The disposition to invade inventors' rights, and to reward their services with empty compliments, may be less prevalent here than in England; nevertheless it is well now and then to look at it from the standpoint of simple honesty. Stealing is stealing, whether the theft is of material property or non-material.

A WORKING MAN.

Genius has been defined as a capacity for hard, steady, and long-continued work; the ability to "toil terribly," as one man of genius has expressed it. The definition may be accepted as a reasonably fair one, with the single addition that genius implies also the gift of working wisely. It is the direction that genius gives to toil, not less than the amount of it, that makes that toil so beneficial to mankind. In whatever way a modern man achieves true eminence he must work for it; and the work done by many of our really great men is positively appalling to men of less power and capacity for endurance.

There are few living men who have made their personal influence for good more variedly felt than Sir John Lubbock. In each of half a dozen different departments of useful activity he has done enough (had he done nothing else) to give him an honorable rank as an original observer, a sterling contributor to the world's progress; and the fertility of his mind seems not more wonderful than its scope and well directed energy. All owing to favorable opportunity, do you say? To inherited position, wealth, schooling, and the like? Hardly, as the history of his life will show. He owes much to such advantages; yet thousands of men have all these and more, but, lacking the disposition and the capacity for hard work, they make no permanent mark.

In his education, Lubbock illustrates what is almost a law with respect to the evolution of men of genius; his early home influences were good and liberal, and he subsequently escaped having his natural force and originality ground out of him by a formal course of university teaching. Before he was fifteen years of age the death of two of the partners of his father's banking house compelled him to leap the gulf between Eaton College and Lombard Street. From that day to this the business of his life has been banking; the investigations which have made him so widely known as naturalist and man of science have been his recreations.

The duties of his desk necessarily occupied the business hours of his youthful years; yet he found opportunity to continue his interrupted studies, and to gratify a taste for natural history which had been early fostered by an intelligent father, and subsequently stimulated by the example of Darwin, who at this time was a near neighbor of the Lubbock family.

The results of his labors in this department began to show themselves in technical journals before he was of age. At twenty-three he contributed to the "Philosophical Transactions" of the Royal Society, and to the entomological and other scientific journals. Since then his yearly contributions show at least a habit of steady application to this sort of original investigation. His recent papers on the intelligence and life habits of bees, ants, and other insects, and their service in fertilizing flowers, are familiar to all readers of the SCIENTIFIC AMERICAN.

In 1865, on the death of his father, he succeeded to the baronetcy and became Sir John Lubbock. Soon after he was induced by the Liberals of West Kent to stand for Parliament, but was beaten. In 1868 he retired in favor of Mr. Lowe, after nomination for the representation of the University of London by a committee of men of the highest scientific eminence. After another unsuccessful attempt for West Kent, he was elected for the borough of Maidstone in 1870. In the meantime he had entered into the discussion of the primitive condition of man, publishing first his "Prehistoric Times," and subsequently a work on the "Origin of Civilization," ably defending his position throughout the controversy in numerous scientific and other periodicals.

As statesman, Sir John has been as hard and successful a worker as in the domain of nature and early man. He has been a conspicuous representative of many and important interests, and has had the honor of piloting through the House of Commons several bills of signal importance to industry, commerce, and science. As the head of a great banking house he has made his influence felt in many ways. One of his most important services to bankers was the organization of the London Clearing House, with the introduction of a system of clearing checks, which extended to country banks the system followed by the London bankers. He represents in Parliament the London Association of Bankers; was a member of the International Coinage Commission, and has contributed not a little to financial literature. As a political writer he has also attracted attention, notably in his paper on the "Imperial Policy of Great Britain," published about a year ago.

In addition to all this labor as banker, Member of Parliament, and scientist, he has found time to serve as Vice Chancellor of the University of London, as member of the Public Schools Commission, and of the Royal Commission for the Advancement of Science; he has lectured before the British Association, the Royal Institution, and many scientific societies in the chief towns of England. He has been Vice President of the British Association, of the Royal Society, and of the Linnæan Society; also President of the Ethnological Society and of the Entomological Society. He is a fellow of all the societies above named, and of the Geographical Society, the Geological Society, the Society of Antiquaries, and other scientific bodies at home and abroad. He is also a magistrate, and withal a clever hand at mechanical work. It is said that his daily manual work would entitle him to a fair return on the wages of an artisan.

