valuable information. And my object in addressing you now is to invite discussion on the suggestion, in the hope that it may be taken up by scientific men in a position to prosecute the inquiry. I hope too, some of the readers of NATURE, engaged in kindred studies, will give us the benefit of their experience and the results of any observations calculated to throw light upon it. T. L. PATTERSON.

Greenock, April 17.

Megalithic Folk-lore.

As I understand that many investigators have come to the conclusion that there are no traces of Dravido-Tibetan races to be found west of Persia, permit me to point out a fact which may not have been brought to their attention.

I have been in Asam now thirty-two years, and during that time the province, and part of Bengal, has been swept (suddenly) from end to end, by a severe scare, which folk at home would find it difficult to understand. It was similar in each case, and to the effect that the Queen wanted five children's heads from each village.

Our Bengali coolies nearly went frantic, in many factories demanding axes and daus (knives) to defend their families. In my own case they implored me to let them put their wives and children on the tea-leaf lofts, while they would guard them at night. In another factory all the doors in the lines were barricaded; or at still another, all were kept wide open so that at the first scream at night all could at once rush out and hide n the jungle.

The state of tension for a week was awful, and of course the ludicrous now and then came in. Two of my near neighbours, freshly out and bent on snipe, happened one morning to emerge from the jungle, muddy and with guns, among the women-folk at work, who all had their children with them for safety.

For the instant they were taken for the child-stealers, and the stampede and shrieks were something awful.

At one place I found an Asamese village deserted, not a soul left—all in hiding, no doubt.

It was quite useless to argue with the common folk, and my educated Babu even half believed it, for on my explaining the absurdity of it all, he simply answered, "Perhaps, sir, it is too foolish."

After a lot of trouble and correspondence, it turned out that the rumour (believed by all) was that the heads were wanted to put under the foundation of the piers for the Gorai bridge. There must be hundreds of Europeans now at home who can corroborate this.

And now to the point. It was a custom among the Kasias, I am told, to sacrifice a victim by putting him in the hole if great difficulty was experienced in raising any of the huge monoliths, and the same custom existed in Polynesia when raising the great posts of Maræ, or large communal houses.

But all over Chota Nagpur, Megalithic remains are common, and our coolies are mostly from thence.

Here then, I take it, we have fairly good evidence that one at least of the "Megalithic" races preserve vividly the folk-lore of past ages. Have we anything like this in European races *in re* these remains of prehistoric times?

That the building of houses on piles is essentially an Asiatic race custom, I need hardly point out, and that the villages in the Swiss lakes are on the same pattern anthropologists will allow.

It may not be so well known that the long communal houses still seen (as a survival) in Italy (Campagna) are on *precisely* the same pattern as those among most of our Naga, and among Dyaks

Add to this, that the prehistoric remains of North Europe are like the present Lapps in character, and it seems not impossible or even unlikely that the races who erected the Megalithic remains in Europe and North Africa, may be allied to those among whom the traditions are yet so vividly remembered.

S. E. PEAL.

Sibsagar, Asam, March 27.

The Glacial Drift in Ireland.

SINCE the publication of Prof. G. A. J. Cole's letter in NATURE (vol. xlvii. p. 464), in which he records the discovery of pebbles of the Ailsa Craig Riebeckite-eurite from the drift gravels on Killiney strand, numerous observers have noted its occurrence in several places along the east coast of Ireland, but hitherto, I believe, not further south than Greystones, Co. Wicklow. Owing to the special interest of this rock, both to glacial observers and petrographers, it may be worth mentioning that two weeks ago I found one small pebble (about 3 c.m. square) of the rock on the shore of Tramore Bay, Co. Waterford, nearly 80 miles further south than the previously mentioned locality, and 230 miles from Ailsa Craig.

HENRY J. SEYMOUR.

Royal College of Science, Dublin, April 20.

The Bright Meteor of April 12.

