

tricks of balancing, and of jugglers who do the "butterfly trick," which has lately been so popular among ourselves, elicit great applause. So popular also are ballet performances, that even the priests, in some of the great temples, engage in sacred dances to add to the "legitimate" attractions of the places of worship. Fencing is a favourite amusement, and is taught to women.

The public baths where men and women conduct their ablutions in the sight of all the world, and the tea-houses, at which women wait on the guests, are two features of Japanese life which are very strange to European eyes.

The town of Yeddo has a very striking physiognomy, so to speak. To the south are the suburbs on the shores of the bay; in the centre the citadel and the dwellings of the nobility; to the south-east, the trading town; to the east, the quays and bridges of the great river, and on the left bank the industrial city of Hondjo; to the north lie the temples, the fields where fairs are held, the theatres and public places of amusement. The western quarters are occupied by the general city population; and the suburbs of the north and west are full of verdure and flowers.

Yeddo has been calculated to have 1,800,000 inhabitants, although as an important city it only dates from the beginning of the 17th century. It is the northern termination of the great military road, the Tokaido, which traverses the empire from Nagasaki to Yeddo, near to which are built towns, villages, and many houses of the nobility, and along which the Daimois pass when proceeding to their compulsory residence in Yeddo. The modes of travel in use are either horseback, or palanquins carried by men. These latter are of two kinds; the norimon, closed on all sides, and in use among the upper classes, and the cango, light in construction, open at the sides, and used by the common people. As the Daimois pass along with their two-sworded retinue, all passengers give way to them, those that are on horseback dismount, and all stand bending low till the great man has gone on his way. The refusal of foreigners to submit to this fashion has led to the murder of more than one.

Yeddo is a busy town. Cotton and silk manufactures of a delicate kind, the making of porcelain, dyeing, tanning, the working in metals, the carving of stone, wood, and ivory, the manufactures of paper and of leather are all carried on in the town. (An illustration of the delicate silk embroidery which is made by the Japanese is given in the accompanying woodcuts, which represent silken dress ornaments.) In the suburbs, especially of the northern part, the gardens of the florists, the rural tea-houses, and the rice-fields are found. Minor industries—those of the makers of chop-sticks, of toothpowder, of dolls, of makers of mats, basket-work, and boxes, down to that of the humble rag picker—are to be found exercised in the small shops, or in the streets of Yeddo. The streets are full of life. The trades are carried on by the artisans, the jugglers and acrobats exercise their skill, men, women, and children pass along, bent on amusement or pleasure; here an enormous artificial fish, or a flag displayed at a house, announces the birth of a child; there a wedding procession takes its way; a Daimio passes, and all bow to the ground; an alarm of fire from one of the many watchtowers of the city calls out the firemen; the watch goes on its rounds; beggars exercise their arts as a kind of sacred trade—in a word, all the complicated machinery of a busy town life is to be seen in active operation, in what was the great capital of the Tycoon.

A jealous exclusion of foreigners prevailed in Japan for more than two centuries and a half; the only favoured people being the Dutch, who were permitted to build a small factory at Decima, and to send thither annually two trading vessels. The arrival of foreigners and their trade were regarded by the Tycoon and the nobles with dislike, chiefly because of the possibility that the introduction of new ideas might upset the old order of things; and the residence of foreign Ministers in Yeddo was rendered so uncomfortable, and

even dangerous, that the legations settled in Yokohama as their permanent place of residence.

Recent events have effected a great change in the government of Japan. The Mikado, the theocratic emperor, has abolished the office of Tycoon. He has left his sacred city, and established himself, temporarily at least, in Yeddo, where the legations are in greater security than before. The export of tea and silk, already great, is increasing: and it is possible that Japan, so long isolated, may in time resume her relations with the outer world, and become, as her early records show her to have been, a busily trading, progressive nation.

It will be seen from the foregoing notice that M. Humbert's volumes contain an immense mass of valuable information as well as exquisite illustrations and lighter matter.

J. A. CHESSAR

FOOD OF OCEANIC ANIMALS

THE receipt of an interesting paper by Professor Dickie, entitled "Notes on range in depth of marine Algæ," lately published by the Botanical Society of Edinburgh, induces me to call the attention of physiologists to the fact, that plant-life appears to be absent in the ocean, with the exception of a comparatively narrow fringe (known as the littoral and laminarian zones), which girds the coasts, and of the "Sargasso" tract in the Gulf of Mexico.

