of strength or weight, and the chest-sounds were healthy. The men, however, were not of a vigorous type, and they were all accustomed to have a cold bath summer and winter. It seemed likely, especially in winter, that the sudden application of intensely cold water to the whole surface of the skin too suddenly raised the internal blood-pressure, and hence the oozing of the blood through the walls of the capillary vessels lying beneath the lining membrane of the throat or larynx, or possibly the lungs. In any case, whatever the true explanation may be, the fact stands out that the unpleasant symptom disappeared as soon as the temperature of the icy cold water was reasonably increased. The practice of taking a cold bath is so universal nowadays that it is perhaps as well to know that although the strong man may indulge in it with unmixed benefit, it may cause in the weak man a symptom which fills him with anxiety.

Lannelongue's Treatment of Tuberculosis.

The object aimed at by this method, as stated by the *Lancet*, is to bring about a sclerosis of the tubercular tissue, whatever may be its seat. The cases thus far treated have been mainly those of surgical tuberculosis.

Experiments have shown that chloride of zinc produces a remarkable fibroid change in the normal tissues of animals; and, as might be expected, the same fibroid transformation is brought about by the same agent in morbid tissues in general, including the tubercular. This chemical compound may be said to fix the anatomical elements by killing them, for it obliterates the capillaries and smaller vessels around where it has been deposited. An inflammatory action is thus set up in the vascular walls, which narrows the calibre of the surrounding vessels for a considerable distance from the initial point. But over and above this another local change of the highest import is brought about. Very rapidly — even within a few hours — there is produced in the altered tissues, by transmigration, and probably also by cell proliferation, an enormous afflux of new anatomical elements. These young cells cause fresh œdema of the periphery of the granulation growths, and infiltrate the tubercular neoplasm to the fullest extent. From this moment the struggle sets in between the accumulated elements and the bacilli, especially between the migratory cells and the microbes, to the detriment of the latter. However it may be as to the strife between cell and bacillus, the elements of the morbid growth which the chloride of zinc had destroyed are re-absorbed slowly, and finally disappear. The young cells, on the contrary, organize with great activity, and form a firm fibrous tissue, which is met with in appreciable quantity as early as the day next after the injection.

Following the sclerosis in articular fungosities, there is produced a thickening and subsequent condensation of osseous tissue if the periosteum be involved in the reparative process, as was the case in the examples of osteo-arthritic disease cited by the author. The remote results, so far as it is yet possible to judge, show a marked tendency for the sclerosed elements to be replaced by a more pliable connective tissue. As a consequence, the diseased parts regain their suppleness and their form, while locomotor functions are preserved entirely, or at least to the limits present at the beginning of the treatment.

The Artificial Production of Dental Caries.

For the past year Mr. Sewill, following other experimenters in the same field, has been endeavoring to produce caries in extracted teeth; and certainly the microscopical appearances presented by the sections shown at the Odontological Society, says the *Lancet*, differed but little from those of natural caries. He found that the best mixture of organic substances for the purpose was one part of bread to eight of saliva. Meat with saliva remained alkaline, and if a small quantity of acid were added became again rapidly alkaline. Albumen, whether as white of egg or other forms, acted in the same way. Saliva and starch produced little acid, which was soon exhausted.

The teeth were immersed in the mixture in glass-stoppered bottles, and kept at a temperature of 35° to 37° C. The bottles were unstoppered about once a day for examination; this, of course, admitted air, and if the mixture became putrid, it at once showed an alkaline reaction, in which case the teeth were taken out, well washed, and the mixture renewed. The mixture became rapidly acid, and remained so (unless putrefaction to a large degree supervened) for from three to five weeks. The acids present were acetic and lactic; of the former 5 per cent and of the latter 0.5 per cent were found after three weeks. The effects upon the tissues were precisely the same, both macroscopical and microscopical, as in natural caries. As in natural caries, the decay was found to commence most readily in places where there was ill-formed enamel or flaws or fissures which allowed access to the dentine, in which tissue the caries progressed more rapidly than in enamel. Cementum resisted longer than enamel, but at length yielded, and allowed the dentine beneath to be invaded. Discoloration was often present, and it was found that carious dentine readily took up stains from such substances as are often admitted to the mouth in medicines or articles of food. Microscopically the translucent zone is well shown, also the "pipe-stems" appearance in transverse sections, and the dentinal tubes are filled with micro-organisms, just as in natural caries.

