was succeeded by the *pebrine*, which swept the silk-growing district irresistibly, until a discovery was made which provided a practical escape from its ravages. This discovery was a new and certain method of detecting the disease in the chrysalis, or moth, which lays the eggs that serve as the seed for next year's growth of silk-worms. By the time, however (1880–81), that this remedy was generally known and practised, the situation had become in other respects almost hopeless. After the war of 1871, wages and the cost of living had greatly increased. Selling prices for farm produce of all kinds, which had formerly been ample, were no longer sufficient, in many cases, to pay the cost of production. The price of cocoons, which at one time had been as high as eight francs a kilogram, fell to six, and then to four francs, and even less. Discouraged by disease and low prices, thousands of farmers rooted up their mulberry-trees for fire-wood, and devoted the ground to vines and other forms of culture. The skilled women, who had formerly gathered the leaves for the silk-worms, and reeled the cocoons, had gone to other employments at higher wages than the languishing silk-industry could afford to pay. By this time French manufacturers no longer depended upon home-grown silk.

During recent years important discoveries in the chemistry of silk-manufacture had enabled the spinners, by skilful dyeing and "loading" their goods with gums and mordants, to use inferior grades of Japanese, Chinese, and Italian fibre in place of the superior organzines which had given the fabrics of Lyons and the ribbons of St. Etienne their lustre and renown. It is urged that the manufacturers were protected by high import duties; but the raw material which fed their looms was, and still remains, duty free. It is said that the weighting and loading of French silks have been carried to an extent which has injured their reputation, and not only disgusted French consumers of such goods, but raised the question whether the use of so much low-grade Asiatic fibre has been, after all, a blessing to the manufacturers of France.

There is now a new and steady demand for better material, and the question has now arisen, "Why not protect the native silk-growers, and raise it at home?" It is argued that it is solely due to the competition of foreign cocoons, and the increasing use of low qualities of silk loaded with fraudulent dyes, that French silk culture has languished since Pasteur's discovery conquered the malady which had threatened its existence. The peasants of France, who hatched more than a million ounces of silk-worm eggs in 1872, used less than a quarter of that quantity in 1886.

In conclusion, Consul Mason says, "The government, which had increased the duties on wheat and cattle, left the agriculturists without protection, and, seeing no hope of relief, many have given up the strnggle, and either emigrated to South America, or flocked to the already overcrowded cities and towns. There are, in this consular district, six rural departments in which the population is steadily decreasing, and this decadence of agricultural prosperity involves a serious menace to France."

HEALTH MATTERS.

Oxygen-Gas in Pneumonia.

IN an article on the value of oxygen-gas in pneumonia, in the *Lancet*, May 24, 1890, Dr. John Chambers says that during the early months of last year, as a practising physician in the United States, he met with many cases of the disease, occurring chiefly in adults and men of middle age. These symptoms in the cases observed were due directly to the deficient aeration of the blood. They were marked by difficulty of breathing, together with weakness of the heart's action. The faulty aeration is recognized almost at its onset by the livid hue of the lips, of the ears, and the finger-nails. This condition is well known to every physician, and, as it is the token of immediate danger to the patient, it is important that the best measures be taken to overcome, if possible, the difficulty. In pneumonic cases in young and old, presenting symptoms of deficient blood aeration, the inhalation of oxygen-gas has, in Dr. Chambers's hands, proved to be a remedy of remarkable power. Under its use, the lips recover their redness, the breathing becomes easy, and the toneless heart is strengthened in its action.

As to the method of using the gas, a few words may be added. A supply of pure oxygen-gas can be easily obtained from the laboratory of a chemist. It is collected in a receiver, and can be conveyed a considerable distance without loss of gas. In the immediate use it is better to fill a rubber bag from the tank than to give the gas directly to the patient. The rubber bag should have a capacity of one or two gallons, and be provided with a stop-cock at one end. To this a short rubber tube ending in a mouth-piece can be readily attached. The mouth-piece is applied over the mouth of the patient, the valve of the bag is turned, and the whole or any portion of the gas in the bag can be inhaled at a single dose. As the gas is heavier than air, its escape from the bag will be facilitated by holding this above the level of the mouth, and slight pressure upon the bag will still further assist in the inhalation. From half a gallon to a gallon of gas can be given every half-hour with perfect safety, and with great relief to the sufferer's symptoms. Such doses have been continued for four days and nights, with the most satisfactory results. Life has certainly been saved in many cases when it has seemed that death was inevitable. When cardiac weakness is urgent, an excellent and safe tonic is found in sulphate of strychnia, which may be given in doses of one-eightieth of a grain every four or six hours, until a decided change in the condition of the pulse is manifest. When this occurs, the strychnia is omitted, but may be of use again in a day or two if the pulse should fail. The relief in desperate cases, where asphyxia is threatened, is so marked that it is astonishing physicians have not more generally used this simple remedy. The use of oxygen-gas imposes a great deal of labor on physicians and nurses. With a little training, however, the nurse soon learns to give the oxygen, thereby relieving the physician. Two nurses should be employed,—one for the day, and one for the night.

