the River San Juan and its embouchure at Grey Town, offers a rare field for research to the naturalist and speculative geologist.

In my early service—1834—I was engaged in the Admiralty nautical survey of the then harbour at the entrance of the River San Juan, subsequently well known as Grey Town. At that time it afforded a secure and fairly spacious anchorage for a few vessels of even 24ft. water (sheltered by a sandy peninsula) with a wide and clear approach.

Between 1834 and 1839 the end of this sandy peninsula, Arenas Point, advanced considerably across the entrance towards the opposite shore, in a depth of five-and-a-half fathoms. In 1859, the point had reached to within a cable's length of the main land, or over 6000ft. in advance of its position twenty-five years previously, in depths varying from 33ft. to 18ft., practically closing the port except to a small description of vessel.

These great geological changes—if they may be 'so called'—in so short a period of time, destroying as they have done a useful port, are an interesting, and, so far as I know, an unique fact; but the point to which I would wish to refer in connection with the musical fish (?) is the vast amount of animal life observed at the time of the original survey alluded to. The port literally swarmed with fish, but we could not venture to haul the seine more than twice, from the circumstance that large alligators came up in it, to the consternation of the fishermen and the destruction of the nets. Sharks of huge size rendered precaution from falling overboard a matter of some moment, as an unfortunate pet monkey discovered by being instantly seized. This abundance of life, proof of good feeding-ground, may have some connection with a well-developed species of musical fish; but this speculation must be left for your naturalist readers.

F. J. EVANS

PERHAPS your correspondent, Charles Dennehy, M.R.C.S.I., R.M.S. *Shannon*, may find an interpretation of the nocturnal musical phenomenon (mentioned in *NATURE*, No. 28) experienced by iron ships when at anchor in seven or eight fathoms, with a bottom consisting of a *heavy, dark sand and mud containing much vegetable matter*, in the following natural system of gas-escape. In examining certain pools of water in the East, notorious for their poisonous qualities at certain seasons of the year, I was aware of intermittent risings of vast quantities of bubbles. The waters rested on vegetable deposits; if these were stirred up, large globules rose with considerable force, and I came to the conclusion that these air risings were due to the escape of gases from the decomposing vegetable matter. If any metallic body had met these bubbles as they rose, some sound would have been produced, the nature of it depending on various causes. The reason of the sound being heard on board ship between twelve and two, and not between two and four, is owing to a very simple, but beautiful rule of law: as the gases are at all times collecting, we might suppose that they would be at all times escaping, but as the surface of the bottom is of an elastic nature, the water pressure imprisons the gas as if it were within a valve; but when the force of the gas overpowers the water pressure, there is a bubbling escape till the collected gases are expended, and thus I account for the sounds continuing "about two hours, with but one or two very short intervals." It is by no means improbable that the musical performance occurs more than once in the twenty-four hours, though the ordinary noises of ship-board prevent its being audible. I believe there is no other way of accounting for this incident; but the test I would propose is to stir up the bottom on a calm day with considerable force; if large quantities of air-bubbles arise, the sailors may rest satisfied that the concert is not given by ghost, mermaid, or siren, but simply by a continued contact of myriads of gas globules against the ship's bottom. The stirring up will not necessarily cause the sound, as the bubbles may be diverted by under-currents.

H. P. MALET

The Sources of the Nile

IN the fifth (May) number of the *Geographische Mittheilungen*, I publish an article and two maps on "Livingstone's Travels and Discoveries from 1840 to May 1869," one of the maps being carefully compiled from the original Portuguese publications of the Portuguese journeys since 1798—viz., those of Dr. Fr. José de Lacerda e Almeida, the Pombeiros Joao Baptista and Pedro, Major Monteiro, and others, showing all that is at present known of those regions. Both maps and text keep aloof from theories and speculations as to the connections of rivers and lakes discovered by Livingstone and the Portuguese with the Nile.

Of the two points at issue, the one as to the connection of the Lake Tanganyika with Albert Nyanza, Livingstone says:—"Tanganyika and Nyige Chowambe (Baker's?) are one water;" but gives no proof of it, having evidently derived his information from hearsay. The most reliable information on this point seems to me that supplied by Burton (*Journal R. G. S.*, vol. 29, p. 254):—"At the head (northern end) of the Tanganyika lies the land of Uzige," in which land, "according to the guides, six rivers fall into the Tanganyika in due order from the east—the Kuryamavenge, the Molongwe, the Kavinvira, the Kariba, the Kibaiba, and westernmost, the Rusizi or Lusizi. The latter is the main drain of the northern country, and the best authorities, that is to say those nearest the spot, unanimously assert that it is an influent."