The conclusions that Mr. Sewill draws from these experiments, and from the facts that caries takes place in natural teeth which are used as artificial substitutes, are, that caries is entirely due to external agents, and that vital action in no way modifies the disease.

NOTES AND NEWS.

THE university extension work has been organized in Chicago. Cleveland, Indianapolis, Fort Wayne, and Altoona are among the latest applicants for branches.

— Accessions to the membership of the Society for the Extension of University Teaching continue to be sent in at the rate of nearly a hundred a week. The best indication of the national character of the work is found in the wide area from which these applications are received, every State in the Union being now represented on the rolls.

— The work of the St. Paul (Minn.) Academy of Science continues to meet with increasing support and encouragement. The museum is receiving many additions, its rooms being permanent and well adapted for the purpose. Persons willing or desirous of adding to its collections by loan, gift, or exchange, are invited to correspond with Professor W. F. Phelps, chairman of the committee on museum, or with Mr. C. B. Scott, curator. It is gratifying to learn that the university extension classes, organized under the auspices of the academy, and conducted by professors from the State University, from Carlton College, and other near-by points, have proven quite successful and promise much for the future.

— The heavy sentence of four years' imprisonment, in addition to fines, imposed in France recently on four persons connected with the alleged sale of the secret of melinite to an English firm gives a new turn to that strange affair. It was recently announced by the French minister of war that M. Turpin, the inventor, and Captain Triponé, the agent of the English firm, really had nothing of value to the French government to negotiate for, and that the most important part of the invention — the means of exploding melinite after it has been united with another substance in the shell — remained in the sole possession of the government. This second substance, according to the New York *Times*, is cresilite, a nitro-cresol obtained from a coal-tar product; and after two-thirds of the space in the shell has been filled with it, melinite is rammed in — a fact which sufficiently indicates that both products can be safety handled, and can be exploded only by a powerful detonator.

— In its latest report the Board of Health of the city of Boston says: "We are of the same opinion now as we were when we made our last annual report, that the large expense to the city, and the perpetual nuisance which attends the storing and handling of garbage, should be abolished by burning it in the kitchen, where it first appears as waste, and before decomposition has begun to make it offensive. By this method the only expense to be

incurred would be the purchase of the pail or other attachment for the kitchen range, which would be less in a term of five years than the present cost of receptacles for storing the garbage. It is a mistake to throw this material upon the fire, for then the combustion is imperfect, and very offensive odors are given off. It should always be placed in a receptacle specially and conveniently arranged for the purpose, in some part of the stove. The ordinary heat of the stove will dry out all moisture and leave charcoal, to be burned like other fuel. There are several patented devices already in the market for this purpose. One of them is obtained only in the construction of the stove, and consists of a receptacle in the side of the stove in which the garbage is put, completely desiccated, and then dumped into the fire. Another consists of a small pail arranged for the purpose, can be applied to any stove, and is said to answer the needs well."

— At a recent meeting of the Chicago Medical Society, says the *Medical Record*, Dr. J. Frank reported a case where a man every July shed his skin. He was taken with feverish tremors, increasing almost to paroxysms. He undressed, lay down, and within a few minutes the skin of the chest began to turn red. The redness rapidly extended over the entire skin, and the feverish tremors continued uninterrupted for about twelve hours. Then he arose, dressed, and walked about in perfect health. The skin now commenced to peel, and ten hours later it began to come off in great patches. From the arms and legs it could be pulled off exactly like gloves or stockings As the old skin came away a new epidermis, as soft and pink as a baby's, was revealed. This new skin was very sensitive; the patient has to wear softened gloves and moccasins for about a week. After the old cuticle had been entirely removed the finger and toe nails began to drop off — new nails literally crowding them out. Finally the change was complete, the man had a new skin and a new outfit of nails, and was ready to return to the mines. The shedding began in his first year and recurred every July thereafter.