During the recent exploration in H.M.S. *Porcupine* of part of the North Atlantic, I could not detect the slightest trace of any vegetable organism at a greater depth than fifteen fathoms. Animal organisms of all kinds and sizes, living and dead, were everywhere abundant, from the surface to the bottom; and it might at first be supposed that such constituted the only food of the oceanic animals which were observed, some of them being zoophagons, others sarcophagons, none phytophagons. But inasmuch as all animals are said to exhale carbonic acid gas, and on their death the same gas is given out by their decomposition, whence do oceanic animals get that supply of carbon which terrestrial and littoral or shallow-water animals derive, directly or indirectly, from plants? Can any class of marine animals assimilate the carbon contained in the sea, as plants assimilate the carbon contained in the air?

Not being a physiologist, I will not presume to offer an opinion; but the suggestions or questions which I have ventured to submit may perhaps be worth consideration. At all events the usual theory, that all animals ultimately depend for their nourishment on vegetable life, seems not to be applicable to the main ocean, and consequently not to one-half of the earth's surface.

J. GWYN JEFFREYS

GOLD DIGGERS IN THIBET

THE Thibetan gold-field of Thok-Jalung in lat. 32° 24' 26" and long. 81° 37' 38" was visited by the pundits employed by the G. T. Survey, in 1867 (August). The camp was pitched in a large desolate plain of a reddish brown appearance, the tents stand in pits seven or eight feet deep for protection against the cold wind, the elevation being 16,330 feet, yet the diggers prefer to work in the winter, when nearly 600 tents are to be found there; the soil when frozen does not "cave in." They have no wood, but use dried dung for fuel, and the water is so brackish as to be undrinkable until frozen and remelted. They live well, taking three meals a-day of boiled meat, barley cakes, and tea stewed with butter. They will not use the Himalayan tea, as too heating and only fit for poor folks.

The gold is obtained from an excavation a mile long, twenty-five feet deep, and ten to two hundred paces wide, through which a small stream runs; the implements used are a long-handled kind of spade, and an iron hoe.

The water is dammed up, and a sloping channel left; at the bottom a cloth is spread, kept down by stones so as to make the bottom uneven; one man sprinkles the auriferous earth over the channel, and another flushes the channel by means of a leather bag, the pieces of gold fall into the inequalities and are easily collected in the cloth by lifting up the stones. The yield is large, nuggets of two pounds weight are found; the gold sells on the spot at rather less than thirty rupees per ounce. A gold commissioner or "sarpon" superintends all the goldfields, a string of which extends along the northern watershed of the Brahmaputra, from Lhasa to Rudok. Each field has a chief or master, but anyone may dig who pays the annual licence-fee of one sarapoo or two-fifths of an ounce.

The curious posture for sleeping, universal among the Thibetans, was observed here. They invariably draw their knees close up to their heads, and rest on their knees and elbows, huddling every scrap of clothing they can muster on their backs; the richer rest thus on a mattress rising towards the head. The poorer avail themselves of a suitable slope on the hill side, or pile stones and earth to a convenient height. This position is most probably adopted in order to secure as much warmth as possible for the abdomen, the thighs pressing against it and excluding the air.

The gold-diggers recreate themselves with tobacco smoked in iron pipes, and, notwithstanding the hardships of their laborious toil, seem very merry, singing songs in chorus, in which the women and children join.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his Correspondents.]

Lectures to Ladies

YOUR correspondent "M." in her letter, which appeared in NATURE No. IV., on the subject of the exclusion of teachers from the lectures to ladies at South Kensington and University College, is scarcely just in her remark that "at University College they don't pretend to care for such an audience." The committee of the Educational Association certainly do not pretend to care for governesses, but give a more substantial proof of their care by admitting them on reduced terms.

All honour to "M." for advocating the claims of governesses; but has she not, in her desire for improving their mental faculties, omitted to take an account of their physical powers? To the question, therefore, which she has propounded—"How can any one who is hard at work all day go to a lecture in the forenoon?"—I am tempted to reply, in the American fashion, by asking another: "How can any one who is hard at work all day go to a lecture in the evening?" There is also the minor consideration that the hire of a lecture-room (the majority of our classes being held in a hired room) for the evening is nearly twice that of a room for the morning, so that it would be a somewhat hazardous experiment to institute evening classes on the chance of ladies who are engaged in teaching all day attending in sufficient numbers to pay the rent.