Regarding the Kassabi, the upper course of which was explored by Livingstone, Ladislaus Magyar, and Rodriguez Graça, it appears to me that the most reliable information we possess of its lower course is that supplied by Livingstone, as collected by him when at Cabango in 1855 (Livingstone's *Missionary Travels in South Africa*, pp. 457 and 458):—"Several of the native traders here having visited the country of Luba, lying far to the north of this, and there being some visitors also from the town of Mai, which is situated far down the Kasai, I picked up some information respecting those distant parts. In going to the town of Mai, the traders crossed only two large rivers, the Laojima and Ohihombo. The Kasai flows a little to the east of the town of Mai, and near it there is a large waterfall. They describe the Kasai as being there of very great size, and that it thence bends round to the west. On asking an old man, who was about to return to Mai, to imagine himself standing at his home, and point to the confluence of the Guango and Kasai, he immediately turned, and pointing to the westward, said, 'When we travel five days (thirty-five or forty miles) in that direction, we come to it.' He stated also that the Kasai received another river, named the Lubilash. There is but one opinion among the Bovonda respecting the Kasai and Guango. They invariably describe the Kasai as receiving the Guango, and beyond the confluence assuming the name of Zairé or Zerézéré. And the Kasai, even previous to the junction, is much larger than the Guango, from the numerous branches it receives. Besides those we have already crossed, there is the Chihombo, at Cabango, and forty-two miles beyond this, eastward, runs the Kasai itself; fourteen miles beyond that the Kaunguesi; then, forty-two miles further east flows the Lolua; besides numbers of little streams, all of which contribute to swell the Kasai. The town of Mai is pointed out as to the N.N.W. of Cabango, and thirty-two days or 224 miles distant, or about lat. S. 5° 45'. It is evident, from all the information I could collect both here and elsewhere, that the drainage of Londa falls to the north and then runs westward. The countries of Luba and Mai are evidently lower than this, and yet this is of no great altitude, probably not much more than 3,500 feet above the level of the sea. Having here received pretty certain information on a point in which I felt much interest, namely, that the Kasai is not navigable from the coast, owing to the large waterfall near the town of Mai * * *

AUGUSTUS PETERMANN

Redaction der Mittheilungen aus
Justus Perthes geographischer Anstalt,
Gotha, May 2

Scandinavian Skulls

IN his recent lecture on the "Forefathers of the English People," Professor Huxley says, "It is a very remarkable circumstance that the skulls of the existing Scandinavians . . . are long;" and he contrasts their dolicephalous type with the round forms of South German, Swiss, and ancient Belgic heads. He also thinks it likely that the Scandinavian invasions of England brought a "longer form of head" into fashion amongst us. The same doctrine is taught by Sir Charles Lyell, in his "Antiquity of Man," and even in the sixth edition of his "Elements of Geology," he says that the Scandinavian skulls of the dolmen period are brachycephalous, or round; those of the iron age being dolicephalous, or long.

Such notions were once current in Sweden and Denmark, but they are now exploded. Originally deductions from history, they rest on no basis of observed fact, and archaeology plainly contradicts them. Thirty or forty years ago, Scandinavian savants believed, on historical and philosophical grounds, that Lapps and Finns were the earliest inhabitants of the Baltic North, that after

them came a Celtic, and finally a Gothic invasion. As Scandinavian archæology grew into a science, and the remains discovered were seen to fall into a stone, a bronze, and an iron series, the three groups collected were, in obedience to the previously existing historic theory, respectively labelled Finnish, Celtic, and Scandinavian. Now, it happened that the first *two* obviously prehistoric skulls found in Scandinavia were of the round type, on which circumstance a learned person (Retzius, if I remember rightly), jumped—in characteristic nineteenth-century style—to the conclusion that the *whole dolmen race* was round-skulled. Never was a more monstrous generalisation built on a miserable collection of two particulars. There are known to exist in museums about 80 skulls attributed to dolmen men, some of which are, perhaps, of questionable origin. These crania are of every conceivable type, being, in fact, identical with modern churchyard skulls. No one pretends that their form is short, or Celtic, or Finnish; and some authorities allege that they are mostly long. These facts are notorious enough in the North. They were ventilated at the late Copenhagen Archæological Congress, and it was not denied on any side that the stone age skulls would suit modern Danes and Swedes. The short skulled stone man is in fact gone the way of the basilisk and the Vital Force, and it is time for him to take his departure from the authoritative scientific teaching of Great Britain.

Professor Huxley appears to believe that the Northern Bronze, or Iron Man, was long skulled. Although this view is quite unsupported by facts, it may be backed by an argument from the domain of the Higher Criticism. In the Museum of Rosenberg are casts of the so-called Gold Horns, the originals of which precious runic articles were stolen nearly 70 years ago. One of these horns bears the inscription—"Ek hleva gastim holtingam horna Favido," which every runologist can read easily enough. But no two runologists agree even approximately in their versions, so that no date can be given to the horns from inferences built on the style of the inscription. However, Professor Steenstrup has pointed out that some figures of men engraved on the horns have heads of a longish appearance, which conclusive fact tells in favour of Professor Huxley's dolicephalous doctrine, although some learned Danes consider that the skulls represented on the horns were obviously Oriental and not Scandinavian.