— It is worthy of remark that the idea of university extension has taken root in other than English-speaking countries. A Danish correspondent writes to the Oxford *Gazette* in regard to work in Denmark: "About five years ago the undergraduates of the University of Copenhagen undertook to give free instruction to the working classes and others who were in need of such instruction. Courses were given in languages, natural science, and all subjects commonly taught in high schools. The rooms in which the instruction was given were lent free by the schools and other institutions. The movement succeeded, and after three years the organizing committee applied for and got State aid, to which, however, no conditions were attached. It was only an encouragement given to the brave efforts of the students. The undergraduates now give free legal advice through competent men, and the movement is extending in every direction. Branches of the central society in Copenhagen have already been established in the chief towns of Denmark, and it is only a question of time when the whole country will be covered by a network of similar instruction."

— Some time ago, says *Engineering*, Mr. Bryan Donkin made a number of experiments on the flow of heat through the walls of a steam engine cylinder, using for the purpose delicate thermometers. At a recent meeting of the American Institute of Electrical Engineers Professor E. H. Hall gave the results of some preliminary experiments on the same subject, made with a thermopile, consisting of a plug of iron, which was screwed into a ¾-inch hole in the cylinder, and had a small hole bored through its centre. Down this hole was passed a nickel plug attached at one end to a thin iron plate, which was also attached to the iron plug. The outer ends of the iron and nickel plugs were connected to a delicate galvanometer in the usual way, and the nickel was of course insulated from all contact with the iron save by the thin plate already mentioned. Three thermopiles constructed on this system were used. In the first the plate connecting the two elements was one-half a millimetre thick, in the second one millimetre thick, and in the third two millimetres thick. The engine cut off at about ¼ stroke, and ran at sixty revolutions per minute. It was found that using the plug with the one-half millimetre plate, the temperature at cut-off was below the maximum, and fell rapidly during exhaustion. The ebb and flow of heat in the cylinder walls was very evident. Heat rushes into these walls at admission, but at cut-off, begins to travel back into the cylinder again, and continues during exhaust to flow from the walls and to boil off any water that may be in the cylinder. Professor Hall thinks that there is evidence to show that in the case of the engine on which he was experimenting a layer of water remained in the cylinder walls from the previous stroke, thus increasing condensation.

— Captain Cowell of the British ship "Drumeltan" reports as follows to the Hydrographic Office on the use of oil in stormy weather at sea: "I have for eighteen or twenty years used oil-bags in heavy running, especially in running down the easting on Australian and New Zealand voyages from England; they have always acted well, the ship running considerably drier, with less sea on board. I have always used canvas bags, first filled with oakum and then the oil poured in. The bags are hung at each cathead with a rather long lanyard, so that it will sometimes dip in the water as the ship rises and falls. In my last voyage in this ship, in the Pacific, off Patagonia, I lay-to for seventy-two hours in a furious gale from west-south-west, but did not ship any heavy water; had one oil-bag at the weather cathead and another at the mizzen rigging, with long lanyards (4-masted ship). Nothing but spray came on board. I learned afterwards that a good many vessels were damaged in that gale, or rather hurricane. Two days afterwards (April 15, 1890), I myself passed the "Adamant," of Hamburg, dismasted and abandoned. I always keep two oil-bags filled with oakum, ready for oil at short notice, and I invariably destroy the old bags, as they are liable to dry hard and become useless."

— Referring to a statement which has been publicly made, that the adoption of electric lighting in place of gas at the office of the Savings Bank Department of the General Post Office, London, has been followed by a marked reduction in the amount of sick leave, the *Lancet* says it has good authority for believing that the statement in question is substantially correct. Although the time which has as yet elapsed — two years — since the introduction of the new illuminant has been insufficient for the collection of trustworthy statistics, the paper named thinks there is every reason to believe that electric lighting will prove to be much more wholesome than ordinary gas flames. An electric lamp does not compete for the oxygen of the apartment in which it is placed, and this circumstance gives it a marked advantage over any open flame. It cannot, like some forms of gas-burner, be used to promote ventilation; but in ordinary situations its harmlessness is a much more important property.

