

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 1860," 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 affluent."

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 Kaungesi; 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 \* \* \*"

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### 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 archæology 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