have otherwise most painful operations performed on them without an anæsthetic. The patient in question had, during a paroxysm of hysteria, fractured her lower jaw and injured the facial artery. The injury proved a most serious one, and necessitated the ligation of the facial and carotid arteries, and finally the removal of part of the lower jaw. The patient insisted upon having all three operations performed without an anæsthetic, and told the operator that she had derived great pleasure from the operation."

Action of Caffeine.

The Paris correspondent of the *Boston Medical and Surgical Journal* reports that at the meeting of the Academy of Medicine in March, Professor Germain Sée read a paper on the researches he had undertaken in conjunction with Dr. Lapicque, his *chef de laboratoire*, on the action of caffeine on the motor and respiratory functions in a normal state and in a state of inanition, the conclusions of which may be summed up as follows: 1. Caffeine in small and repeated doses, about sixty centigrams per day, which may be prescribed with advantage to soldiers on the march, facilitates muscular work in augmenting the activity, not directly of the muscle itself, but of the motor nervous system, cerebral as well as medullary. The consequence of this double action is to diminish the sensation of effort, and to avert fatigue, which constitutes a nervous and at the same time a chemical phenomenon. 2. Caffeine prevents breathlessness and palpitations consecutive to effort, which is of great importance. 3. It thus immediately communicates to a man who gives himself up to violent and prolonged exercise the aid that he requires. 4. In producing this excitation of the cerebro-spinal motor system, on which depends the augmentation of the muscular tonicity, the caffeine augments the waste of the carbon of the organism, and particularly of the muscles, but it does not restrain the nitrogenous waste. It therefore is not, in the strict sense of the word, a means of saving (*moyen d'épargne*). 5. A saving action in general can take place in the higher animals in a complete manner to prevent the injurious effects of fasting, only in a condition impossible to realize; namely, inaction or immobility, more or less absolute where there is little expenditure without work. With caffeine, we observe just the reverse, that is to say, an intense work, which we will obtain only at the expense of the wear and tear of the organism. The animal machine can work only in consuming combustible matters, and it is precisely in promoting this combustion that caffeine permits muscular work even during fasting. 6. Caffeine has not, as is generally believed, the marvellous property of replacing food: it only replaces the general tonic excitation which the ingestion of food produces. If it be admitted that it is the direct and instantaneous action of the aliments which stimulate the stomach and the nervous system, and that their alimentary value is primarily nothing, one might substitute one stimulant for another. Caffeine, far from sparing the reserves, will place a fasting man in a position to undertake his work only by attacking these reserves, the destruction of which it hastens by the excitation of the nervous system, and, by its medium, that of the muscles. The organism will then soon use up its nutritive supply, and the caffeine will not prevent it. It is, nevertheless, of incontestable but temporary utility for the physical forces.

NOTES AND NEWS.

A NUMBER of Chicago "lady medicals" are said to have organized a committee for the purpose of securing an international congress of women physicians in 1892.

—One of the latest additions to the University of Pennsylvania is the establishment of an archæological museum. In addition to the American specimens, the museum contains a fine collection of flints, bronze implements, and pottery from Europe, as well as objects from Asia, Africa, and the South Sea Islands.

—Dr. Rothrock, professor of botany at the University of Pennsylvania, is preparing for the establishment of a museum which promises to be of unusual industrial importance. The new collection, to be called the "Museum of Economic Botany," will consist of specimens of all kinds of woods, vegetable fibres, grains and drugs, arranged so as to illustrate the processes of manufacture from the raw product, and the various uses to which each material may be put.

—A study of the figures presented in the 1890 edition of George P. Rowell & Co.'s "American Newspaper Directory" reveals some interesting facts pertaining to the business of newspaper publishing. This volume, which was issued April 1, and is the acknowledged authority on newspaper statistics, estimates the total number of papers now published in the United States and Canada at 17,760. Of these, 812 are Canadian publications. This is a net increase, since last year, of 629 in the United States and 24 in the Dominion of Canada.

— In the course of some excavations lately made at Ludwigshafen, on the Rhine, the tibia and two teeth of a mammoth, and the jaw of a stag, were found. The skeleton of another "antediluvian" animal, *Nature* states, was discovered in the limestone near Oberhildesheim. The researches are being continued.

— According to a French journal, the number of foreign students now studying in Paris is about 1,000, of whom 729 (107 of them women) are studying medicine, and 182 law. Literature has 66 (including 9 women), science 60, and pharmacy 23. It is remarkable, says *Nature*, that Russia furnishes the largest contingent of the foreign medical students, viz., 150; America coming next with 139. We find no mention of England. The foreign element is, on the above estimate, about one-tenth of the whole.