— An antiquarian find which will excite interest all over Europe, says the *Academy*, has lately been made in Rœvemose peat bog, near Hobro in Jutland, Aalborg Amt. The objects are all of silver, the principal piece being a very large basin, on which have been fastened plates of silver hammered out with figures of men, women, and animals. The basin is twenty-six Danish inches in diameter, but scarcely eight inhes high. One or two pieces are apparently wanting; but it is hoped they will turn up when the moss is minutely examined. The eye-holes of the figures are now empty, but had evidently been filled with colored glass. One of the plates, which is nearly seventeen inches long, shows warriors, with helmets and other ornaments. One figure is a god with a wheel at his side, and on another are two elephants. A third shows a horned god in a sitting posture with his legs crossed orientalwise. All these have apparently nothing to do with Northern mythology, as was at first supposed. The whole find has now reached the Danish National Museum, and we see that these pieces belong to the god-lore of the Gallic peoples. The god with the wheel, for instance, is the Gallic sun god. The whole is the work of a Gallic artist at that early period when the Roman and Gallic peoples first came in contact. Allowing time for these things to wander so far north, the date would seem to be, as regards Denmark, the first century before Christ. Other things belonging to this Gallic group have been found previously in this country. The total weight of precious metal hitherto exhumed is about twenty Danish pounds.

— The attendance at the lectures of the Society for the Extension of University Teaching for the past season, as reported from the general offices of the society at Philadelphia, was exceptionally large, as compared with any previous experience either in this country or England, and, as a result, many may hesitate to form centres because they see no prospect of getting two or three hundred to follow the lectures of the course. Perhaps it may be well in this connection to notice the fact that in the printed report of the London society the average number present at each lecture in many centres is found to vary between eight and fifty. In many cases, certainly, the attendance was much larger, but it is by no means clear that the smaller centres were not fully as successful in several important particulars. It has been observed, for example, that the percentage of those in attendance at the lectures, who also took part in the class work, was greater in the smaller groups. Since so many of the benefits of extension work are dependent upon a participation in the lectures by the class, one must conclude that proportionately the smaller centres were more successful. Wherever there are a score of persons who wish to hear a given course, there should be no hesitation on account of the small numbers. Better results in many ways will be obtained under these circumstances.

— During recent years a good deal has been said amongst marine zoölogists of the use, as a food supply, that might be made of the enormous numbers of copepoda that swarm in the surface-waters of the sea, says a Norwegian correspondent of *Nature*, and the Prince of Monaco has pointed out the value this widely-distributed nutritious matter might have to shipwrecked sailors; but I am not aware that any one has yet actually made the experiment of cooking and eating copepoda, so the following record may be of some interest. While tow-netting during the last few days about the North Cape, we have had some large hauls of copepoda; and it occured to us last night, while watching the midnight sun off the entrance to the Lyngen fjord, that one gathering might be spared from the preserving bottle and devoted to the saucepan. We put out one of the smaller tow-nets (3½ feet long, mouth one foot in diameter) from 11.40 P.M. to midnight, the ship going dead slow, and traversing in all, say, a mile and a half during the twenty minutes. The net when hauled in contained about three tablespoonfuls of a large red copepod (*Calanus finmarchicus*, I think), apparently a pure gathering — what Haeckel would call a monotonic plankton. We conveyed our material at once to the galley, washed it in a fine colander, boiled it for a few minutes with butter, salt, and pepper, poured it into a dish, covered it with a thin layer of melted butter, set it in ice to cool and stiffen, had it this morning for breakfast on thin bread and butter, and found it most excellent. The taste is less pronounced than that of shrimps, and has more the flavor of lobster. Our twenty minutes' haul of the small net through a mile or two of sea made, when cooked in butter, a dishful which was shared by eight people, and would probably have formed, with biscuit or bread, a nourishing meal for one person. It would apparently, in these seas, be easy to gather very large quantities, which might be preserved in tins or dishes, like potted shrimps.