THIS meteor was visible overhead at Dunstable, Beds., precisely at the time mentioned by A. G. Tansley (p. 581). I had just started one of my sons to London by the 8.5 p.m. train, and I saw the meteor sail slowly across the sky from north-west to south-east, directly the train had started. The nucleus as seen here was brilliant white and yellow-white with a bright yellow-white train. The train formed an equilateral triangle, the nucleus being in one angle in front. I did not see the train in the form of sparks, but as light. Before it died away, both nucleus and train became bright crimson and an equally brilliant blue. There was no explosion heard by me.

Dunstable. WORTHINGTON G. SMITH.

Remarkable Sounds.

THE following passage in a Chinese itinerary of Central Asia —Chun Yuen's "Si-yih-kien-wan-luh," 1777 (British Museum, No. 15271, b. 14), tom. vii. fol. 13, b.—appears to describe the icy sounds similar to what Major Head observed in North America (see p. 78, *ante*):—

"Muh-sih-urh-tah-fan (=Muzart), that is Ice Mountain[1], is situated between Ili and Ushi. . . . In case that one happens to be travelling there close to sunset, he should choose a rock of moderate thickness and lay down on it.[2] In solitary night then, he would hear the sounds, now like those of gongs and bells, and now like those of strings and pipes, which disturb ears through the night: these are produced by multifarious noises coming from the cracking ice." KUMAGUSU MINAKATA.

April 9.

THE ROYAL OBSERVATORY, EDINBURGH.

THE new Edinburgh Royal Observatory, which was formally opened by the Secretary for Scotland on the 7th inst., is situated on Blackford Hill, some two and a half miles due south of the centre of the city, in a public park, of which about three acres have been transferred to the Crown by the Edinburgh Town Council. The centre of the observatory is about 440 feet above the level of the sea. The name of Blackford Hill will suggest to many readers the lines from "Marmion":

Blackford! on whose uncultured breast
Among the broom, and thorn, and whin,
A truant-boy, I sought the nest,
Or listed, as I lay at rest,
While rose, on breezes thin,
The murmur of the city crowd,
And, from his steeple jangling loud,
Saint Giles's mingling din.

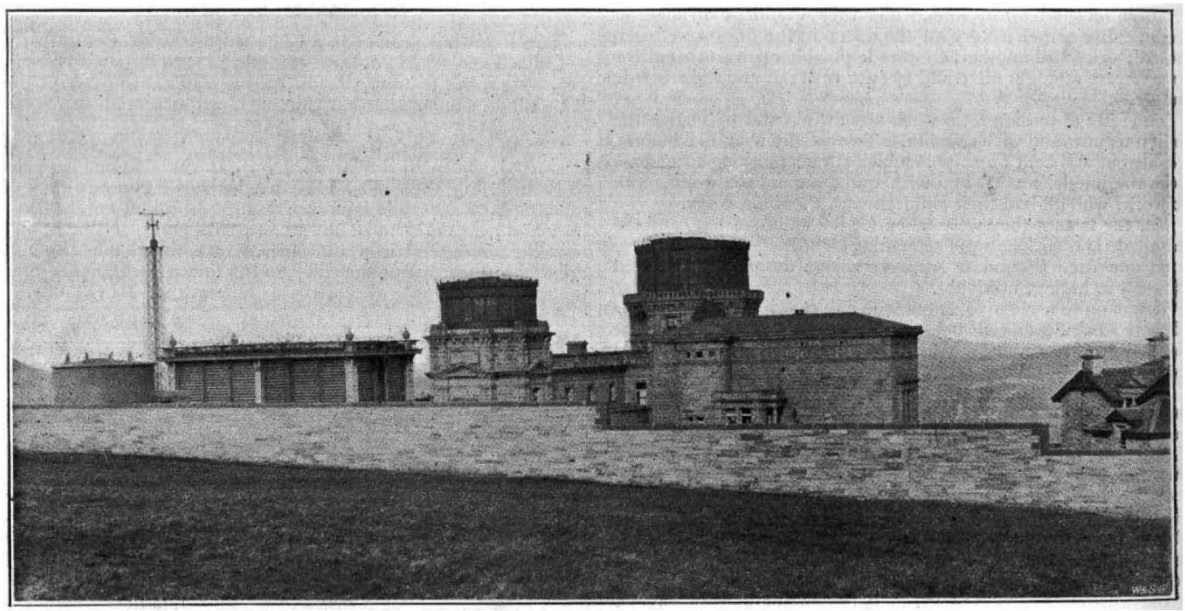
The main building is T-shaped, with a tower for the 24-inch reflector, removed from Calton Hill, at the west end, and a somewhat larger tower for the 15-inch Dunecht refractor at the east end. The clear length of the platform above the rooms connecting these towers is 110 feet. The stem of the T is built in three stories. In the basement are the gas engine and dynamo, storage cells and primary batteries, the heating apparatus and a book-store; while above the library and adjoining rooms is a room 66 feet by 23 feet, with its floor on a level with the platform already mentioned.