—At a meeting of the Société Chimique de Paris in March a paper by M. Meslans was presented by M. Moissan, announcing the isolation of fluoroform (CHF_3), the fluorine analogue of chloroform ($CHCl_3$). A brief abstract of this preliminary communication will be found in the *Chemiker Zeitung* for March 26. During the course of the work recently published concerning propyl and isopropyl fluorides, we learn from *Nature*, M. Meslans had occasion to study the action of silver fluoride upon iodoform. The result of this action was found to vary according to the conditions of experiment, liquid products being obtained under certain conditions, and gaseous products under others. The end result, however, was always the production of a gas, which turns out to be fluoroform. Chloroform, as is well known, is readily attacked by a warm alcoholic solution of potash, potassium chloride and potassium formate being produced: $CHCl_3 + 4KOH = H . COOK + 3KCl + 2H_2O$. It is interesting to learn that fluoroform behaves in precisely the same manner, for the gas is decomposed by either aqueous or alcoholic potash with formation of fluoride and formate of potassium. On being heated to redness in a glass tube, fluoroform is also decomposed, with production of gaseous silicon tetrafluoride and a deposit of carbon. The gas is only very slightly absorbed by water, but it dissolves readily in chloroform or alcohol. Fluoroform has also been prepared by substituting chloroform or bromoform for the iodoform used in the first experiments.

—The superiority of the highways of Europe over those of the United States is one of the first things which attracts the attention of the traveller from this country. In Europe the roads are under the supervision of officials who are thoroughly trained for their work. In the United States road-engineering is committed to the control of citizens not particularly interested in this imposed task, and with no special training for their duties. The results are evident. Our public roads are a disgrace to the people. To assist in remedying this condition of affairs in Ohio, by disseminating information on the subject of roads, and proper ideas with regard to their construction and management, Case School of Applied Science, Cleveland, will give, free of charge, instruction in road-engineering sufficient to qualify a man of ordinary intelligence to properly locate and manage a highway. The instruction will consist of lectures on the following topics: location and construction of roads; keeping up and repairing roads; ditching and drainage; road-making machinery; improvement of the surface of roads, including the use of gravel, broken stone, plank, paving, etc.; highway structures, including retaining walls, culverts, bridges, etc.; cost of earthwork and mechanical structures; highway administration; and laws relating to highways. For those who desire it, instruction will be given in the use of instruments employed in road-engineering,—the compass, transit, and

level,—and in drawing plats, plans, and profiles. Besides the instruction given by the professors of Case School, practising engineers of wide experience will give lectures on special topics connected with road-making. The only preparation needed for the course of instruction is a common English education, such as is given in the district schools of Ohio. The lectures will begin the first Monday in February, 1891, and will continue four weeks. There will be no charge of any kind made by Case School.

—There is an ample demand for the increased use of soap in India; for at present, after allowing for local manufacture, it may be said of the people of India that soap is to them an unknown luxury, the consumption being at the rate of less than a shilling's worth for every hundred inhabitants a year. The imports of soap have, it is true, more than doubled during the last six years, and the trade is steadily increasing from year to year. It is not any thing like a large trade even now; for the largest quantity yet imported, that of the year ending April, 1889, reached only 74,000 hundredweight, the value of which was $511,445. The bulk of this was from England, the other European states supplying only a little over 3,000 hundredweight. The soap-factories at Bombay, Jeypore, and Meerut are doing well, and increasing their out-turn, and the local demand will most probably now go on increasing from year to year. The soap manufactured by these companies is much liked by the natives, and particularly that variety called "vegetable" soap is in much request. Hindoos of the orthodox type would not touch a soap made of tallow or animal fat, as it is against the principles of their religion to do so. Such men and women in general, therefore, did not use soap at all, and contented themselves by cleaning their hands with simple earth, or the soap-nuts of species of *Sapindus* and the legumes of *Acacia concinna*. Since the production of the vegetable soap, the objection to the introduction of that article in the native Hindoo household is overcome, and soap is beginning to replace the primitive clay and vegetable substances used. About 8,000 hundredweight of native-made soap is now exported annually. The imports of soap of all kinds into British India have been as follows in the last six years: 1883–84, 34,447 hundredweight; 1884–85, 38,075; 1885–86, 49,804; 1886–87, 59,016; 1887–88, 6[illegible],139; 1888–89, 74,072. The imports since this have, however, been declining Of 500,000 hundredweight of soap exported from England in 1888, 75,275 hundredweight went to India.

