

like animals of a higher order, become a cannibal under these circumstances.

W. CLEMENT LEY

Lutterworth, August 22

I HAVE twice within the last few days noticed the same thing that your correspondent writes about, viz. wasps devouring flies. In the first instance the fly was found held fast by the feet of a wasp which I had killed; the fly was dead, but I think intact. In the second instance the body of the fly was reduced to a shapeless mass, and about half had been devoured, no doubt by the wasp. I had previously observed a wasp apparently attacking a butterfly (small white), possibly for the same purpose; it was, however, unsuccessful. I do not know whether it is unusual for wasps to do this, but I have certainly never observed it before.

H. N. DIXON

Northampton

THE question of your correspondent "F. N." in your last number (p. 385), inquiring whether the incident observed by him is an unusual occurrence or not, is one that has been so frequently asked that it is somewhat curious that the fact has not become recognised generally as constituting a regular habit of the insect. Four years ago several letters upon this subject were communicated to NATURE (*vide* vol. xxi. pp. 417, 494, 538, 563, and vol. xxii. p. 31), and many other notices of the practice might be quoted. Darwin related having observed a wasp seize and carry off a fly too large for convenient transport, which returned to the ground to cut off the wings to lighten its weight, and then flew away with it. During the hot months, butchers' shops, as I have frequently noticed, are much resorted to by wasps as a hunting-ground, and although they are also fond of the juice of dead meat, they are encouraged rather than destroyed, in consequence of the benefit they confer by their habit of preying upon "blow-flies," as I have more than once been told by the shopkeepers themselves.

WILLIAM WHITE

Highbury Hill, N., August 23

WITH reference to the account of the wasp and fly in NATURE by "F. N.," though not exactly an answer to the query put, still the following may be of some interest to him and others of your readers:—

I was sitting one day in an arbour in the grounds of Duff House, when a wasp and a bluebottle-fly fell at my feet. Here a scuffle (it could scarcely be called a fight) ensued, which lasted a few seconds. I think the wasp used its sting as well as its mandibles. The fly dead, the wasp then tried to lift it. This was frequently repeated, but without avail. The wasp then went round and round and over the fly several times. Then another trial. But no; it seemed to me that the fly was too heavy or too bulky. The wasp now began to nibble at the body of its prostrate victim, and at last severed it in two. It then seized one portion, and after making the attempt twice, succeeded, rose, and disappeared. In a little while, however, I was rather surprised to see the wasp return; at least one similar came, and having whizzed round about my head, looked at me, went and hovered for an instant or so above the spot where the other half of the fly lay, then alighted, and bore it off in triumph. I do not think that the wasp intended to eat the fly, but rather meant it as food for the larvæ at home.

THOMAS EDWARD

Banff, Scotland

SEEING the communication of "F. N." on a "Carnivorous Wasp" in last week's NATURE brings to my recollection a similar observation of my own about a fortnight ago. My attention was drawn to an immense number of wasps and flies feeding together, apparently in perfect amity, at the bottom of a recently emptied sugar hogshead that was lying on its side in the sun. The amity, I may say, was not altogether perfect, as when a wasp approached a fly the latter speedily gave way. Suddenly a wasp, which was flying about in the interior of the tub, darted on an unsuspecting fly which was peacefully regaling itself with sweets, and carried it off. I managed to trace its flight to a neighbouring wall, where I saw the wasp apparently busily engaged in devouring the fly. On approaching more closely, in order to find out if I could what these unamiable proceedings were, I disturbed the wasp, which flew away with the fly still in its grasp, and this time I was unable to follow it. My impres-

sion at the time was, I remember, that the wasp wished to rob the fly of its sugar. This was the only case I noticed.

Leicester, August 25

E. F. BATES

[We have received numerous letters of the same purport as the above. The subject was discussed in NATURE, vols. xxi. and xxii., as referred to by Mr. White above.—ED.]