An Epidemic of Pulmonary Phthisis.

Dr. Marfan, chief of the medical clinic of the Faculty of Medicine of Paris, gives, in the *Semaine Médicale*, Oct. 23, 1889, the details of a localized epidemic. In an important business-house in the centre of Paris, twenty-two persons were employed about eight hours a day. One of them, aged forty, employed at this place for twenty-four years, had been phthisical for three years, when he died on the 6th of January, 1878. He coughed and spat upon the floor for three years, and did not leave his work till three months before his death. From that time, out of twenty-two persons employed, fifteen have died. One only died of cancer: the remaining fourteen died of pulmonary tuberculosis. One year before the death of the first person, who appears to have been the starting-point of the epidemic, two employees, who had been connected with the same business for more than ten years, began to cough and spit upon the floor. They died in 1885. Beginning with the end of 1884, the deaths followed each other at closer intervals.

Dr. Marfan states the unsanitary conditions of the apartment in which these persons were employed. It was small, and the cubic air-space was less than ten cubic metres (350 feet) to each person. It was badly ventilated, badly lighted, and the gas was burned a part of each day, especially in winter. The floor was of wood, uneven, cracked, and very dirty. The first victim of phthisis, and those who followed, spat directly on the ground; and the sputa, becoming dry, was converted in this already unhealthy apartment into a poisonous dust. The room was swept each morning; and sometimes the employees arrived before the sweeping was finished, and while the dust was still floating in the air. It was difficult to sweep the room thoroughly, since the tables were fixed to the floor. It appears very probable that the swallowing and inhaling of this tuberculous dust was an essential factor in the propagation of the disease.

The proprietors of the place where the deaths occurred removed and burned the floor, and so rapidly was the work accomplished that the reporter had no time to collect a sample of the dust from the cracks in the floor for the purpose of experiments upon animals. A new floor was laid, which was waxed and treated from

time to time with spirits of turpentine, all painted surfaces were repainted, and Dr. Marfan recommended that the floor should be swept in the evening after the departure of the employees, and that the windows should be left open all night.

Dr. Vallin recommends in place of these measures a mixture of equal parts of coal-tar and spirits of turpentine, or of paraffine dissolved in warm petroleum, and, in place of the sweeping, the removal of the dust by sponges, or cloths moistened with an antiseptic solution.

Tissue Metabolism in Cancer.

Dr. F. Müller has made some careful comparative observations upon the urine in cases of cancer and other wasting diseases, and in simple starvation. He finds, according to the London *Lancet*, that in the cancerous the excretion of nitrogen far exceeds the amount ingested, and infers that this excess must in consequence be derived from the disintegration of the albuminoids of the body. However, in two out of seven cases this loss was not greater than occurred in other individuals similarly insufficiently nourished. The chlorides were, on the other hand, notably diminished,—a fact, he thinks, pointing to the source of the excreted nitrogen; viz., from the organ albumen, and not from the circulating albumen. Obviously, however, many diseases share, with carcinoma, in this disintegrating process, as Müller showed to be the case in chronic febrile affections, especially severe forms of malaria, in leukæmia, and pernicious anæmia. Previous observers do not coincide in their statements on this head as regards leukæmia. Voit and Pettenkofer found no marked evidence of increased metabolism in this affection, and Fleischer and Penzoldt concurred in this so far as regards mild cases. But in severe cases the last-named find the urea to be increased both absolutely and relatively. Sticker and Klemperer arrived at the same conclusion. Respecting pernicious anæmia, there is a concurrence of testimony in support of increased nitrogenous excretion. Reverting to cancer, this evidence, Müller thinks, goes to prove that malignant disease excites the formation of metabolic products which are poisonous to the organism. He points out that cachexia develops in the cases of malignant growths, no matter how limited, and without their involving any important organ; whereas a non-malignant tumor may attain great dimensions without affecting the excretion of urea. At the same time no such poison or ferment destructive of albumen can be isolated from cancerous tumors, although the fact pointed out by Feltz, that the urine of the cancerous is more toxic to animals than that of healthy individuals, is, with other facts, highly suggestive of that view.

