the author enumerates gneiss, amphibolgneiss, mica-schist, talc-schist, phyllite, granite, syenite, amphibolite, serpentine, and crystalline limestone. Under the mesozoic division, he gives red sandstone, quartzite, and conglomerate, which he considers to be of Triassic age, and compact limestone and dolomite, which may be either of Triassic or Jurassic age, or both. Above these come deposits of chalk and marl of middle cretaceous age. The tertiary and quaternary deposits consist of miocene lacustrine beds with lignites, post-miocene diluvium or fluviatile gravels, and alluvium. Amongst eruptive rocks he enumerates quartz-porphyry, augite-porphyry, pyroxenic tuff and conglomerate, trachyte, trachyte-conglomerate, pumaceous tuff, &c. The only other geological paper in this number is an explanation of Sheet iv. (East Carpathia) of the Geological Survey's map of the Austro-Hungarian empire. Both numbers of the *Jahrbuch* are accompanied by the usual mineralogical communications, which contain a number of papers, amongst them one by von Johann Rumpf upon "Kaluszite," a new mineral, the chemical formula of which is given as $CaK_2(SO_4)_2 + aq.$ or in another way as $CaO, SO_3 + KO, SO_3 + aq.$ An illustrative plate accompanies the description.—Prof. Tschermak furnishes some account of the meteorites in the imperial mineralogical collection up to October 1872, giving a table that shows in a condensed form the names of the places where the meteorites were found, the hour of the day, the day of the month, and the year in which the stone fell, &c.—Special mention must also be made of a paper by Fuchs on the Island of Ischia, which is geological and historical, as well as petrological—a paper which will well repay perusal by those who are engaged in the study of igneous geology.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.*]

The Largest Amphipod.—Willemoesia (Deidamia).

In a paper which was read at the Royal Society this year, I described the anatomy of a female amphipod caught in the Atlantic, and remarkable for its large size and the absence of the second pair of antennæ. This female had a length of 84 mm., not of 14 mm., as has been stated in NATURE and in other periodicals which have reprinted my abstract from the Proc. Roy. Soc. We have since also caught males of this interesting amphipod, which were still larger, more than 3 in. long. A description of these has been added to the above-mentioned paper, so that now the anatomy of both sexes will be known. This amphipod, which, as we have discovered, lives on the surface, is, thus, by far the largest one known. Some figures representing the male and parts of the mouth, which at first could not be dissected, and therefore not well be seen, will appear in a larger paper on some of the remarkable deep-sea and other crustacea caught during the *Challenger's* cruise in the Atlantic.

This amphipod, however, which was supposed to be new, and to which I gave the name of *Thaumops pellucida*, has been already described by Guérin-Méneville under the name of *Cystosoma neptuni*. The distinguished French naturalist has described this species from a single specimen caught in the Indian Ocean. This I found out only when I got Mr. Spence Bates's catalogue of amphipods sent out to me, in which the original figure has been reproduced. The first description of this species seems, however, to be so incomplete, that some additional knowledge about its structure will be welcome, I hope, to zoologists.

The geographical distribution of certain amphipods seems to be a very wide one, for we have not only caught several specimens of Cystosoma in the Atlantic, but also a species of the genus Oxycephalus, which hitherto seems to have been found in no other but the Indian Ocean.

With regard to *Willemoesia* (*Deidamia*), Mr. Grote has been kind enough to point out in vol. viii. p. 485 of NATURE, that the name Deidamia has been used already for a genus of Sphingidæ, by Dr. Clemens, and honoured me by calling the two blind crustacea, which are so closely allied to the fossil Engonidæ, by our family name; I am very much obliged to the curator of the Buffalo Museum for this information, and will always be glad, during the time of our cruise, to receive communications of this kind. For though we have a good library on board, mistakes like these cannot always be avoided, when it is necessary to give a name to those animals which I describe, not because they are new, but because they furnish interesting additions to our knowledge of the morphology of lower animals.

R. v. WILLEMOES-SUHM

H.M.S. *Challenger*, Simons Bay, Cape of Good Hope, Nov. 24, 1873

Physiological Effects of Ozone

Long before Schönbein discovered ozone, electricians who had been in the habit of employing Franklinic or statical electricity as a therapeutic agent, had discovered that the electrical aura, as they termed it, or the current of air proceeding from an electrified point, possessed decided physiological properties, and the effect appeared to be the same whether, on the single fluid hypothesis, the electrical current or breeze passed from the point to the animal surface, or *vice versâ*. The physiological effects principally noticed were the power of this breeze to allay chronic inflammatory actions in delicate organs, such as inflamed eyes, or to relieve pain arising from a decayed tooth; but they were most remarkable in the curative effect produced on obstinate ulcers, when the electrified current or aura was daily thrown upon their surfaces for some minutes. The *rationale* of this process was not understood, and electricians were contented to accept the facts without being able to explain them.

About 45 years ago I employed Franklinic electricity as a collateral branch of my electrical pursuits pretty extensively as a therapeutic agent, and had abundant opportunities of noticing these physiological actions. In addition to these a fact gradually developed itself during the course of my electrical investigations, namely the effect which an electrified atmosphere had upon the mucous lining of the throat and bronchial tubes. It was no uncommon thing, after a day's continuous use of an electrical machine in a close room, to feel a considerable amount of irritation over the respiratory tract very similar to that experienced when recovering from an attack of influenza, and I found that I could often produce the same irritation by removing the prime conductor from the cylinder of an electrical machine and holding my face in such a position as to breathe the copious ramifications of electricity that were thrown off from it.

These effects are all now referable to the development of ozone, and the interesting experiments of Mr. Dewar and Dr. M'Kendrick, recorded in NATURE (vol. ix. p. 104) open up a field of inquiry, the extent and importance of which can scarcely be estimated. Of late years ozone has, by a kind of *post hoc propter hoc* reasoning, been designated the scavenger of the atmosphere, since raging epidemics have been suddenly checked in their course after the occurrence of a good rattling thunderstorm, and hence the old notion, not without good foundation, that lightning clears the air. So much importance has been attached to the supposed value of this antiseptic agent, that not a few, and myself amongst the number, have recommended various forms of apparatus for the development of ozone within the precincts of fever hospitals, but the experiments of Mr. Dewar and Dr. M'Kendrick seem to show that there is a limit beyond which it would not be prudent to ozonise an atmosphere destined for respiratory processes.

The further investigation of its physiological effects will therefore be looked forward to with no small interest. The examination of the subject, however, must not end with its effects upon animal physiology.

From experiments which I have made on the extraordinary electrical conditions which are suddenly induced in an atmosphere forming the extended di-electric of a thunderstorm, I can trace an intimate relation between the copious development of ozone and a corresponding effect upon delicate vegetable organisms, which may lead to the discovery of the proximate causes of blight so frequently the accompaniment of thunderstorms. Some years ago I extended a small atmospheric exploring wire between my own house and the cupola of a chapel 400 ft. off. One end of this wire was brought into my study, and connected with an electrical battery containing about 12 square feet of internal surface; a discharging apparatus, which also served the purpose