

*Some Observations relating to the Function of Digestion.* By A. P. W. Philip, M.D. F.R.S. L. & E. Read January 16, 1829. [*Phil. Trans.* 1829, p. 137.]

The author, referring to his former papers published in the Philosophical Transactions, concludes that digestion requires for its due performance, both a proper supply of gastric secretion, and a certain muscular action in the stomach; the latter circumstance being required for the expulsion of that portion of food which has been acted upon by the gastric juice. Nervous power is necessary for secretion; but the muscular action of the stomach being excited by the mechanical stimulus of the contents of that organ, is independent of the nervous power. It has already been shown by the author, that after the removal of a portion of the eighth pair of nerves, the galvanic influence directed through these nerves will restore the secretion of gastric juice; but Messrs. Breschet and Milne Edwards have lately endeavoured to prove, that the same effect results also from mechanical irritation of the lower portions of the divided nerves. The author points out several circumstances which appear to have been overlooked by these gentlemen, and which, he thinks, invalidate the conclusions they have deduced from their experiments. He states that a certain quantity of digested food will always be found in the stomach of the animal for five or six hours after the operation, and even after the lapse of ten or twelve hours, from its being less completely changed, and therefore expelled more slowly than in the natural state. The paper concludes with the recital of experiments made for the author by Mr. Cutler, in which the contents of the stomach of a rabbit, whose eighth pair of nerves, after excision, had been kept mechanically irritated, were compared with those of another rabbit, in which the nerves had not been irritated, and of a third, which had been left undisturbed. All those who witnessed the result of this experiment, among whom was Mr. Brodie, were convinced that the irritation of the nerves had no effect whatever in promoting the digestion of the food; neither did it at all contribute to relieve the difficulty of breathing, consequent upon the section of the nerves.

*Experiments on the Friction and Abrasion of the Surfaces of Solids.* By George Rennie, Esq. F.R.S. Read June 12, 1828. [*Phil. Trans.* 1829, p. 143.]

The first part of this paper is occupied by a rapid review of the labours of mechanicians on the subject of friction, from the period of those of Amontons at the end of the 17th century, to those of Coulomb and of Vince in the years 1779 and 1784; from which the author draws the conclusion that the progress of knowledge in this department of science has been slow and unsatisfactory, and that a wide field is still left open to experimental investigation. With a view to elucidate several points not yet sufficiently ascertained by