### Fireballs

WHILST speaking of the electric discharge to the Rev. Canon Thomas, of Meifod, a few days ago, he told me that he was some years ago overtaken by a most violent storm of thunder and lightning whilst crossing on horseback a Merionethshire mountain. During this storm Mr. Thomas saw (what appeared to him to be) three balls of fire successively hurled to the ground near him from the clouds.

About a fortnight ago a sudden and violent thunderstorm broke over North-East London, when at least one building was struck. The window of my room was wide open at the top. During one of the peals of thunder a zigzag line of lightning was distinctly seen by me (and another person) to come into the room by the open window and form an irregular line of fire along the cornice of the room. In the middle of the zigzag there seemed to be a momentary stoppage, with a star-like expansion of the line. There was no reflection or optical illusion, and no damage was done.

W. G. SMITH

### A Cannibal Snake

I SEND the following brief history of a snake's meal off another about his equal in bulk.

Some years since I was amused at the conduct of a small triangular-headed snake about ten inches long that I encountered in a road, who coiled himself and struck at me as if to dispute my progress. He was a pretty little fellow, gray spotted, and I picked him up, and carrying him home, deposited him in a small fish globe with sand and stones in the bottom. Here he lived contentedly for several months without eating anything, although frequently tempted with various insects and other food. After three months or so, my neighbour's children brought in a small black snake, shorter, but rather larger in diameter than my pet, and we decided to place the two together. Scarcely had the new-comer touched the sand than my pet glided rapidly around the sides of the globe, and struck him with his fangs just behind the head. The black snake dropped apparently lifeless, the other retained his hold with his jaws, and winding his tail closely about midway up the body, stretched himself out and his prey at the same time, till he seemed to dislocate his vertebra. We could hear the black snake crack. An hour or so later I found that he had begun to swallow him, having already got the head fairly inside his jaws. I called my family and neighbours, and we watched the process for several hours. He coiled the lower part of his body around his prey at the distance of an inch or two from his jaws, so tightly that it seemed almost to cut it in two, and then appeared to curl himself together and force the portion between the coil and his jaw down his throat. When that portion was ingested, he took a fresh hold lower down and repeated the action. The black snake disappeared quite rapidly, until the amount swallowed distended and stiffened the other, so that he could not hold it with a coil. After this the process was slow and tedious, apparently being mainly carried on by alternate retractions of the jaws, and it took nearly half an hour to dispose of the last inch, which was of course very small. Finally he succeeded, and lay stretched out, a singular-looking specimen, his outline distorted by the convolutions of the reptile he had swallowed, which could plainly be traced through his distended skin. He lay quiet for several days, and apparently digested the greater portion of it. I never fed him again, and finally turned him loose, his parting salute being a vicious attack upon my boot.

C. F. CREHORE

Newton, Massachusetts, August 12

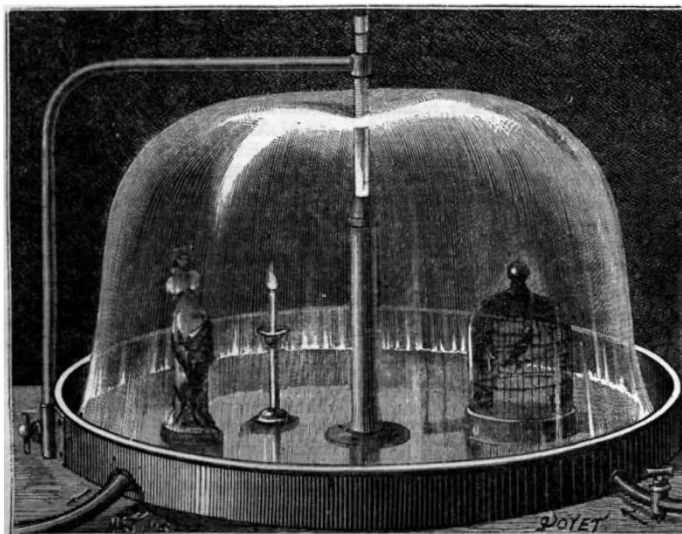
### WATER BELLS

THE accompanying design (from *La Nature*) represents a water bell, the invention of M. Bourdon, of more transparent and complete effect than those hitherto produced, which have all either made the water issue by a very diminutive annular orifice, or shot the liquid jet

against a disk of polished metal with slightly elliptic rim, producing in either case a bell fringed all round its circumference and lacking transparency.