This room, which ranges exactly north and south, is intended for optical experiments and spectroscopic

[1] In Prejevalsky's "From Kulja, across the Tian-shan to Lob-nor," London, 1879, foot-note, p. 177, the word Muzart, or Mussart, is stated to mean "Snowy."

[2] The old Chinese pilgrim, Hwen-tsang, who followed this same route, observed that the travellers passing thereby must sleep on the ice (Schuyler "Turkestan," London, 1876, vol. i. p. 391).

research, for which purpose a siderostat by Foucault, with a silvered mirror 16·3 inches in diameter, is mounted at the northern edge of the platform under a movable cover. Arrangements have, of course, been provided for darkening this room at pleasure. In the north wall of the room, and facing the siderostat, is fixed a massive iron frame capable of carrying lenses ranging from the 15-inch object-glass down to that of an ordinary camera, the lenses most frequently used being provided with adjustable rings so arranged that they need only be centred once for all. For 39 feet of the length of the room three lines of rails are let into the floor, on which travel three iron carriages for the spectroscopes, gratings, or cameras in use, the side rails being intended for apparatus to receive deviated rays. In addition to these a narrow gauge line runs along the centre of the room from end to end, 66 feet. This is intended for long-focus photographs. All these rails are carried by steel beams distinct from those which support the floor. Any one who has been at Dunecht will recollect the comfort with which the most



6 in Refractor. Transit House. 24-inch Reflector. Siderostat. 12-inch Reflector. 15-inch Refractor. Optical Room. Library.

FIG. 1.—Royal Observatory, Edinburgh, from the South-west.

delicate solar work could be carried out in the optical room there, of which the room at Edinburgh is a copy.

In the east tower is mounted the 15-inch Dunecht refractor. Amongst the adjuncts to this instrument may be mentioned the large stellar spectroscope made by T. Cooke and Sons (Fig. 2). As this spectroscope has not yet been described, the following particulars may be of interest. It is provided with three prisms: (1) one of 60° by the makers, giving a dispersion of 5° 7′ from A to H, and capable of separating the lines 488·81 and 488·84 of Angström's map. It shows also 43 lines between B and C. It was with this prism that D_3 and another helium line, 487·6 mmm. ±, were detected in the Great Nebula of Orion at Dunecht in the winter of 1886-87 (see *Monthly Notices*, vol. xlviii. p. 360). (2) A large compound prism by Sir H. Grubb, with nearly twice the dispersion of the prism first mentioned. (3) A Merz prism with an angle of 20°, intended for use on the fainter stars. The collimator has a focal length of 24 inches, and an aperture of 2 inches, the ratio being 12 to 1, the same as that of the 15-inch refractor. The viewing telescope is somewhat larger in aperture, to ensure catching the whole of the rays emerging from the prism. The tube of the collimator is made as rigid as possible, and is isolated from the large bronze tube which carries the whole spectroscope. The rays from the great object-glass may be intercepted, just in front of the slit, by a diagonal eye-piece, removable at pleasure, which allows the object to be viewed, and serves also as a finder. Attached to the same draw-tube is a second prism for throwing the light from any artificial source upon the slit. Only one prism can be used at a time, but it can be readily exchanged for another, without disturbing the adjustments. The prism is carried by a divided circle, so that its exact position is always known. The long rod shown in the figure rotates the prism; the shorter one moves the viewing telescope, the position of which may be read either by two opposite microscopes, or by a long reading microscope (not visible in the figure), carried close down to the observer's eye

