them "singing shells," and I have been shown what they said were those which made the noise. Some people doubt, however, whether it is these shells that sing, or some others, or fish of some kind. Whatever it be, I can answer for having heard the sounds repeatedly,—so distinctly, too, that you cannot help hearing them even when the oars and paddles are splashing and the boat going fast through the water. The sounds are like those of an accordion or Æolian harp, guitar, or such like, vibrating notes and pitched in different keys.

Lieut.-Col. PORTLOCK made the following communication on the same subject.—I think it right to draw attention to the *Helix apertus*, which is very remarkable for its property of emitting, when irritated, a strong and well marked sound. When I first noticed the sound thus emitted on accidentally touching the animal I was peculiarly struck by it, and immediately referred to Rossmäesler, who I found describes the quality of the animal in a very graphic manner, stating that the sounds were such as indicated irritation. The *Helix apertus* is very abundant at Corfu, appearing sticking on the squill leaves in the spring, when about the beginning of March the annual increment of growth of the shell is perfectly soft. If the animal be irritated by a touch with a piece of straw or other light material, it emits a distinctly audible sound possessing a singular grumbling or querulous tone. This it frequently repeats if freshly touched, and continues so to do for apparently an unlimited space of time, as I kept one for a considerable time in my house, and heard this sound whenever I touched it. As Rossmäesler has so fully described this fact, I shall only add that I have on more occasions than one heard what I considered a similar, though very feeble, sound from the *Helix aspersa*, and I need not say that the explanation seems very easy from the structure of the animal.

The PRESIDENT stated that he had received a note from Mr. Joseph Clarke informing him that *Colymbus arcticus* had been shot near Swansea, and ought to have been included in his Fauna of Swansea.

A paper was read from Dr. MACDONALD 'On the erroneous Division of the cervical and dorsal Vertebræ, and the Connexion of the first Rib with the seventh Vertebra in the Mammifers, and the true normal Position of the Head of the Ribs in Mammals.'—Dr. Macdonald pointed out an interesting application of comparative anatomy of the osteology of mammals, in correction of an error in descriptive zoology introduced by the illustrious Cuvier, and blindly continued by all succeeding systematizers and copyists. It is at present the received opinion, that all mammals except the Brachypus have seven cervical vertebræ—that is to say, unconnected with the ribs. This will not be found to be the case in the Quadrumana-Carnivora (except Phocæ), Rodentia, Pachydermata, Pecora and Celacea. In all these the head of the first rib is articulated opposite the intervertebral space, and partly articulated to the body of the seventh vertebra—and thus becomes a dorsal vertebra. A more extended examination will show that the normal situation of the head of the rib is intervertebral. Thus in Man the twelve ribs will have thirteen vertebræ connected with them. Dr. Macdonald referred to the various osteological museums in London, Edinburgh and Glasgow which he had enjoyed the opportunity of examining; the skeletons of the Seal, Seahorse and Kangaroo were the only exceptions. Thus, while a correction of a widely-circulated error was proposed, Dr. Macdonald at the same time suggested the general principle of the normal situation of the ribs being in the interspace of the vertebræ,—and showed the extension of this principle in the construction of the rest of the skeleton; where, even to the fingers or toes, this may be exhibited. The second part of the communication, showing the analogy between the arrangement of the bones of the arm and hand with the foot in Man, was for the purpose of correcting the homologies that have been proposed for the pectoral fins in the osseous fishes:—but this would require a greater space than we can now devote, and would not be easily followed without illustration.

A paper was read from the Rev. J. BRADLEY 'On the Formation of Sand-rocks by the Tubes of a Species of Sabella.'

Mr. JOSHUA CLARKE wished to draw the attention of the Section to the parasitical habits of *Rhinanthus Crista-galli*. This plant was frequently found amongst barley, and produced injurious effects. On examining the roots he found that they were parasitic upon the roots of the barley.—Mr. BENTHAM believed that this plant, with *Euphrasia*, *Odontites*, and *Melampyrum* might be parasitical. He had, however, recently examined *Euphrasia* and *Odontites*, but could not discover that they were parasitical. He believed that they might be parasitical in some cases, but certainly *Euphrasia* and *Odontites* were not always so.—Mr. BABINGTON thought from the drawings exhibited by Mr. Clark that the *Rhinanthus* was probably only partially parasitical.

The SECRETARY read a communication from Mr. W. THOMPSON 'On Additions to the Fauna of Ireland.'—*Birds:* Tringa Temminckii, Leislez, shot near Tralee.—*Mollusca:* Bullea quadrata, Bullea formosa, Bullea acuminata, Orbis foliaceus, Stillfer Turtoni, Rusva abyssicola, Rissoa fulgida, Fusus Sabini, Inchotropis borealis, Natica sordida, Nucula polii, Arxidia verginea, Aplidium fallax, Botrylloides rubrum. (The author records the liberal assistance he has had from Mr. M'Andrew, Mr. Barlee, and Mr. Jeffreys, who have all communicated to him their Irish specimens and discoveries.)—*Crustacea:* Hippolyte pandaliformis, Idotea acuminatum.—*Annelida:* Planaria flexilis, Euphrosina foliosa, Octobothrium (?) Merlangi.—*Zoophytes:* Gorgonia verrucosa, Alecto major and dilatans, Lepralia simplex, Hyndmanni, annulata, Peachii, innominata, Ballii and trispinosa.