The bell to which we here call attention is distinguished by the way in which it causes the liquid vein to expand as soon as it reaches the orifice of the ajutage. Instead of making it strike against a metal plate, the surface of which, however carefully polished, always betrays some imperfection, M. E. Bourdon brings an antagonistic column of water to bear on it, so that the jet expands and falls into the basin, forming a bell as clear as crystal and impervious enough to cut off all communication between the interior and circumambient air.

The pipe conducting the water from the reservoir ends in a truncated form of nozzle, of about 12 degrees of angular opening, in such a way as to make all the threads of water converge towards the middle of the jet. Over this is placed concentrically to the truncated nozzle a glass tube of about 20 cm. in length, and of the same interior diameter as that of the orifice by which the water rises from the reservoir. This antagonistic tube, as it may be called, has to be supported by a copper rod fixed either against a wall or on the margin of the basin, at a distance of 2 cm. between its lower extremity and the truncated appendage. The reservoir must be kept at a constant level by means of a water-gauge cock. The



water-height above the jet will be about 60 cm. The flow of the water or its stoppage will of course be regulated by a cock.

The apparatus so arranged and the basin filled with water to the level of the overflow, the cock will be gently opened, and the water traversing the interval between the ajutage and the antagonistic tube will rise a few centimetres high in the latter. A ball of ovoidal shape will then come to view. By opening the cock very slowly its diameter will gradually enlarge till the bell assumes the form of a hemisphere. At this point let the opening of the cock be reduced a very little, and the bell will change its shape; its rim will become lowered to the

plane of the water of the basin, and its profile will show a bell similar to the gardener's bell glass.

By placing a very thin copper wire vertically towards the top of the bell, a vertical incision may be made in the bell, parting it into two separate sides. Through the gap thus formed, a statuette, a lighted candle, or a cage containing a bird, may be introduced inside the bell without wetting it. The tubes hitherto used have not exceeded 20 mm. in diameter; but by employing apparatus of much larger dimensions, water bells of from 3 to 4 metres in diameter might be produced just as perfect as those of from 60 to 80 centimetres, and under which people might walk about or lounge at pleasure.

SCIENCE AND THE SANDHURST EXAMINATIONS

WE have now before us the revised regulations for the examinations of candidates for admission to the Royal Military College, Sandhurst. Up to and including the summer examination of 1885 the present scheme is to remain in force. Under it Mathematics, English History, and Latin receive 3000 marks each; Greek, French, German, Experimental Science, General and Physical Geography and Geology count 2000 marks each. Candidates are left free to select any four of these subjects. They may also take up drawing, for which 1500 marks are given. After the summer of 1885 the subjects are to be grouped and marked as follows:—

	Marks
CLASS I.—1. Mathematics ... ..	3000
2. Latin ... ..	3000
3. French ... ..	3000
4. German ... ..	3000

CLASS II.—1. Greek ... ..	2000
2. Higher Mathematics ... ..	2000
3. English History ... ..	2000
4. Experimental Sciences ... ..	2000
5. Physical Geography and Geology	2000
CLASS III.—1. English Composition ... ..	500
2. Drawing, Frechand ... ..	500
3. „ Geometrical ... ..	500

Of these subjects candidates *must* take up three from Class I., and may take up either the remaining subject in Class I. or any one subject in Class II., and may also take up all the subjects in Class III.

These figures speak for themselves. Science is now placed on an equal footing with Greek and Higher Mathematics, &c., and its position is therefore somewhat improved as compared with that assigned to it in the proposals of a few months since. In the main, however, the revised scheme cannot be satisfactory to any one who has the interests of education at heart.