Would-be representatives of the working man—like Citizen Swinton, or Schwab the beer seller, or Kearney the cab man—would probably call Sir John a pampered aristocrat, and dispute his right to the title of working man; but the real workers, whether manual or intellectual, or both combined, cannot but honor him as a real worker, a useful worker, an uncommonly hard worker.

THE TELEPHONE A SENSITIVE ELECTROSCOPE.

The law first discovered by Faraday more than 40 years ago, that intermittent electric currents will induce other currents in neighboring conductors, was applied to advantage in various forms of small machines with double and triple coils, mostly used for medical purposes, and culminated in that powerful modern apparatus now found in most all physical cabinets, the Ruhmkorff coil.

The experiments proving that such currents are also generated when the wires are not close together are well known to electricians. But when the wires are several feet distant it requires delicate galvanometers or other electroscopic appliances to demonstrate their presence.

As the telephone is an instrument adapted to be acted upon by very weak electric currents, and to manifest their audible effects, it may be anticipated that it is very well adapted to test the presence of currents incidentally induced by other currents passing through neighboring wires, and the observation of such phenomena has caused the most intense surprise among those not acquainted with the law of electric induction, making them wonder how the current passes from one wire to another through several feet of intervening air. From the first time the telephone was used many strange sounds were heard, which often interfered with the successful use of the instrument, especially when the return currents went through the ground; but even while using two wires extraneous sounds were noticed, and finally it was found that the click of the Morse telegraph was transmitted through the telephone when its conducting wires were suspended on the same poles as those conducting the telegraphic messages. Finally, when the separate wires of several telephones are carried together by the same poles, or only in proximity to each other even for a short distance, the sound of every telephone was found to be transmitted to the others. The latest instance we find recorded in a late number of the Rochester *Evening Express*. It mentions that a strange fact not on the programme was developed in recent experiments. While Professor Johnson was, during the afternoon, preparing the instruments so as to transmit the singing from Buffalo to Rochester, by means of the Western Union telegraph wire, the sound was also distinctly heard through a telephone in another locality (Mannel's store), which had no other connection with the Western Union wire than that. The wire connecting it with Buffalo ran parallel and near to the Western Union wire, but nowhere touched it. It is further reported that a similar state of things took place during the concert, when the cornet solo and singing in Buffalo were also heard in a third telephone in Amsden's office, the wire of which at no point approached nearer to the Western Union wire than a distance of ten feet.

It had before been noticed that sounds were heard in Amsden's office when the telephones of the Vacuum Oil Company were used, the wires of which were parallel, but did not approach each other at any point within several feet. The Rochester editor adds: "This we regard as one of the most wonderful developments yet of this mysterious force of electricity, but perhaps the electricians will be able to give some explanation of the fact, which is well attested."

It will be seen from what we said in the beginning of this article that not only is there an explanation, but that it is founded on one of the best known and established laws of electricity, and that even the whole phenomenon was anticipated; however, it must be confessed that no one did anticipate such a perfection of detail as practical experience shows to be attainable, and it proves the telephone to be one of the most sensitive electroscopes for detecting the presence of induced currents.

NICKEL PLATING.

The plant necessary to commence nickel plating consists of a battery, preferably of the Smee type, with carbon negative; a well bolted oblong wooden tank, of a size to suit the articles to be plated, coated on the inside with good asphalt, and nearly filled with the nickel solution; nickel plates for anodes, and brass rods to suspend the plates and work in the bath; suitable vessels for an alkali, an acid, and soft water for cleaning the work before placing it in the nickel bath; polishing and buffing lathes, rouge, crocus, etc. The bath may be composed either of the chloride of nickel and ammonia or the corresponding sulphate, dissolved in pure water. If the latter is used, the solution must be kept neutral and up to about six degrees of hydrometer. It is prepared by dissolving ¾ lb. of the salt in each gallon of water. This salt is generally considered the best for nickel plating, and costs only $1.30 per pound. From this bath the nickel can be profitably deposited at $2 a pound. The chloride bath requires about four ounces of the salt per gallon, and works better with a slight acid reaction, the tendency in working being toward alkalinity, even with great exposure of anode. The intensity of battery current must be proportioned to the bath, and remain constant. Large baths offer less resistance to the electric current than those of smaller dimensions, and can therefore be worked with a current of somewhat less tension. For a bath of 10 gallons or less, the tension of the current should be equal to that of from 2 to 3 Smee cells (carbon and zinc) in series. The exposed surface of the nickel anodes should in no case be less than the surface to be coated, but may with advantage be greater. The amount of battery power for a given amount of work should be in zinc surface equal to the surface to be coated, with care to preserve the normal tension of the current. If the current is too intense the coating will present a dull white or frosted appearance. The anodes must be in connection with the negative plate (carbon) of the battery. Damage is not infrequently done to the bath and work by misconnection.