The pointer in the field of view is illuminated by monochromatic light of any desired colour or intensity, produced by a small direct-vision spectroscope, on the plan devised by Prof. Smyth. No detail has been omitted that could contribute to the accuracy of the observations, such as focusing scales for collimator and viewing telescopes, eclipsing screens in the field of view as well as in front of the slit. A thermometer shows the temperature of the inside of the prism box. It will be seen from Fig. 2 that measures can be made on either side of the axial line by simply turning the viewing telescope and rotating the prism into the proper position.

It would be scarcely possible to enumerate the various minor instruments, but the following may be mentioned. Two heliostats by Duboscq and Browning; photo-measuring instrument by Grubb; dividing engine by Dumoulin Froment, of 64 cm. range, showing the thousandth part of a millimetre; delicate Oertling balance and weights; standard mètre à 0° by Dumoulin Froment; standard yard by Simms; two excellent spherometers by

Hilger ; Foucault apparatus for measuring the velocity of light ; Ladd polariscope with large collection of crystals ; two extra large Nicols ; anemograph, King's barograph, and standard barometer by Casella ; resistance coils, large electro-magnet and a great variety of electric and physical apparatus, including one of Prof. Rowland's magnificent gratings. Among the smaller telescopes are :

12-inch reflector by Browning-With,
6-inch refractor by Dallmeyer,
6 " " " T. Cooke and Sons,
4 " " " " "
3 " " " " "

All the foregoing are equatorially mounted with clock-work, and there is an object-glass prism by Merz, which fits either of the 6-inch telescopes.

A 4-inch reversible transit by Cooke and Sons, with stand for both the meridian and prime vertical, is mounted in a detached hut.

A Zöllner's astrophotometer, a 12-inch altazimuth by Simms, a variety of theodolites, sextants, reflecting

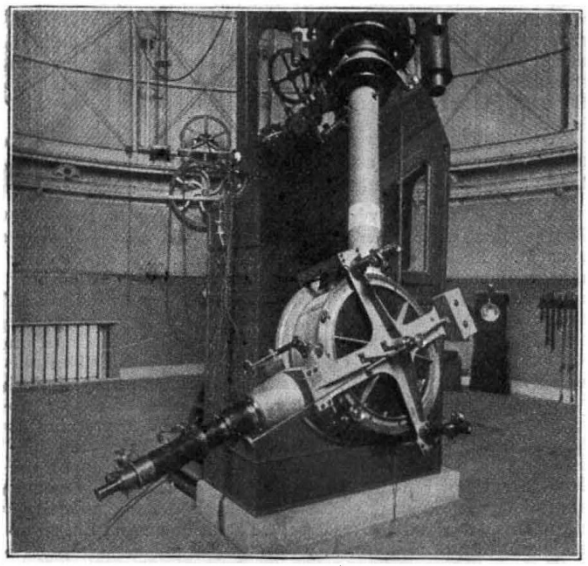


FIG. 2.—Stellar Spectroscope, by T. Cooke and Sons, attached to the 15-inch Dunecht Refractor. (The divided circle is 18 inches in diameter.)

circles, cameras, spectroscopes, and prisms from 4½ inches downwards, complete the outfit for work at the observatory and on expeditions.

