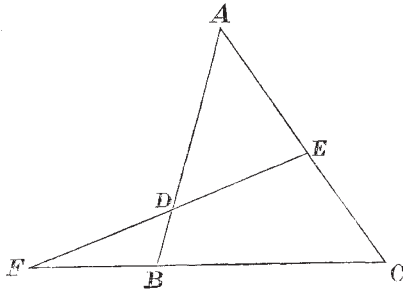


In Hutton's "Mathematical and Philosophical Dictionary" (1796) we find:—

"ANTIPARALLELS, in geometry, are those lines which make equal angles with two other lines but contrary ways; that is, calling the former pair the 1st and 2nd lines, and the latter pair the 3rd and 4th lines, if the angle made by the 1st and 3rd lines be equal to the angle made by the 2nd and 4th, and, contrariwise, the angle made by the 1st and 4th equal to the angle made by the 2nd and 3rd; then each pair of lines are antiparallels with respect to each other, viz. the 1st and 2nd, and the 3rd and 4th.



"So if AB and AC be any two lines, and FC, FE two others cutting them so that the angle B is equal to the angle E and the angle C is equal to the angle D; then BC and DE are antiparallels with respect to AB, AC; also these latter are antiparallels with respect to the two former."

It is curious also to note an error as regards the ratios of the segments of the sides, similar to but not identical with the one pointed out by the contributor to the *Miscellanea Mathematica* as occurring in "Clark's Dictionary"; for the next paragraph states:—

"It is a property of these lines that each pair cuts the other into proportionate segments, taking them alternately;

$$\begin{aligned} \text{viz. } AB : AC &:: AE : AD :: DB : EC \\ \text{and } FE : FC &:: FB : FD :: DE : BC. \end{aligned}$$

Here the third ratio in each line is wrongly stated to be equal to the two which precede it; for keeping the triangle ABC and therefore also the direction of FE fixed, it is clear that the ratios $AB : AC$, $AE : AD$ remain fixed, while $DB : EC$ may range from zero to infinity. E. M. LANGLEY.

The Force of "Example" in Animals.

SOME years ago we had two cats—a tabby, and a powerful tom perfectly white all over. One day I happened to be in the attic, and noticed them go out on the slates, when Tom jumped across the yard to the next roof. It appeared to me a splendid leap, considering the width of the yard and the height of the roof. When Tabby came to the edge of the slates her courage failed, and she uttered a cry of distress, whereupon Tom turned round and leaped back, and giving a cheerful mew as much as to say, "Look how easily it can be done," jumped across again, this time followed by Tabby, to my great delight. ϕ .

"Astrarchia stephanix."

IN the interesting "Geographical Notes" from New Guinea, published in NATURE of September 5 (p. 449), it is stated that Sir William MacGregor procured, among others, "a female *Astrarchia stephanix*, the only male bird of that species being in the Museum, Berlin." Will you permit me to rectify this in communicating to you that the only male *Astrarchia stephanix* is in the Zoological Museum of Dresden. The bird was described and figured by Dr. Finsch and myself in the year 1885, and the name is correctly written as I have just given it. Dresden, September 8. A. B. MEYER.

THE RECENT GREAT EARTHQUAKES IN JAPAN.

FULL details have now been received of the recent earthquakes in Japan. According to the report of the Governor of the Kumamoto district, in the Island of

