at constant speed under varying loads when the external electro­motive force is constant, provided that a differential combination of direct shunt and reverse series winding be employed,—the shunt coil serving to energize the magnets and the series coil to reduce their magnetism to a certain extent when the current in the arma­ture is increased. The proportion of series to shunt winding necessary for this result depends on the relation of the resistance of the armature to that of the shunt coil, and it is an easy deduction from the theory that, when the resistance of the armature is negligibly small, the speed of a simple shunt-wound motor driven by means of a constant external electromotive force is sensibly constant, a result which has been experimentally demonstrated by Mr Mordey *(Phil. Mag.,* Jan. 1886). It is shown in the same paper that a similar means of governing may be used when the current passing through the motor is kept constant, instead of the external electromotive force. The principle of differential com­pound winding to secure automatic regulation of speed has been applied in several American motors, notably by Mr Sprague.

Details of most of the electrical tramways and railways mentioned in the text will be found in the journals *Electrical Review, Electrician,* and *Electrical World* (New York) of the dates referred to. See also *The Electric Motor and its Appli­cations,* by T. C. Martin and J. Wetzler (New York, 1887). The Portrush line is described by E. Hopkinson and A. Siemens in a paper read before the Society of Arts, April 1883. For telpherage, in addition to articles in the journals named, see Fleeming Jenkin, “ On Telpherage," *Jour. Soc. Arts,* May 1884; also *Profes­sional Papers of* the Corps of Royal Engineers, Chatham, vol. x., 1884. (J. A. E.)

TRACY, Antoine Louis Claude Destutt, Comte de (1754-1836), was born in Bourbonnais on July 20, 1754. The noble family to which he belonged was of Scottish descent, tracing its origin to Walter Stutt, a gentleman who in 1420 accompanied the earls of Buchan and Douglas to the court of France, and whose family afterwards rose to be counts of Tracy. The father of Destutt de Tracy (as he is usually called) was a soldier, and died a field-marshal. Destutt de Tracy began his studies under the superintend­ence of his mother, and afterwards prosecuted them at the university of Strasburg. During his student days, how­ever, he was chiefly noted for his skill in every kind of manly exercise. On leaving the university he embraced a military career, in which his advance was rapid. When the Revolution broke, Tracy, who was then thirty-five years of age, took an active part in the provincial assembly of Bourbonnais. He was elected a deputy of the nobility to the states-general, where he sat alongside of his friend La Fayette. In the spring of 1792 he received the rank of field-marshal, along with the sole command of the cavalry in the army of the North ; but, as the conduct of affairs fell more and more into the hands of the extremists, he took an indefinite leave of absence, and settled with his family at Auteuil. Here, in the society of Condorcet and Cabanis, he devoted himself to scientific studies. Under the Reign of Terror he was arrested and imprisoned for nearly a year. It was his solitary meditations at this period, we are told, which discovered to him his true bent. Under the influence of Locke and Condillac he aband­oned the natural sciences for the study of mind. On the motion of Cabanis he was named associate of the Institute in the class of the moral and political sciences. He soon began to attract attention by the *mémoires* which he read before his colleagues—papers which formed the first draft of his comprehensive work on ideology. The society of “ ideologists ” at Auteuil embraced, besides Cabanis and Tracy, who have been called respectively the physiologist and the metaphysician of the school, Volney, who has been called its moralist, and Garat, its professor in the National Institute. Under the empire he was a member of the senate, but took little part in its deliberations. Under the Restoration he became a peer of France, but protested against the reactionary spirit of the Government, and re­mained in opposition. In 1808 he was elected a member of the French Academy in room of Cabanis, and in 1832 he was also named a member of the Academy of Moral Sciences on its reorganization. He appeared, however, only once at its conferences. He was old and nearly blind, and filled with sadness, it is said, by the loss of his friends and the discredit into which his most firmly cherished opinions had fallen. “ His only distraction was to have Voltaire read aloud to him.” He died at Paris on the 9th of March 1836.

Destutt de Tracy was the last eminent representative of the sensualistic school which Condillac founded in France upon a one­sided interpretation of the doctrines of Locke. He pushed the sensualistic principles of Condillac to their last consequences, being in full agreement with the materialistic views of his friend Cabanis, though the attention of the latter was devoted more to the physio­logical, that of Tracy to the psychological or ‘ ‘ ideological ” side of man. His ideology, he frankly stated, formed “ a part of zoology,” or, as we should say, of biology. To think is to feel. The four faculties into which he divides the conscious life—perception, memory, judgment, will—are all varieties of sensation. Perception is sensation caused by a present affection of the external extremities of the nerves; memory is sensation caused, in the absence of pre­sent excitation, by dispositions of the nerves which are the result of past experiences; judgment is the perception of relations between sensations, and is itself a species of sensation, because if we are aware of the sensations we must also be aware of the relations between them; will he identifies with the feeling of desire, and therefore includes it as a variety of sensation. It is easy to see that such conclusions ignore important distinctions, and are, indeed, to a large extent an abuse of language. As a psychologist Destutt de Tracy deserves credit for his distinction between active and passive touch, which has developed into the modern theory of the muscular sense. His account of the notion of external existence, as derived, not from pure sensation, but from the experience of action on the one hand and resistance on the other, may be compared with the account of Bain and later psychologists. Tracy worked up his separate monographs extending over a number of years into the *Elements d'Idéologie* (1817—18 and 1824-5), which presents his complete doctrine. He also wrote in 1806 a *Commentaire sur l’Esprit des Lois de Montesquieu,* in which he argues ably in sup­port of a free constitution on grounds which hardly admit of being harmonized with his general philosophical principles. The book was translated in America by his friend President Jefferson, who recommended it for use in the colleges. The first French edition appeared in 1817, and it was several times reprinted.

TRADE, Board of. The greater part of such super­vision of commerce and industry as exists in the United Kingdom is exercised by the “ Committee of Privy Council for Trade ” (see Privy Council), or, as it is usually called, the Board of Trade. As early as the 14th century councils and commissions had been formed from time to time to advise parliament in matters of trade, but it was not till the middle of the 17th century, under the Commonwealth, that any department of a permanent character was attempted. Cromwell’s policy in this respect was continued under the Restoration, and in 1660 a committee of the privy council was appointed for the purpose of obtaining information as to the imports and exports of the country, and improving trade. A few years later another committee of the council was appointed to act as intermediaries between the crown and the colonies, or foreign plantations, as they were then called. This joint commission of trade and plantations was abolished in 1675, and it was not until twenty years later that the Board of Trade was revived under William III. Among the chief objects set before this board were the inquiry into trade obstacles and the employment of the poor; the state of the silver currency was also a subject on which John Locke, its secretary, lost no time in making representations to the Government. Locke’s retirement in 1700 removed any chance of the Board of Trade advo­cating more enlightened opinions on commercial subjects than those generally held at that time. It had only a small share in making the constitutions of the colonies, as all the American ones except Georgia and Nova Scotia were formed before the reign of Charles IL; and in 1760 a secretary of state for the colonies was appointed, to whom the control drifted away. In 1780 Burke made his cele­brated attack on the public offices, which resulted in the abolition of the board. In 1786, however, another per­manent committee of the privy council was formed by order in council, and with one or two small exceptions the legal constitution of the Board of Trade is still regulated by that order. Under it all the principal officers of state,