G. Henderson; a Spotted Cavy (*Cælogenys paca*), a Blue and Yellow Macaw (*Ara ararauna*) from South America, deposited; a Blue Crested Tanager (*Stephanophorus leucocephalus* ♂) from Brazil, two Cape Doves (*Œna capensis*) from South Africa three Hardwicke's Spur Fowl (*Galloperdix lunulata* ♂ ♀ ♀), two Rufous Spur Fowl (*Galloperdix spadicea*), two Rain Quails (*Coturnix coromandelica*) from India, three Blackish Sternotheres (*Sternothærus subniger*) from West Africa, purchased; a Heloderm (*Heloderma suspectum*) from Mexico, received in exchange; a Burrhel Wild Sheep (*Ovis burrhel* ♂), a Red Deer (*Cervus elaphus*), six Upland Geese (*Bernicla magellanica*), five Long-fronted Gerbilles (*Gerbillus longifrons*), bred in the Gardens.

## OUR ASTRONOMICAL COLUMN

MINIMA OF ALGOL.—In the calculation of the following Greenwich times of geocentric *minima* of Algol, the later observations of Schmidt have been brought to bear:—

| | | h. | m. | | | h. | m. |
|---|---|---|---|---|---|---|---|
| August | 12 ... | 14 | 35 | September | 24 .. | 14 | 43 |
| | 15 ... | 11 | 23 | | 27 ... | 11 | 31 |
| | 18 ... | 8 | 12 | | 30 ... | 8 | 20 |
| September | 1 ... | 16 | 14 | October | 14 ... | 16 | 23 |
| | 4 ... | 13 | 3 | | 17 ... | 13 | 12 |
| | 7 ... | 9 | 51 | | 20 ... | 10 | 0 |
| | 12 ... | 17 | 54 | | 23 .. | 6 | 49 |

It is much to be desired that the observation of this star should be taken up in a systematic manner by one or more observers. We have been indebted to the late indefatigable astronomer at Athens for nearly all the published determinations of *minima* during the last ten years.

THE COMET 1858 III.—Herr Spitaler, of the Observatory at Vienna, who has been searching for some time past for this comet with the 27-inch refractor along the track defined by the calculations of M. Schulhof, remarked on May 26 three small, faint, uncatalogued nebulæ, of which, owing to rapidly-advancing clouds, he was only able to secure the following approximate places:—

| | h. | m. | s. | | | ° | ′ |
|---|---|---|---|---|---|---|---|
| 1. Right Ascension ... | 17 | 40 | 50 | ... Declination ... | + | 35 | 33 |
| 2. ,, | 17 | 42 | 0 | ... ,, ... | + | 35 | 33 |
| 3. ,, | 17 | 42 | 10 | .. ,, ... | + | 35 | 33 |

A period of almost unexampled bad weather followed, and it was not till June 17 that observations could be repeated: the first of the three nebulæ was then missing, and its disappearance from the position where it had been observed on May 26 was confirmed with the same instrument on the night of June 20. Its place is close upon that given in M. Schulhof's ephemeris if the comet's mean anomaly is assumed to have been 8° 33′ at midnight on May 26.

It is not clear from what elements the positions assigned in the sweeping-ephemeris have been derived. In M. Schulhof's most probable orbit the period of revolution is 6·61 years. If we assume four revolutions to have taken place between 1858 and 1884, we find a period of 6·478 years, and reducing by the factors for $d\mu$ in *Astron. Nach.* No. 2592, in the most probable ellipse, and bringing up the longitudes to May 26, 1884, we have the following constants for the comet's equatorial co-ordinates:—

$$x = r \,.\, [9{\cdot}99985] \,.\, \sin\,(v + 291^\circ\ 27'{\cdot}5)$$
$$y = r \,.\, [9{\cdot}99890] \,.\, \sin\,(v + 201^\circ\ 33'{\cdot}8)$$
$$z = r \,.\, [8{\cdot}87720] \,.\, \sin\,(v + 181^\circ\ 14'{\cdot}6)$$

If the true anomaly, May 26·5 G.M.T., be assumed to be 49° 36′·6, we find that the calculated right ascension agrees with that observed, but the calculated declination is 3° 34′ too small. And M. Schulhof's definitive orbit for 1858 shows a similar discordance in declination, when the computed and observed right ascensions are made to agree. A comparison (made as a check) with the observed longitude and latitude leads to the same inference. It will be of interest to learn upon what elements M. Schulhof has founded his predictions.