—The problem whether kangaroos can be acclimatized in England appears to have been solved at Tring Park by a very simple process. Hitherto it seems to have been assumed that the only chance of keeping kangaroos in that climate is to rear them on the principle which, to use a vulgar colloquialism, is known as "coddling." They have accordingly been kept and tended in pens or small enclosures, as we see them in Regent's Park. At Tring Park, however, according to the interesting account of Mr. Walter Rothschild, they have simply been turned loose in the park and woods, and the experiment has proved remarkably successful. Fifteen years since, the late Baron de Rothschild endeavored to breed kangaroos; but the male and young one were unfortunately poisoned by eating laurel,—a danger which English kangaroo-breeders will do well to note. Of late, however, the experiment has been renewed with success. They are found, we are told, to breed freely, and there are now to be seen in Tring Park twenty-eight or thirty native kangaroos, including the red and black species, Bennett's wallaby, the black wallaby, and the larger macropius, generally known as "the giant kangaroo."

—In respect to a statement alleging that the Australian Government had refused to allow M. Pasteur the reward of £20,000 offered to the person who should suggest the best plan for the destruction of the rabbits that infest that colony, M. Pasteur is reported to have said that this was not so, for the simple reason that he had never sought it, and that, owing to circumstances over which he had no control, he could not claim such a reward. He had sent M. Loir, his nephew, and another of his assistants, to Australia in order to try the experiments which he had made in his laboratory on a more extended scale. The assistants returned to France after a few months, discouraged. According to M. Pasteur, says the *British Medical Journal*, they were not allowed by the commission appointed by the Australian Government to make any important experiments. This commission permitted the assistants to inoculate a few rabbits, and the experiments were successful enough to warrant a further extension of the authorization; but all sorts of delays and adjournments were caused, until the assistants abandoned all hope of being able to carry out the purpose for which they had undertaken the voyage to Australia.

—Ten million young whitefish from the govermnent fish-hatchery on Lester River, Minnesota, have been placed in Lake Superior this spring, and it is intended to place fifteen million more there at once. About one-fourth of these will probably survive, maturing in four years, if the illegal work of the net-fisherman can be prevented.

—At the meeting of the Royal Society of Edinburgh on Feb. 28, Dr. John Berry Haycraft communicated the results of some recent investigations on voluntary muscular contraction. Dr. Haycraft's observations are interesting both to physiologists and to physicists. Where a muscle is stimulated by an electrical shock, all the fibres of the nerve receive the same stimulus, and all the fibres of the muscle to which the nerve passes contract together, and in the same way. This is not the case when a muscle contracts on receiving a natural nerve stimulation, starting either as a result of volition or of reflex action. The central nervous system seems unable to affect all the fibres of a muscle, through the numerous nerve-fibres passing to it, in such a manner that they all shall contract exactly in the same way. The reason for supposing this to be the case is the fact, observed by the author, that fascicular movements are always present within a muscle during a voluntary or a reflex contraction, so that tracings taken from different parts of the same muscle invariably differ from each other. The experiments were conducted, *Nature* states, both upon the human masseter and the gastrocnemius muscle of the frog. These fascicular movements occurring within it, will prevent any muscle from pulling with perfect steadiness on any lever or other registering apparatus; and the tracings taken by means of such apparatus will show oscillatory waves, often very rhythmical in their appearance. Many observers have concluded from an examination of these tracings that they indicate that the central nervous system discharges impulses into the muscle at a rate corresponding with that of the oscillations observed. Thus some observers find twenty, others ten, oscillations per second in the muscle curve, and they consider that the nervous system discharges into the muscle at these rates. The author finds that the fascicular movements just described as occurring within the muscle itself account fully for the oscillations seen, the irregular aperiodic movements of the muscle compounding themselves with the period of oscillation proper to the registering apparatus itself; for, by varying the instruments used, the resultant curves may be varied at will, slow oscillations appearing when using instruments of slow period, quick oscillations when using instruments of quick period. The author suggests that these fascicular movements probably account for the production of the muscle sound, which Helmholtz long ago pointed out was chiefly an ear-resonance sound. This, of course, could readily be evoked by any slow aperiodic movement, and the fascicular movements within the muscle must, at any rate, assist in producing it. These fascicular movements may, perhaps, account for the results obtained by Lovén with the capillary electrometer, for it is more probable that he wa registering the period of his own instrument than that th muscles were twitching at the slow rate of eight times pe second. If these conclusions are correct, there remains litt to be said in support of the theory generally accepted, that th nervous system normally discharges nerve impulses into th muscles like shots quickly fired from a revolver. It may b that this is the case, but the subject requires more extended investigation before any definite conclusions can be arrived at.