In conclusion, I hope that if "M." can spare a few minutes of her valuable time some forenoon, she will look in at one of our lectures; and if she sees, or rather hears, anyone answering the description of "Lady Barbara, who sneers aloud," I will use my utmost endeavours to get up an evening class for "M." even though she should be the only pupil.

THE HON. SEC. OF THE LADIES' EDUCATIONAL ASSOCIATION, LONDON

Chrysophanus Dispar

YOU ask for information about *Chrysophanus Dispar*. The statement that it has been met with in Kerry is not in itself improbable, and entomologists will be interested in having it confirmed; but when we find it said in the same paragraph that the insect is not uncommon in England, it will be received with doubt. *C. Dispar* has hitherto been found in only one locality in these islands, the neighbourhood of the fens formerly surrounding Whittlesea Mere. Other localities appear in works on entomology, but have never been authenticated.

Owing partly to the drainage of the fens, and partly to the indefatigable efforts of dealers and other collectors, the insect has been quite extinct, I believe, for nearly twenty years.

Of late years the subdivision of species in entomology as well as in other departments of Natural History has been somewhat checked. What formerly appeared as those distinct species of *Polyommatus*, in our books of British Butterflies, under the names of *Agestis*, *Artaxerxes*, and *Salmacis*, are now all referred to the first-named species. *Agestis* is absent where *Salmacis* is found, and both where *Artaxerxes* is found, and the variety is referred to the difference of latitude. In the same way entomologists no longer recognise any specific distinction between *C. Dispar* and *C. Hippothoe*, widely-spread continental species. I possess a fine series of *C. Dispar* reared from larvae taken in the year 1846. The spot in which they were found is close to the Holme station, 69 miles from London on the Great Northern Railway. They fed exclusively on the common water dock (*Rumex Palustris*). It is a curious illustration of the obscure causes which regulate the geographical range of species, that though the plant is abundant in the whole range of fen country, and generally throughout England, the butterfly was always confined to that immediate neighbourhood.

C. Virgauræa was introduced into catalogues of British Lepidoptera on the authority of dealers, but its claims to be a British species were never authenticated.

Eton, Windsor.

C. W. D.

The Brighton Aquarium

WOULD it be unduly troubling you were I to ask you to inform me, through the medium of the columns of NATURE, if the much-talked-of Brighton Aquarium is really to be "started"?

H. H. MOTT

The Cloaca Maxima

WILL you pardon me for asking a question which probably I ought to be able to answer myself? Mr. Corfield, in his interesting comparison of the hygienic performances of the ancients and ourselves, mentions the well-known Cloaca Maxima as one of the great glories of the Romans. Can he tell us how they got the sewage into it? I presume the invention of Bramah was not known in those times, and I was a little disappointed in not finding in his able paper a solution of a mystery which has puzzled me since my childhood. What did the Romans want with a Cloaca Maxima, and how did they use it?

Dec. 11th.

IGNORAMUS

Lightning in a Clear Sky

THE following extract from the "Life of Charlemagne," by Eginhard, a contemporary, may be interesting to C. W. D. "Cum Carolus imperator ultimam in Saxoniam expeditionem contra Godefridum, regem Danorum, ageret, quadam die, cum, ante exortum solis, castris egressus, iter agere cõpisset, vidit repente delapsam cœlitus cum ingenti lumine facem a dextra in sinistram per serenum aera transcurrere; cunctisque hoc signum, quod portenderet, admirantibus, subito equus quem sedebat, capite deorsum merso, decidit, eumque tam graviter ad terram clisit, ut fibula sagi rupta balteoque gladii dissipato, a festinantibus qui aderant ministris exarmatus non sine adminiculo levaretur. Jaculum etiam quod tunc forte manu tenebat, ita elapsum est ut viginti vel eo amplius pedum spatio longe jaceret."

J. M. W.

NOTES

It is stated that the Council of the British Association for the Advancement of Science have determined to ask the permission of the Lord President of the Council to appear before him as a Deputation, to urge upon the Government the need of a Royal Commission to inquire into the Present State of Science in England. We may congratulate ourselves that in Lord De Grey we have a Minister whose well-known large and scientific sympathies ensure a careful consideration of the important proposition to be laid before him.

MOST of our readers know ere this that the Government has determined not to fill up the appointment of the Mastership of the Mint vacant by the death of the lamented Graham. The duties are to be performed by Mr. Freemantle, who deserves all