Kiushiu, the centre of the earthquake was a mountain situated to the west of Kumamoto, the chief town in the province of Higo. Knipo is one of a chain of volcanoes connected with Mount Aso, one of the most noted volcanoes in the country, which was visited and described a few years ago by Prof. Milne, who regards it as one of the two or three largest volcanoes in the world. No eruption, however, has ever as yet taken place there, but fears are now entertained of a terrible eruption; rumblings have been heard, and the mountain has discharged lava in several places. Aso Yama, or Mount Aso, has for many years been known as the only active volcano on the Island of Kiushiu. This mountain rises to a height of nearly 5000 feet. Its last eruption was in 1874, when a large quantity of grayish-white pumice ashes was discharged. It would seem, however, that more or less constant discharges have taken place at intervals ever since the premonitory signs. On the morning of July 28, the day of the destructive shock, the weather was agreeably cool, but at twilight the sky was clothed with a dark cloud tinged with a pale reddish colour, and the atmosphere became quite close. About ten minutes past eleven p.m. a noise as of thunder was heard. Simultaneously a strong earthquake movement commenced. As the nature of the shock was unusual, some of the inhabitants dressed, whilst others with scarcely any clothing, rushed from their houses, a number of them only to be crushed to death by falling walls and trees. The Castle of Kumamoto, which was the scene of the memorable siege by General Saigo at the time of the Kagoshima rebellion, and is noted for the solidity of its structure, was damaged in several parts. In the streets fissures appeared in several places, some of the cracks measuring six feet in width. In other parts of the town subsidences occurred; in some instances water was seen spouting from the fissures created by the seismicological disturbance. There were several incipient fires caused by the overturning of lamps, but they were speedily extinguished, and much additional loss of property was thus avoided. Houses were overturned and the occupants killed. The first shock was soon followed by several smaller and two severe ones. With the break of day the dull cloud moved off, to leave the sky covered with yellowish little patches. The most severe shock was the first one, when even unusually strong houses were almost displaced from their foundations. Old houses and those not very strongly built were brought to the ground with sufficient force to kill, and in other cases injure numbers of persons. The losses sustained by chemists and china-ware merchants were large, owing to the breakage among their brittle stock. All wells in Kumamoto have either been rendered so foul with mud as to make them useless, or are dry by reason of the escape of water. The city is being temporarily forsaken by those who can afford to remove their families. In the town of Kumamoto the list of casualties is three persons crushed to death and six wounded. Twenty-two houses were thrown down and sixteen partially wrecked. In the neighbouring district of Akita, however, the force of the shock seems to have been felt more severely. Fifteen lives were lost, thirteen persons were injured, and thirty-two dwellings were overthrown, while many farmhouses were more or less damaged. In Sage, also a district of Kiushiu, there were underground sounds as of many cannons; then ensued prolonged vibrations from south to north-west, dwellings leaning over at inclinations varying from 70° to 80° , accompanied by loud crackling of posts and walls. The ground quivered so that pedestrians stumbled and fell. This shock continued for about four minutes. During the night there were two other disturbances, the last being the most severe. The greatest disorder and fright prevailed, and a night of terror was passed in the open air by the unclad population. In the districts of Sakanami and Kami-Tunaki the ground for a space of 9 acres began to

crack on July 28, and the phenomenon continued until the whole surface was covered with a network of fissures. According to the latest accounts, fifty-three distinct shocks had been felt, only two or three of them being severe. Within twelve hours on August 3, thirty-five earthquakes were experienced at Kumamoto, one of which caused the ground to open in no fewer than twelve places.

THE UNITED STATES ECLIPSE EXPEDITION.

THE Navy Department in Washington is now fitting out an Expedition to Angola, on the west coast of Africa, to observe the total eclipse of the sun which will be visible there on the afternoon of December 22 next. Prof. Todd, of Amherst College, has been appointed chief of the party, a position similar to that which he held two years ago in conducting the Eclipse Expedition to Japan.

The party, which will be a large one, will leave New York about October 1, in a Government cruiser. The natural history department of the Expedition will be under the charge of Dr. Wm. J. Holland, of Pittsburg, who will make large collections and extensive investigations, especially in entomology, which is his special department. He filled a similar position in the Expedition to Japan in 1887. Work will be done in many directions, and even if the weather or any accident should render a successful observation of the eclipse impossible, the Expedition will have a great amount of valuable information and collections when it returns.