If the comet's mean period between 1858 and 1884 were about 6·478 years, it might have approached the planet Jupiter in the middle of September 1880, within 0·97 of the earth's mean distance from the sun, a sufficiently near approach to cause a sensible, though not very important effect upon the elements defining the position of the plane of the orbit.

The intervention of unfavourable weather at Vienna after May 26 was particularly unfortunate, as the comet in the observed position would be receding from both earth and sun, and consequently the intensity of light would be rapidly diminishing, thus rendering a further observation after June 17 almost hopeless. It will remain for M. Schulhof to decide whether the object observed and missed at Vienna was really the comet the return of which he had led astronomers to expect, or another body. Possibly the discordance noticed above may be explained by error in the orbit as printed.

## THE PHYSIOLOGICAL BEARING OF ELECTRICITY ON HEALTH[1]

THE reader of the paper commenced by stating that electricity as at present used is at once a source of danger, a possible cause of sickness, and a remedy.

In all these cases it has been insufficiently studied, and continues to be ill understood. This condition of affairs is probably due to the fact that from the great subdivision of modern science, a competent knowledge of physics as well as of physiology is rarely acquired by the same person, whereas, for accurate work it is essential that so powerful an agent should be measured by accepted units. What little has been done by the physiologists is marred by considerable errors as to the force actually in use. Indeed much of it requires total revision in the light of modern discoveries.

1. Dangers to sight were very briefly considered. It was noted that the incandescent and the arc light subjected the eyes to two totally different risks, the former from heat rays at the less refrangible, and the latter from actinic and chemical action at the more refrangible, end of the spectrum. To obtain a sufficient protection in both cases, a pair of eye-protectors, made for the speaker by Mr. Baker of High Holborn, was shown, in which the front glass was blue, and the side "blinker" deep red. The former could be used alone for incandescent lamps, to remove glare, and lessen irritation; while the side glass could be turned down over the blue when powerful arc lights had to be gazed at. If the two tints were well selected and combined by means of the spectroscope, a very handy and simple appliance was obtained, clearly conducive to health. 2. Dangers to life and health were more minutely adverted to. Causes of death may be:—(1) By catalytic action; (2) by thrombosis of the larger vessels; (3) by shock and syncope, due to action on the cardiac nervous system. It was admitted that, considering the enormously increased power of our modern sources of electricity, accidents had been singularly few; and indeed it was abundantly proved that a large steady current, even of considerable magnitude, was comparatively harmless to the human economy. Rapid fluctuations, especially at the starting or breaking of the circuit, were much more dangerous; and still more so if by accident, or by the impregnation of the skin with conducting saline solutions, the resistance of the body was reduced to a minimum. In reviewing the recorded accidents, at the Birmingham Music Hall, in Paris, at Hatfield, and on board the Russian yacht, it was obvious that they were not all to be classified under the third heading given; inasmuch as life in some cases had been prolonged for three-quarters of an hour after the accident. Probably thrombosis in some form would account for them; but more precise information was much needed. Dr. Stone then proceeded to consider certain remedial and physiological points. 1. Several common errors were corrected, especially that of imperfect contact. 2. Any approximate determination of the electrical resistance of the human body to low and high tension currents respectively was described. 3. Use of the telephone and meter-bridge for measuring this resistance demonstrated; and 4. Measurements of E.M.F. of high tension alternating currents by dynanometer and quadrant electrometer were given. Much of this had already appeared in the pages of NATURE on June 14 and September 13, 1883, and on April 3 of the present year. The great need for an electrical testing establishment open to observers at large, like that at Kew, was insisted on, and might well be undertaken by the Society. Lastly, a few suggestions were thrown out as to the therapeutical uses to which electricity, administered, not as now, haphazard, but quantitatively and scientifically, might be put. These were classified as (1) muscular, (2) sensory, (3) neurotic, (4) eliminative, (5) vaso-motorial.

[1] Abstract of a paper by W. H. Stone, M.A., M.B. Oxon, F.R.C.P., Member, at the Conference of the Society of Telegraph Engineers at the Health Exhibition, July 4.