According to the highest Copenhagen authorities, there is no ground whatever for the assertion that modern Scandinavian skulls are of the long type. It is equally incorrect to say that Scandinavians are fair-haired and blue-eyed

G. STRACHEY

The Anglo-Saxon Conquest

IN an interesting paper, quoted at p. 661 of NATURE, Prof. Rolleston dwells upon the proportion of short-lived male skeletons, found in Anglo-Saxon interments, as contrasted with the older character of the Romano-British interments, deducing therefrom a conclusion as to their respective longevity. The writer appears to have forgotten that the youth of Romano-Britain had for many generations been forcibly expatriated—drafted abroad to feed the armies of Imperial Rome.

A. HALL

Analogy of Colour and Music

MR. W. S. OKELY accuses me of having criticised his letter "far too hastily," and writes that he does *not* compare the *diameters* of Newton's rings with one another, but their *cubes*. On referring to his letter in NATURE for Feb. 10, I read as follows:—"Professor Zannotti, of Naples, gives for the *diameters* of the rings from red to red, the cube-roots of the numbers 1, $\frac{8}{27}$, $\frac{8}{27}$, $\frac{8}{27}$, $\frac{8}{27}$, $\frac{8}{27}$, $\frac{8}{27}$. The intervals between these, taken successively, are $\frac{8}{27}$, $\frac{1}{18}$, $\frac{1}{18}$, $\frac{1}{18}$, $\frac{1}{18}$, $\frac{1}{18}$, $\frac{1}{18}$. Your readers can now judge whether my failure to apprehend Mr. Okely's measures was due to my undue haste or his obscurity of expression. When Mr. Okely speaks of my "doubting the accuracy" of Professor Zannotti and M. Biot, he is drawing entirely on his own imagination; what I *did* doubt was the value of the deductions drawn by Mr. Okely from their figures. I *now* doubt his power of distinguishing between external facts and those evolved from his own moral consciousness.

Trin. Coll. Cambridge, May 4

SEDLEY TAYLOR

Colour of the Sky

YOUR correspondent "H. A. N." will find some interesting remarks on the blueness of the sky in Professor Tyndall's "Glaciers

of the Alps" (p. 257, &c.), and one or two additional notes in my "Alpine Regions," p. 150. With regard to the colour of the sky at great heights, I can inform him that in fine weather the blue becomes deeper as one ascends, as has been noticed by many persons accustomed to mountain climbing. The most striking instance that I have seen was during an ascent of Monte Rosa, 15,217 feet. On this occasion the colour was so deep as almost to approach a black, as deep as or deeper than the richest hues of *Gentiana acaulis*. This intensity of colour was only very conspicuous during the last few hundred feet of the ascent; and in expeditions to mountains of nearly the same height I have not often seen it approached, never surpassed. Mr. Hinchliff in his "Summer Months among the Alps," p. 111, calls attention to the same phenomenon on Monte Rosa, and very appositely quotes Shelley:

The sun's unclouded orb
Rolled through the black concave.

T. G. BONNEY

The Royal Society

I CANNOT but think that the list of candidates recommended by the Council for election into the Royal Society published in your last number will be read by the outside world with considerable surprise. I look in vain in it for the names of two men, at least, of world-wide reputation, and well known as no mere *dilettanti* in their respective sciences, who were among the candidates, while the names of others are found there, which are on everybody's lips with the thought, What have they done to merit the scientific distinction which is looked on by every lover of science as almost an opening of the gates of paradise? Is it possible for us outsiders to learn anything of the considerations which govern the election?

NOT AN F.R.S.

The Origin of Species and of Languages

ALTHOUGH the origin of languages is due, doubtless, to the gradual variation, selection, and combination of a few primary sounds, partly emotional, partly imitative; yet the process differs essentially from the Darwinian in one all-important respect—that it is carried on by the countless efforts of *rational* beings. No irrational animal, though capable of uttering emotional sounds that are quite intelligible to its fellows, and though in some instances capable of imitating both natural and articulate sounds in a remarkable degree, has ever formed a language, simply because it wants reason. Therefore the analogy, in so far as it really holds, seems to tell against the Darwinian theory, in as far as that ascribes the origin of species to *reasonless* variation and selection.

To me this seems a most important consideration. But I cannot trespass further on your space.

Stirling

WILLIAM TAYLOR

TAUNTON COLLEGE SCHOOL

THE educational scheme which occupied much of the late Lord Taunton's attention during the last years of his life, but of which he only saw the beginning, has now come into practical working. Under ordinary circumstances the development of an ancient Grammar School into a modern Public School would merely pass as one of the now frequent symptoms of advance in English higher education. Thus the removal of Bishop Fox's foundation (A.D. 1522) to a fine range of buildings outside Taunton, would hardly demand notice here. Our readers, however, whose attention was taken by Mr. Tuckwell's paper on Science Teaching in Schools (NATURE, No. 1), will see that the application of his system on a much enlarged scale is likely to affect considerably the position of science in the West of England. While calling public attention to the admirable educational arrangements of this particular school, we wish to remark on science teaching in schools in general, with regard to two points which we observe to be often misconceived by the very teachers and parents whom they especially concern.

First, as to the amount of other work displaced by the introduction of Physical Science as one of the regular parts of the school course. In the mediæval system,