the same time causes a record from an automatic tuning-fork interrupter to be imprinted side by side on the photographic plate. In Dr. Stein's second paper, he describes the use of a small Deprez electromotor to drive a small fan, by which warm, dry air is caused to circulate round a Holtz machine, which by this means is always ready for action. In some historical notes by Herr Holthof, dealing with the early stages of telegraphy, there comes out the interesting point that, so early as 1854, an important improvement had been made in the suggestion of Bourseul for an electric telephone. An anonymous writer, signing himself "L." in the pages of "Didaskalia," gave in that year, under the title of "Elektrische Telephonie," an account of Bourseul's crude notion, and added something not to be found in Bourseul's suggestion, namely, the use of an electromagnet in the receiver to actuate the disk of thin metal to which the listener was to apply his ear; the description of the instrument—which, it seems, never reached anything beyond an anonymous suggestion—reads like a description of a Bell telephone, of which it is a remarkable foreshadowing. It is remarkable that Reis, who was at that time resident in Frankfort, should, when using an electromagnet in his subsequently invented telephone, have stopped short of the use of a disk in his receiver in place of the bar armature he employed. It is pretty clear he did not know of "L.'s" suggestion. The remainder of the papers in the "Year-book" deal chiefly with telegraphic and fire-alarm apparatus. The Frankfort Society is to be congratulated on the value of the papers communicated to it during its short existence.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.*]

What are the Saccopharyngoid Fishes?

IN December of last year M. Vaillant communicated to the French Academy of Sciences a notice of a remarkable deep sea fish, to which he gave the name *Eurypharynx pelecanoides*. He was in great doubt as to the relations of this form, but concluded that "of all fishes it is to *Malacosteus niger*," placed in the family Scopelidæ by zoologists, that he was most inclined to approximate the new type. Five specimens of a nearly related form, to which Mr. J. A. Ryder and myself have given the name *Gastrostomus bairdii*, were obtained by the United States Fish Commission steamer *Albatross*, in the summer and autumn of the present year. The largest of these specimens is nearly two feet long, and an anatomical investigation reveals some very remarkable peculiarities of structure, which have caused Mr. Ryder and myself to differentiate the two forms, Gastrostomus and Eurypharnyx, in a distinct order of fishes to which we have given the name Lyomeri.

The Lyomeri are fishes with five branchial arches (none modified as branchiostegal or pharyngeal) far behind the skull; an imperfectly ossified cranium, deficient especially in nasal and vomerine elements, articulating with the first vertebra by a basi-occipital condyle alone; with only two cephalic arches, both freely movable, (1) an anterior dentigerous one, the palatine, and (2) the suspensorial, consisting of the hyomandibular and quadrate bones; without opercular elements; without maxillary bones, or distinct posterior bony elements to the mandible, with the scapular arch imperfect (limited to a single cartilaginous plate) and remote from the skull; and with separately ossified but imperfect vertebræ. Whether other than the two genera mentioned, Eurypharynx and Gastrostomus, belong to this order is not entirely certain, but there is little doubt, in the opinion of Mr. Ryder and myself, that the family Saccopharyngidæ also belongs to the order, and it is for the purpose of calling attention to this doubtful and still little known type, that in behalf of Mr. Ryder and myself I address the present communication. No satisfactory information has been given as to the Saccopharyngidæ, except by Dr. Mitchill in 1824, and by Dr. Harwood in the *Philosophical Transactions* for 1827. The plate published in the volume cited represents the head of Ophiognathus with the mouth closed as well as open, and the differences in the relation of the posterior angles of the mouth to the axis indicate that Ophiognathus (as well as Saccopharynx) has a movable suspensorium, and would therefore exhibit the Lyomerous peculiarity of structure. It appears from Dr. Günther's "Catalogue of the Fishes in the British Museum" (vol. viii. p. 22), that in 1870 there were two specimens of a Saccopharyngoid fish—probably the *Ophiognathus ampullaceus*—in the British collection. (It is possible that the so-called young mentioned in the Catalogue may be a Eurypharyngoid.) The question whether that species belongs to the Lyomeri can therefore be readily settled negatively or affirmatively. Assuming that the family Saccopharyngidæ belongs to the order, the two families would apparently be distinguishable as follows:—

The Eurypharyngidæ are Lyomeri with the branchio-anal portion much shorter than the rostro-branchial; with the tail very elongated and moderately attenuated backwards; with the head flat above and with a transverse rostral margin, at the outer angles of which the eyes are exposed; with the palatine jaws excessively elongated backwards and the upper parallel, and closing against each other as far as the articulation of the two suspensorial bones; with minute teeth on both jaws; the dorsal and anal fins well developed, and continued nearly to the end of the tail, and with minute narrow pectoral fins.

The Saccopharyngidæ appear to be Lyomeri with the branchio-anal portion much longer than the rostro-branchial; the tail excessively elongated and attenuated; the cranium unknown; the eyes antero-lateral; with the palatine bones moderately extended backwards (in comparison with the Eurypharyngidæ), and apparently not closable against each other; with enlarged teeth in one or both jaws; with the dorsal and anal fins feebly developed, and with pectorals small but broad. Saccopharynx is considered by Dr. Günther to consist of "deep-sea congers," but evidently it is not at all related to the congers or any other allied fishes.

I can assure English naturalists that no type of fishes will more fully reward investigation than the Saccopharyngidæ, and it is to be hoped that some master of applied anatomy, like Profs. Huxley or Lankester, may deem an examination of the specimens in the British Museum worthy of their attention. A few of the many remarkable peculiarities of organisation of the type have been described in an article "On the Anatomy and Relations of the Eurypharyngidæ," by Theodore Gill and John A. Ryder, in the *Proceedings* of the United States National Museum for 1883 (pp. 262-273), and a full monograph will appear later. May we hope for information respecting Saccopharynx in time to correlate it with that on Gastrostomus? THEO. GILL

Cosmos Club, Washington, December 18, 1883

The Mildness of the Season

As the flowering of plants at this time of the year is perhaps the best indication of the mildness of the season, I send you a list of the plants from which I and a friend gathered one or more flowers on the 24th and 26th inst. I have given the list of each day's gathering separately. Those on the 24th were gathered between this city and Hinton Charterhouse, once noted for its Carthusian monastery. Those of the 26th were gathered between Bath and Bradford-on-Avon, a very old town which contains the remains of a Saxon church and one of the finest tithe barns in England. VIATOR

Bath, December 27, 1883

List of Plants from which Flowers were gathered on December 24

Draba verna (Spring Whitlow Grass)
Primula acaulis (Primrose)
Veronica officinalis (Com. Speedwell)
Bellis perennis (Daisy)
Centaurea scabiosa (Greater Knapweed)
Ulex europæus (Com. Furze)
Achillea millefolium (Com. Yarrow)
Crepis virens (Smooth Hawk's Beard)
Lamium album (White Deadnettle)
Fragaria vesca (Wood Strawberry)

Gathered on December 26

Ranunculus repens (Creeping Crowfoot)
Cheiranthus cheiri (Com. Wallflower)