

18 per cent. greater in thorianite than in Joachimsthal pitchblende, while in autunite, a phosphate of uranium, this ratio was about 20 per cent. less. She separated the radium chemically before estimating it.

This month appeared in the *Philosophical Magazine* (p. 345) a communication by Mr. F. Soddy and Miss Pirret on this subject. They find that, by determining the radium directly in the mineral, the ratio is practically the same for thorianite as for Joachimsthal pitchblende, but that in their specimen of autunite the ratio is only 44 per cent. of that of pitchblende. During the last three months I have been engaged on this problem also. I find that the ratio in thorianite from Java agrees within the limits of experimental error with that in specimens of pitchblende from Joachimsthal and from German East Africa, the latter of which is probably of primary formation. In my specimen of autunite, however (from Autun, in France), the ratio is only 27 per cent. of that of the pitchblendes. Thus, taking the ratio Ra to U in pitchblende as 1, in Middle Gleditsch's specimen of autunite it is only 0.80; in Mr. Soddy and Miss Pirret's it is 0.44, and in mine 0.27.

To explain these somewhat exceptional results, it must be assumed either (1) that the Ra has been washed out of the mineral in some way, or (2) that the mineral is very young, and that therefore the Ra is not yet present in equilibrium amount.

To throw light on these points, I hope to determine the ratios uranium to ionium and to actinium in different specimens, not only of autunite, but of the family of minerals $R'(UO_2) \cdot (R''O_2)_2 \cdot 8H_2O$ ($R' = Ca, Ba, Cu; R'' = P, As$), of which it is a member.

ALEX. S. RUSSELL.

Physik.-Chem. Institut der Universität, Berlin,
August 6.

Elemental Weight Accurately a Function of the Evolution of Ideal Space-symmetry Ratios.

SUFFERING from a malady of the eyes, I may be excused the two following errors in my communication published in *NATURE* of July 21:—

(1) For *hex*, or the cubic line-ratio, read throughout *oct*, or the octahedral line-ratio; and for *oct* similarly read throughout *hex*.

(2) In the table at the end, No. 6, read 1.00766 as the mean, in place of 1.00765, the product in this instance (No. 4 in the references to the general formula) deviating by 0.00001 from the experiment; in the other cases the figures are exact.

H. NEWMAN HOWARD.

Aberdovey, North Wales.

The Jamaica Earthquake.

MAY I point out that in the review of "Recent Earthquake Investigations" (*NATURE*, August 11, p. 165), the date of the Jamaica or Kingston earthquake (where the loss of life was 800, and of property about 2,010,000*l.*) is wrongly stated? It took place on January 14, 1907, and not on June 14, 1906.

D. MORRIS.

Boscombe, August 12.

CHOLERA AND ITS CONTROL.

NOTHING is more striking, even to the casual observer, than the change that has taken place in the attitude of the public, no less than of those who have charge of the public health, towards those great epidemic outbreaks that swept Europe up to the end of the eighteenth century "and after." Until the Great Fire of London in 1666—indeed, until the rise of the great school of sanitary reformers of whom Chadwick and Simon may be taken as types—panic and despair were the predominant emotions aroused in the presence of plague, cholera, and the like. With a knowledge of the results of what could be done by the adoption of efficient sanitary measures, these two paralysing influences were gradually rendered less effective, especially as the call to preventive and curative work could be made to divert men's minds from brooding and evil anticipation. Men then realised

how much could be done to ameliorate the conditions of communities attacked by these diseases, and how successful were the preventive measures adopted as regards transference not only from community to community, but from individual to individual, with the result that organisation took the place of panic and hope succeeded on despair. Still, men were working in the dark, and the mystery enshrouding the mode of spread of disease was profound until Pasteur, Koch, Lister, and their many disciples gradually evolved from the chaos of theory, fact, and fancy the germ-theory of disease, and isolated from the welter of organisms by which the patient was surrounded the one that in each case appeared to be the specific cause of the disease.

In no case is this more marked than in that of cholera, and at the present time one may see in different parts of Europe reproduced different phases of the history of the evolution of our methods of dealing with cholera epidemics at different periods. In Russia and in some parts of Italy, where fatalism and apathy prevail, and where sanitary science has not yet reared its head, cholera still arouses panic, only to be followed by the lethargy of despair. In other parts of Europe efforts—in many cases very inadequate—are made to combat the spread of the disease, whilst in northern Europe, including such places as Amsterdam and London, the announcement that cholera may invade the country, or that it has already gained a foothold, simply means a call to renewed sanitary efforts directed by intelligent experience and skill, which will prevent the disease from entering the country except as carried by isolated patients, and the treatment of patients in such fashion that there will be no further extension beyond a very limited area.

At the present juncture, when cholera may spread from Russia, Italy, Roumania, or elsewhere, the crisp instructions issued to port medical officers no less than timely account of the outbreak of cholera in Rotterdam last year about this time (see the *Times*, August 19), should give comfort and courage, both to those who have to deal with cholera in our ports, and to those who at one time would inevitably have been attacked in large numbers. Between August 20, 1909 (when cholera was found in three children in one family, who died suddenly with the clinical symptoms of cholera, the nature of the disease being at once confirmed by full bacteriological examination) and September 11, what might have expanded into a great epidemic in Rotterdam began and was crushed. The facilities for the spread of the diseases are perhaps greater in Rotterdam than in any other seaport town in the world, but by careful isolation, not only of the patient, but of "contacts," *i.e.* people who have come in contact with the patients at any time after the outbreak of the disease, in "isolation" wards, and "observation" sheds, by warning the people against the use of unfiltered water, the eating of green fruit, and excessive indulgence in the use of alcoholic liquors, the epidemic was cut short. Fines and imprisonment were awarded to those who interfered in any way with the authorities in carrying on their work, either by obstructing them or by failing to notify cases where the illness showed any symptoms of cholera. Careful observation of suspected cases, disinfection of houses, bed linen, clothing, of patients and contacts alike, were all resorted to; but, on the other hand, all who helped were well treated, receiving whatever wages they would have earned normally; indeed, we are told, they were so well treated generally that "many presented themselves as contacts in the hope of receiving food, clothing, and wages without working." It may be said that these methods were, on one hand, harassing, and, on the other,