Mr. JEFFREYS remarked that the specimens sent to him by Mr. Barlee as *Bullea quadrata* of Searles Wood, were not that shell but a variety of *B. caterva*; and that the *B. quadrata*, of which he possessed a specimen through the kindness of Mr. R. Howse, had been hitherto found, or recorded as found, only on the Northumberland coast. He also corrected the specific name of Sabini, applied by Mr. Alder to the Fusus, mentioned by Mr. Thompson; and he stated that the *Natica sordida* of Lamarck (and named *falsa* by Mr. Thompson in the 'Annals of Natural History') had been found in the English and Bristol Channels as well as on the coast of Galway. And he made a few observations with respect to the analogy of the Fauna of the Southern and Western Coasts of Ireland with that of the South-West of England, instancing *Ovula patula* and *Tellina balaustina* as recent and interesting examples.

A paper was read from Dr. CROOKE 'On the Influence of a Want of Salt in Diet as a Predisposing Cause of Cholera.'

Dr. WALLICH denied that a want of salt had anything to do with cholera.

'An Attempt to give a Physiological Explanation how persons both blind, deaf and dumb from infancy, interpret the Communications of others by their Touch only,' by Dr. FOWLER.—The facility with which young blind and deaf persons acquire such efficiency in their fingers as to enable them to substitute their touch for loss of both sight and hearing admits of a physiological explanation from the following considerations:—1. That the knowledge of objects and their various relations is not from the specific nerve of each organ of sense, but from the muscular sense residing in the muscles by which they are adjusted. Mere contact without pressure gives no knowledge of the forms or bulk of objects, and soon ceases to excite any sensation if the muscles which move the fingers are not in action. This fact that all our distinguishing sensations are in the muscular sense of adjusting muscles, seems to afford a satisfactory proof that it is by this objects appear erect, though in the dead eye they are inverted when seen on the retina. When the head is unmoved and the eye alone raised to look up at the ceiling we have a contractile feeling in the elevator muscles of the eye and forehead, and when we depress our eyes we have analogous feelings in the depressing muscles. Such muscular sensations, like those of the larynx, pass unheeded by those who can both hear and see; but the slightest sensations indicative of the meaning of others are objects of anxious attention to the blind and deaf, more particularly when new to them. This excitement by novelty of feeling is well marked by Sir H. Davy, who said he felt an extended sense of touch when he had for some time breathed the nitrous oxide gas, and this probably from the larger proportion of oxygen than in atmospheric air. For I think it will be found that simultaneously with retransmission of motor influence to the adjusting muscles of any part, there is also retransmission to its arteries to ensure a supply of blood (the source) from which both sensibility and contractibility are sustained.

SECTION F.—STATISTICS.

'Vital Statistics of Calcutta,' by Dr. C. FINCH.

'On the Distribution of the Population of Great Britain and Ireland,' illustrated by Maps and Diagrams, by HERR PETERMANN.

'On the desirableness of extending to the Working Classes the opportunity of purchasing Deferred Annuities, as a provision for old age,' by Mr. KENRICK.

'Contributions to the Statistics of Darlaston,' by Mr. KENRICK.

MONDAY.

SECTION G.—MECHANICAL SCIENCE—*continued.*

The further papers read were:—

'An Explanation (and Exhibition) of Models of various Machines,' by Mr. C. WILLIAMS.

'On Investigations undertaken for the purpose of furnishing Data for the Construction of Mr. Stephenson's Tubular Bridges at Conway and the Menai Straits,' by Prof. E. HODGKINSON.

'On the Application of Steam Power to the Drainage of Marshes and Fen Lands,' by Mr. J. GLYNN.—The number of districts in which I have successfully applied the steam-engine for such purposes is 15, and the quantity of land so drained amounts to more than 125,000 acres; the engines employed being 17 in number, and their aggregate power 870 horses,—the size of the engines varying from 20 to 80 horse-power. I was also engaged in draining the Hammerbruk District, close by the city of Hamburgh; and in another district near to Rotterdam an engine and machinery with the requisite buildings were erected from my plans by the Chevalier Conrad. In many of the swampy levels of Lincolnshire and Cambridgeshire much had been done to carry off the water by natural means; and many large cuts had been made and embankments formed—especially in the Bedford level, which alone contains about 300,000 acres of fen land; and the great level of the Fens contains about 680,000 acres, now rich in corn and cattle. The Dutch engineers who had been engaged in these works had erected a number of windmills to throw off the water when the sluices could not carry it away. By the aid of these machines the land was so far reclaimed as to be brought into pasture and cultivation, producing occasional crops of wheat. The waters from the uplands and higher levels were intercepted by catch-water drains; which carried away as far as might be practicable the highland waters, and prevented them from running down upon the fen,—but as it often happened, when there was most rain there was least wind, and the wind-engines were useless when their help was most needed, and the crops were lost. In this state was the fen country when the steam-engine was introduced: and by its aid the farmer may venture to sow wheat upon these rich levels with as much confidence and even more than upon higher ground; for not only can he throw off at pleasure the superfluous water, but in dry weather a supply can be admitted from the rivers,—so that farming in such cases is rendered less precarious than in situations originally more favoured by nature. It is, however, to be remarked that the quantity of rain which falls in these levels on the eastern side of England being much below the general average of the kingdom, the power required to throw off the superfluous water is small compared with the breadth of land to be drained; the proportion seldom being greater than 10 horse-power to 1,000 acres, and in some cases considerably less. The general plan is to carry away the water coming off the higher grounds, and as far as may be practicable prevent it from running down into the marsh by means of the catch-water drains before mentioned, leaving the rain water alone to be dealt with by mechanical power. As the quantity of rain falling in the great level of the Fens seldom exceeds twenty-six inches, and about two-thirds of this quantity is carried off by evaporation and absorption or the growth of plants, it is only in extreme cases that two inches in depth require to be thrown off by the engines in any one month,—which amounts to 1 cubic foot and a half upon every