the *arculus!* To account for the vein marked Cu_2 I should say that it is before the arculus and does not enter in the consideration of the ordinary cases. According to the authors, this vein does not occur in any of the hymenoptera, except *Pamphilius*.

If my view is correct, a large part of the peculiarities of the venation of hymenoptera is connected with the great lengthening of the arculus and the shifting of it from the base of the wing.

The only changes in the designation of the cells which my attempt at elucidation involves are: M_3 is Cu_1; Cu_1 is *2nd Cu; Cu* is *1st Cu; M* is homologous with the cell marked *1st M* in *Scenopinus* (*Am. Nat.*, 32; 339, fig. 36); M_4 is the same as the cell marked *2nd M* in *Scenopinus* and the cell marked *M* in *Rhamphomyia* (41).

CHARLES ROBERTSON.

NOTES ON INORGANIC CHEMISTRY.

A GOOD illustration of how much material there is in inorganic chemistry which needs reinvestigation, is found in the fact that there has been no general method of forming the sulfids of the rare earths, nor have any of the sulfids been obtained in a pure condition, with the possible exception of that of cerium. This gap has now been filled by Muthmann, of Munich, in conjunction with L. Stützel. They find that while the oxids are very slowly converted into sulfids when heated in a stream of hydrogen sulfid, the anhydrous sulfates are, under the same conditions, very readily converted quantitatively into the sulfids. The sulfids of cerium, lanthanum, neodymium and praseodymium were formed in this way, and their properties, physical and chemical, studied. They are fairly stable in the air at ordinary temperature, but are decomposed with evolution of hydrogen sulfid by warm water or dilute acids. They take fire readily on heating in the air, and when finely divided the cerium sulfid often proved pyrophoric. They burn to a mixture of oxid and sulfate. On heating in a current of dry hydrochloric acid, they are readily and quantitatively converted into the anhydrous chlorids, and on a small scale this is the best and easiest method of preparation of these chlorids. The study as a whole, which is published in the last *Berichte*, is a valuable contribution to the chemistry of the rare earths.

IN a series of experiments by A. Petterson, of Upsala, printed in the *Klinische Wochenschrift* (Berlin), the fact is established that in meat and fish preparations, containing 15% of salt for the purpose of preservation, a constant and luxuriant growth of microörganisms takes place. From this the conclusion is drawn that the special flavors, odors, consistencies, and colors of salt conserves are chiefly produced by various microörganisms.

THE subject of food preservatives is also discussed from a different standpoint by R. Kayser, of Nuremberg, in the *Zeitschrift für öffentliche Chemie*. In earlier times, the tendency of various foods to decomposition was counteracted by drying, smoking, pickling and the like. In some cases special processes were used, as the treating wine with sulfur, beer with hops, etc. At the present day, scientific progress has led to the use of low temperatures, of sterilization, and especially to the use of chemicals. In this last case the demand is made that the preservatives used shall not only be harmless in the quantities used, but inert to the human system even in vastly greater quantities than ever used in foods. This demand, it is pointed out, is unprecedented, for it is not complied with under old methods. Common salt, saltpeter and creosote are present in these and are not less injurious in quantity than the more recently used boric acid, borax, salicylic acid, benzoic acid, etc. There are no authentic instances on record of injury from the use of any of these in foods, while there are very many instances of injury from foods which, apparently good, were in reality decomposed (presence of ptomains, etc.). The whole subject needs to be treated in a more rational way.

THE latest numbers of the *Chemical News* contain reprints of several papers on the new radiant substances discovered by M. and Mme. Curie. It is found that the radio-activity of polonium and radium can be communicated by contact to inactive bodies, such as many metals, paper, barium carbonate and bismuth sulfid, and this induced radio-activity persists for a considerable time.

MME. CURIE has concentrated by fractionation the radium which is associated with barium in the uranium minerals, and determined the atomic weights of the successive fractions—one fraction having an activity 3000 times that of uranium had an atomic weight of 140. (Ba = 137.8.) A later fraction of 7500 times uranium's activity had an atomic weight of 145.8, hence it seems that radium has a higher atomic weight than barium. In this work half a ton of uranium mineral was used and the radiferous barium chlorid which was fractionated amounted to two kilos. The spectrum of this concentrated radium was studied by Demarçay, and in addition to the spectrum of barium, very intense and complete, a series of new lines was found and measured. Some of these are very characteristic. It thus appears reasonably certain that radium has a definite position as a chemical element, and the properties of the purified substance will attract great interest when determined. Among the chemical effects of the salts of radium is the conversion of oxygen into ozone. This phenomenon seems to be connected rather with the radio-activity than with luminosity. Radium carbonate is very luminous, but produces less ozone than radium chlorid, which is much less luminous, but more strongly radio-active. If a radium salt is placed in a glass vessel, a violet coloration is seen in the glass which proceeds from the interior to the exterior. In ten days or so the bottom of the flask is almost black. This takes place in glass containing no lead. The effect of the Bacquerel rays upon barium platino-cyanid is also chemical. All these phenomena point to the fact that the rays emitted by radium present a continual development of energy.

J. L. H.

CURRENT NOTES ON METEOROLOGY.

THE WEST INDIAN HURRICANE OF AUGUST, 1899.

AN account of the West Indian hurricane of August 7–17 last, in the *Monthly Weather Review* for August (issued October 30), brings out several points worth noting here. The report from the Weather Bureau observer at Arroya, Puerto Rico, says that the Spanish steamship *Alava* took refuge in the Port of Jobos, and with all her anchors down and working full speed ahead, she dragged for half a mile. At Aguadilla, Puerto Rico, the passage of the calm central 'eye' of the storm occupied about one hour. At Nassau, considerable damage was done by the northeast wind, which backed to northwest, and fell calm. People then came out to gather up their scattered effects, when the wind suddenly began to blow from the southwest with great force. An aneroid reading of 27.75 inches, corrected for instrumental error and for elevation, was made at Guayama, Puerto Rico, and one of 28.11 inches was made at Juana Diaz.

RECENT PUBLICATIONS.

NOTE.—The unusually large number of recent publications of importance makes it necessary, in view of the limited space, to restrict our mention of them to a few lines only.

EVELYN B. BALDWIN: 'The Meteorological Observations of the Second Wellman Expedition,' *National Geographic Magazine*, December, 1899, 312–316. Mr. Baldwin is an official of the United States Weather Bureau, and was equipped with instruments by the Bureau. This is a preliminary report of his meteorological work.

FRANK H. BIGELOW: 'The probable State of the Sky along the Path of Total Eclipse of the Sun, May 28, 1900, Observations of 1899,' U. S. Department of Agriculture, Weather Bureau. Bulletin No. 27. 8vo. Washington, D. C., 1899. Pp. 23. Charts IV. This report summarizes, for the information of astronomers and others interested in the approaching eclipse, the results of observations made in 1897, 1898 and 1899 to determine the prevailing average cloudiness in the districts covered by the eclipse track.

FRANK H. BIGELOW: 'Some of the Results