A word must be said about the clocks. Two of these, the Dunecht sidereal clock by Frodsham, and the excellent Makdougall-Brisbane clock by Dent, from Calton Hill, are mounted in the base of the pier of the larger tower, shut in by thick double doors stuffed with "slag-wool." This guarantees a nearly uniform temperature for both clocks, while the Brisbane timekeeper has the further advantage of being subjected to a uniform barometric pressure of 25 inches maintained inside a cast-iron case. This latter part of the arrangement has been most efficiently carried out by Messrs. Jas. Ritchie and Son, of Edinburgh. Automatic signals from this chamber serve to rate the mean time clock, which is kept to Greenwich time, and transmits currents to Edinburgh and Dundee for regulating the time signals.

The 8·6-inch transit circle by Troughton and Simms, formerly at Dunecht, is mounted in a detached double iron house 80 feet west of the observatory, with which it is connected by a covered way. It has two finely-divided circles—one of them movable. North and south of the instrument, but in the same room, are two 6-inch collimators, which can be pointed on each other through a hole in the 17¼-inch central cube of the telescope. The opening in the roof is 39 inches broad.

The great 4-barrelled chronograph by Cooke, from Dunecht, capable of recording six hours' continuous observations on each barrel, is mounted in the base of the west tower. It is supplemented by a small 3-pricker fillet chronograph by Fuess, of Berlin. Both instruments can be worked from six places in the observatory, and with either of the sidereal clocks. The clocks can also be compared automatically on the chronograph, or audibly by a sounder.

In the south wing the principal room is the library, 24 feet by 34 feet 6 inches, and 20 feet in height, which contains the astronomical library collected by Lord Crawford at Dunecht, comprising about 15,000 volumes. Divided amongst the computing rooms are the books removed from Calton Hill.

The observatory and instruments are lighted by electricity, generated by a 7-horse Crossley gas engine, charging 53 large storage cells.

Within the boundary wall of the observatory stand the house of the Astronomer Royal for Scotland, two semi-detached villas for assistants, and a gate-lodge for the care-taker and messenger.

The transit circle and reflector have only just been mounted, but the large refractor has been in use since last autumn, and in spite of the very unfavourable weather a considerable number of observations of comets have been secured with it. The provisionally-adopted coordinates of the transit house are: Latitude + 55° 55′ 28″·0. Longitude 12m. 44·2s. west of Greenwich. It is not likely that these will have to be materially altered.

THE PLACE OF SCIENCE IN EDUCATION.

THE Bishop of London should know something about education. He has been the Principal of a Training College, an Inspector of Schools, and Head Master of Rugby School, and he has written in a broad spirit on educational matters. No wonder, then, he modestly confessed at the London Diocesan Conference last week, that "he happened to know a good deal about education." There is one branch of knowledge, however, which he thinks should be cut off from the educational tree nurtured in elementary schools, and that is the branch of science. "He had very often felt," he said, referring to the Education Bill, "that it had been a very great evil that we insisted upon instructing little children in elementary schools in a great many scientific subjects, and he should not have been at all sorry if all these scientific subjects were got rid of entirely, and it had been left to the managers, and to the teachers under the managers, to introduce other subjects which would be more suitable." And, later on, he remarked : "Teaching of an advanced character might very well be permitted in some schools, but in regard to all these scientific schools, and the apparatus connected with them, the sooner they were got rid of the better."

Evidently Dr. Temple is moved by the oppression which schools suffer from science, and he desires to emancipate them. But to any one familiar with the facts as to scientific instruction in this and other countries, and the beneficial results which proceed from it, Dr. Temple's strongly-expressed desire will appear astounding. The schools in which science is successfully taught (and we count success not so much by examinational results as by the training of the mind and eye and hand, and the development of the spirit of inquiry), invariably contain the most intelligent scholars ; the towns or districts which possess properly organised and equipped science schools contain