Kola-Nut for Seasickness.

Dr. C. W. Hamilton of the British Navy writes to the *British Medical Journal* of May 10, 1890, that he has found the seed of the kola (*Sterculia acuminata*) a most successful remedy in seasickness. From half to one dram of the seed was slowly chewed, and in about half an hour the distressing symptoms of the malady gradually disappeared. The writer had never found any drug to act as well as this, and believes that further trials will prove it to be an effectual remedy for seasickness.

ELECTRICAL SCIENCE.

Electric Welding and Ice-Machines.

THE ice-famine is proving a bonanza for the Thomson Electric Welding Company, says the *Boston Advertiser*. There is a great demand at present for pipe-welding machines, with which to make the long coils of pipe for artificial-ice machines, for brewery coils, for sugar-refinery and general refrigerating purposes. The pipes originally come in lengths of from eighteen to twenty feet. The coils are frequently six hundred to seven hundred feet long. By old systems the pipe is welded together by a slow and laborious process, requiring fifteen minutes for each weld, two blacksmiths and a dozen helpers, and a large space, each pipe being lifted from the forge to the anvil, and a mandril inserted. There is often a serious loss of ammonia as a consequence of imperfect welding. By the electric process the welds can be made so homogeneous that there is no chance for ammonia to escape. The length of time required is two minutes for each weld, and all the help required is a man and a boy. The cost of the old process is fifteen cents each; by the new, two cents. As the coil is bent after each weld, the work can be done in a very small space. The managers of the Welding Company consider this, next to shell-welding, the most important industry which has sprung up as a result of the welding invention.

Atmospheric Electricity in the Tropics.

In order to investigate the relations of atmospheric electricity to the moisture of the air within certain limits, Herr F. Exner has made observations of the fall of atmospheric potential in countries with high relative moisture, particularly in the Indian Ocean between Aden and Bombay, in Bombay itself, and in Ceylon, both on the coast and in the interior. According to *The Electrical Engineer* of July 9, the measurements were made with transportable apparatus invented by Herr Exner. All the values of the fall of potential were positive. Near the coast the finely divided spray arising from the breaking of the waves exerted an increased action on the fall of potential. On the other hand, measurements made in Cairo and the vicinity showed that there the dust of the air exerted a lessening influence on the fall of potential, which, with a strong wind, was so marked that the sign of the fall of potential became negative.

Storms and Electric Wires.

It has for some years been the practice at the Berlin post-office, says the London *Electrical Review*, for the employees to make a note of storms and magnetic disturbances, direction of storms, length, etc.; and the result has demonstrated that underground wires, without being entirely free from the influence of magnetic storms, are much less liable to disturbance than overhead ones, and, on the other hand, that accidents from lightning are much less serious in those towns where the overhead system is in vogue.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

A Stony Meteorite from Washington County, Kan.

HAVING seen press despatches from Washington, the county seat of Washington County, Kan., announcing the fall of an aerolite near that town on Wednesday, June 25, I visited that county at the earliest possible opportunity, for the purpose of ascertaining the facts. I found them to be as follows, and verified by a multitude of witnesses: At about ten minutes before one o'clock on the afternoon of June 25, the sky being free from clouds, a strange noise was heard by thousands of people residing in the counties of Washington, Republic, Cloud, Clay, Riley, Pottawatomie, and Marshall, in Kansas, and in the counties of Thayer, Jefferson, and Gage, in Nebraska. The same noise was heard by hundreds of people in counties more distant than those mentioned.

The descriptions given me of the character of this strange sound were exceedingly various. Mr. E. F. Woodruff of Clifton, fully twenty-five miles from the place where the meteor struck the ground, stated to me, that while standing on the front porch of his hotel after dinner, a few minutes before one o'clock, his attention was attracted by a rumbling sound like thunder, which began gently, and increased in power to a maximum, rising even above the din of a Missouri Pacific Railroad train which passed within a few rods during the continuance of the phenomenon. The sound appeared to him to come from the zenith, and to continue for two or three minutes, gradually fading away, and being at no time of an explosive character.

Mr. John Yates of Grant Township, more than fifty miles from Washington, on the contrary, heard the sound of the flying me-