— The annual meeting of the Society for the Preservation of the Monuments of Ancient Egypt was held last week, says *Nature* of July 23, in the rooms of the Society of Antiquaries at Burlington House. Lord Wharncliffe, president, occupied the chair. The report stated that there was little to report of success attending the proceedings of the society for the past year. Its energies had been directed principally to two points, the necessity for an official inspector or superintendent in Egypt, whose duty should be the care of the ancient monuments, and an endeavor to do something towards arresting the gradual destruction of the Great Temple at Karnak. Reports concerning a proposed scheme for barring the Nile below Philæ, to make a vast reservoir for purposes of irrigation, had appeared in the public papers from time to time, and recently various more definite communications had been received by the committee on the same subject. The result would be, it was acknowledged, to completely cover this beautiful island and temple with water. There had been some correspondence on this subject with the authorities in Egypt; but as nothing had as yet been decided as to any scheme of irrigation, and as a committee would be appointed to consider the whole question, it might be considered as suspended for the present, and the committee had thought it best to wait before taking any further action; but they would not lose sight of this important matter, and would oppose to the utmost of their power any engineering scheme which would involve injury or destruction to this world-renowned spot. General Donnelly moved the adoption of the report; and the motion was seconded by Sir Edmund Henderson, and agreed to. The committee for the coming year was then elected, and a discussion subsequently took place as to the proposed scheme for barring the Nile below Philæ, the opinion of the meeting being evidently strongly opposed to the adoption of any system of irrigation which should involve damage to the temple. Mr. J. Bryce, M.P., spoke of the wanton injury which was often inflicted on monuments in Egypt, and said that he thought it would be necessary, in dealing with that matter, to bring the question of jurisdiction to the attention of those from whom any system of inspection or care was to emanate.

— The most remarkable example of reclamation by means of artesian well-water, says United States Irrigation Commissioner Hinton, in an official report, is found in the desert provinces or departments of Algeria under the French rule. The area, officially given, of French Algeria, is 184,465 square miles. The outlying portion is put at 135,000 square miles. In this total of over 329,415 square miles one-half belongs to the Sahara or desert. The European population in 1887 was about 250,000; the natives and naturalized were 3,328,549, making a total of 3,578,549. Cultivation by means of flowing well-waters has been sedulously fostered by the French colonial government for both political and economic reasons. Such wells as a means of reclamation began systematically to be bored in 1857, the French engineer M. Jus having demonstrated in 1856 that the desert was endowed with large supplies of underground water. The total number of wells that have been bored since that date in the departments of Algiers, Oran, and Constantine is stated at 13,135. These wells range from 75 to 400 feet in depth, and the low pressure common to the majority of them forces the water to a distance of about two feet above the ground. The waters are then collected in small ditches, which convey them to the vineyards, date-trees, and fields of durra, millet, wheat, etc., which comprise the chief products. In all, about 12,000,000 acres have been reclaimed in this way. The government bores are at least one-tenth of the whole number. As an illustration of the reclamation brought about by this well irrigation, the following figures from a report made in 1885 will be of value, but they relate solely to the cultivation of the grape for wine-making purposes. In the province of Algeria there are 60,322 acres; in Constantine, 25,021 acres; in Oran, 26,114. Under this species of cultivation Algeria is becoming a great wine-growing country. It sent to France during eleven months of 1886, 10,513,966 gallons of wine; and of cider in the same year, 219,277,124 gallons were made. The date-palm is the largest product of the desert oases proper. The total area under colonization or settled occupation in 1887 is given at 49,400,000 acres; under cultivation by irrigation in wheat, barley, oats, vines, olives, dates, tobacco, etc., at 17,041,133. The forest plantations cover 5,000,000 acres.

— Professor Louis Bevier of Rutgers College has been appointed to organize the work of university extension in connection with that institution.

— Professor Jeremiah W. Jenks of the University of Indiana has accepted the chair of social, political, and municipal institutions in Cornell University.

— W. F. Durand, late of the Agricultural College of Michigan, is now professor of mechanical engineering at Pardue University, Lafayette, Ind.

— Professor A. T. Woods, well-known as a writer on mechanical topics, has resigned the professorship of mechanical engineering in the Illinois State University to become professor of dynamic engineering in Washington University at St. Louis.