After landing at St. Paul de Loanda, 250 miles south of the mouth of the Congo, the Expedition will go about one hundred miles into the interior, in order to be on higher land, and out of the fever belt on the coast. The eclipse, which will occur on December 22, 1889, at about 3 p.m., will be total for a little over three minutes at the station south-east of Loanda. The whole length of the eclipse will be between two and three hours. In photographing its different phases, if the sky is clear, it is hoped that about 150 photographs will be taken, with the largest telescope ever used for photographing an eclipse. This will give an image of the sun about $4\frac{1}{2}$ inches in diameter. Owing to the number of fine instruments which have to be carefully transported and adjusted, about two months will be spent at the observation station, and the party will be absent about five or six months altogether. The particular point where it is hoped a settlement may be made is Muxima on the Quanza River. In reply to a question as to the instruments he would take with him, Prof. Todd is reported to have said:—

“Some of them will be the same as I had in Japan, especially the great telescope, forty feet long, to get pictures of the different stages of the eclipse with. It is the same sort of a telescope that I used in photographing the transit of Venus in 1882 at the Lick Observatory. But photographing the corona is not the main thing nowadays in eclipses. All that has gone by. There are other questions of much more importance than merely to find out how the corona looks. It is a very complex phenomenon. The sources of its light are not known, and the streamers of light are in parts superposed or overlapping. The most important thing to do is to take photographs in such a way that the intensity of the light in every part can be accurately measured, and to photograph the spectrum of as many separate portions of the coronal light as possible. We are making much progress in this direction, but the old methods of eclipse photography in use ten or fifteen years ago yielded very insufficient results, and there is relatively little use in following them up if the more advanced and specialized work is not undertaken. Of course they are good as far as they go. Then I shall have several new devices, which my previous experience, particularly in Japan, has led to the invention

of. Among other things I have devised a revolving plate holder, which will enable us to get the largest possible number of pictures at the critical moments.”

URANIUM.

EXACTLY a century ago—namely, in 1789—Klaproth succeeded (says the *Times*) in isolating from a dark-coloured mineral known as pitchblende a yellow oxide, which, after carefully testing, he pronounced to be the oxide of a new metal. To this metallic substance he gave the name of uranium, so calling it after the planet Uranus, then recently discovered by Herschel, and it was at once classed among the rare metals, and still remains so. Its rarity is indicated by its market price, which is about £2400 per ton. There are several oxides of this metal; but the best known and most important is the sesquioxide, which forms a number of beautiful yellow salts. This oxide is largely employed for imparting delicate golden and greenish yellow tints to glass, while the protoxide is much used in producing the costly black porcelain. Uranium is also found to be useful in certain photographic processes as a substitute for the chloride of gold; but its rarity and consequent high price have hitherto caused its application to be very limited, although there are uses other than those already named to which it could be put if it were less scarce and less costly. It is found in Cornwall, Saxony, and Bohemia; but up to the present time it has only been met with in isolated pockets and patches. The centenary of its discovery by Klaproth has, however, been marked by the finding of a continuous lode at the Union Mine, Gramppound Road, Cornwall, which is believed to be the only known lode in the world. This discovery is regarded as unique in the history of the metal, for the lode is what is known as a true fissure vein, and the ore is found to contain an average of 12 per cent. of the pure metal, the assays going up as high as 30 per cent. in some parts of the lode. Several tons of the ore have already been raised and sold, fetching high prices. The lode traverses the mine from north to south, and the uranium occurs in it chiefly as a sesquioxide. It is anticipated that the present discovery will enable two important applications of the metal to be followed up. The first is as a substitute for gold in electroplated ware, inasmuch as with platinum and copper it forms two beautiful alloys, each having the appearance of gold, and the former also resisting the action of acids. The second application is in connection with electric installations, where its usefulness consists in its high electrical resistance. The mineral deposits generally at the Union Mine are of an exceptional character, comprising, in addition to uranium, magnetic iron, silver lead, tin, copper, ochre, and amber.

THE BRITISH ASSOCIATION.

NEWCASTLE, *Tuesday Night.*

IT is impossible at this stage to say what will be the character of the third Newcastle meeting, so far as numbers are concerned. In one quarter I am informed it is not expected that the attendance will be above the average, while another authority, who ought to know, assures me the numbers will be greater than was the case even at the Manchester meeting. For it should be remembered that, until that meeting, Newcastle topped the record so far as numbers go. To judge from the aspect of the Reception Room, not many people have yet arrived, though doubtless they will come in by later trains, and tomorrow morning. So far as I have been able to learn, very few foreign men of science of distinction are expected. Universal regret is expressed that the serious illness of Dr. Burdon Sanderson will prevent his taking