The work should be scrupulously clean when entered to the bath, and should be carefully moved about after entering to free it from any adhering air bubbles. If the finished work is to have a smooth polishing surface it must present such a surface before entering the bath. Nickel is hard and cannot well be burnished. Traces of oil and grease are removed by a hot soda solution. After dipping in clean water the surface is freed from films of oxide by an acid bath. If the work is of iron the acid may be hydrochloric diluted with three or four volumes of water; if of copper or brass, of nitric acid diluted with about twenty parts of water. Brighten the work in the acid dip, then immerse momentarily in water; go over it with a clean stiff brush and very fine sand; again dip in the acid, then quickly in soft water, and place immediately in circuit. The hand must not come in contact with the surface of the work after removal from the alkali, as the slightest touch may spoil all. On removal of the work from the plating bath it should be immediately dipped in cold water and transferred to hot water, which will cause it when taken out to dry quickly and perfectly. The bath should be covered when not in use, to keep out dust and prevent as much as possible its evaporation.

By a little practice and proper attention to these simple rules the nickel bath may be worked continuously, month after month, and the metal deposited smoothly and with certainty. Magneto-electric machines, such as those of Gramme and Weston, are now gradually replacing galvanic batteries in large electro-plating establishments.

THE WORKING WOMEN'S HOTEL.

The fine building on Fourth Avenue, Thirty-second and Thirty-third Streets, designed by the late A. T. Stewart as a home for the working women of New York city, is being rapidly put in order for the reception of its guests. The exterior work was long since finished, but until recently much remained to be done to complete the interior arrangements. The plans of the building were made by Mr. John Kellum, and were evidently well considered. The result is far in advance of any similar enterprise of the kind, every detail being especially adapted to the purposes of the structure.

There are 502 sleeping rooms of various sizes, together with eight reception rooms and extensive parlors and dining rooms. A library of nearly 3,000 volumes is one of the best features, and it is furnished with suitable desks and conveniences for writing. The carpets, upholstery, etc., were designed and made for this especial purpose, and the general decorative effect is artistic, the tints and forms being harmonious. The mechanical arrangements of the house are excellent. There are five elevators, besides stairways. Water is supplied by steam pumps from an artesian well on the premises, and the gas burned will be made in the building. This independence with regard to water and gas will effect a considerable saving, and will allow of a more liberal use. Steam heat will be introduced.

Within the building is a large court containing a fountain; and this, as well as the imposing entrance, shows an intention to make the hotel something more than merely comfortable.

The *Tribune* states that the minimum charge for those living at the hotel will be $6 per week, and from that amount up to $10 per week. These rates will be too high for the great number of working girls in New York, who are paid from $3 to $7 per week. But it is expected that a large class of women will find a home at this place. The artists, writers, teachers, students, telegraph operators, actresses, and the majority of women engaged in the finer mechanical and commercial pursuits, are believed to be numerous enough to fill many such hotels.

Practical Utility of Lubricators.

Dr. Joule, of Manchester, England, one of the most distinguished chemists of the day, has made a thorough investigation of the subject of friction and heat; and it is now not only well known that the loss of heat is loss of power, but the value of the power lost can be estimated almost to a fraction. "We may gather from this knowledge," says Mr. W.H. Bailey, "when we apply it to workshop economy, that if a pedestal or bearing becomes so hot through friction as to cause one pound of water to be raised one degree Fahrenheit in temperature in one minute, heat has been lost equal to that which would be created by a weight of one pound falling through a space of 772 feet. We are told that if we apply this conversely, heat has been lost which would lift one pound weight 772 feet; and if we apply these illustrations still further, and imagine forty-two pedestals or bearings losing heat by friction in a similar manner, we may inform ourselves that we are losing nearly one horse power, because they represent 32,424 foot-pounds of force; and if we know from our books what our coal costs, it will take very little trouble to give us the exact cash value of this friction and destructive action."