On the Effects produced in the Rates of Chronometers by the Proximity of Masses of Iron. By Peter Barlow, *Esq. of the Royal Military Academy. Communicated by* John Barrow, *Esq. F.R.S.* Read June 28, 1821. [*Phil. Trans.* 1821, *p.* 361.]

It having been ascertained that during Captain Buchan's voyage to the arctic regions, in 1818, the rates of chronometers differed on board and on shore, and this change having been attributed by Mr. Fisher to the iron of the vessel, the author felt desirous of examining into the effects of the proximity of masses of iron upon chronometers' rates, and of determining their causes. In this communication he details the results of a variety of experiments and observations relative to the effects of iron on chronometers placed under different circumstances in its vicinity; whence he concludes, that it undoubtedly does alter their rates, but that it does not necessarily accelerate them, as suggested by Mr. Fisher; on the contrary, in Mr. Barlow's experiments, it was generally productive of retardation, much depending upon the direction of the balance in respect to the iron; and although the law of this influence has not been ascertained, it is suggested as a practical conclusion, that on ship-board care should be taken to keep chronometers out of the vicinity of any considerable mass or surface of iron; and as much of the iron of a ship is concealed, Mr. Barlow thinks the best way of ascertaining the best situation for a chronometer would be to set down a compass in any place designed for it, and to observe and compare the direction of a needle with that of the azimuthal compass on deck, while the vessel is on different tacks; and if the disagreement between the two be very considerable, another place should be chosen.

Lastly, as the power of the iron to disturb the chronometer resides on the surface (as in the instance of the compass), and as we know generally the distance and direction of a plate, such that its power may be equal to the mean action of the iron of the vessel, we are thence able to ascertain, before a chronometer is sent on board, whether the effect of the ship's iron will be to accelerate or retard its going.

On the Peculiarities that distinguish the Manatee of the West Indies from the Dugong of the East Indian Seas. By Sir Everard Home, *Bart. V.P.R.S.* Read July 12, 1821. [*Phil. Trans.* 1821, *p.* 390.]

The following are the principal differences pointed out by Sir Everard Home as characterizing the Manatee of the West Indies from that species of the Dugong, lately described to the Society, from Sumatra. It differs externally in the shape of the tail, in having neither tusks nor nails, and also in the form of its snout. The teeth differ in number; and though the general form of the skeleton is similar, there are fewer vertebræ. The stomach differs in the shape of the solid glandular part, and of the lateral pouches, but both animals feed upon fuci. The forms of the teeth, however, in

these two species are totally different, which shows, says the author, how inefficient a mode of classing animals is furnished by the appearance of the teeth.

On a New Compound of Chlorine and Carbon. *By* Richard Phillips, *F.R.S.E. F.L.S. M.G.S. &c. and* Michael Faraday, *Chemical Assistant in the Royal Institution. Communicated by Sir* Humphry Davy, *Bart. P.R.S.* Read July 12, 1821. [*Phil. Trans.* 1821, *p.* 392.]

The above substance was discovered by M. Julien, of Abo, in Finland, amongst the products arising out of the distillation of calcined sulphate of iron, with crude nitre in iron retorts. It forms white acicular crystals by sublimation, and when passed through a green glass tube containing red-hot rock crystal, it is decomposed with the deposition of charcoal and evolution of chlorine. It is not altered by repeated sublimations in chlorine. It was analysed by passing its vapour over red-hot oxide of copper, by which chloride of copper and carbonic acid gas were produced: the former was decomposed by nitrate of silver, and the proportion of chlorine estimated by that of chloride of silver formed. From this and other experiments, the authors conclude that this substance consists of one portion of chlorine and two of carbon: they failed in their endeavours to convert it into either of the other chlorides of carbon, to which, in its physical and chemical properties, it bears however a considerable resemblance.

On the Nerves; giving an Account of some Experiments on their Structure and Functions, which lead to a new Arrangement of the System. *By* Charles Bell, *Esq. Communicated by Sir* Humphry Davy, *Bart. P.R.S.* Read July 12, 1821. [*Phil. Trans.* 1821, *p.* 398.]

In this paper the author proposes to limit his inquiry to the nerves of respiration, comprehending under that term all the nerves which serve to combine the muscles employed in the act of breathing and of speaking; and after showing that the simplicity or complexity of the nerves are as the functions or organizations of the parts which they supply, and that, however numerous and complex they appear in some parts of the body, they may nevertheless be divided into two distinct classes, by ascertaining what parts are necessary to life and motion, and what are superadded as requisite to higher and more complex enjoyments and actions; the former class comprehending the nerves of the spine, the suboccipital or tenth, and the trigeminus or fifth; and the latter the eighth pair, the portio dura of the seventh, the spinal accessory, the phrenic, the external respiratory, and the lingual; Mr. Bell proceeds to a detailed account of these nerves, showing, by an examination of the nerves of the face, that the two sets differ in structure and sensibility as