

The lesson to American farmers, especially those of the North-west, which the total product of the cultivation of flax in Russia furnishes will be readily appreciated and understood. The possibilities which the cultivation of the flax fibre offers to Western farmers is only equalled by the surprise that such possibilities have thus far been neglected. The seed has been cultivated with more or less satisfactory results in the United States, but the fibre practically not at all. The climate, soil, and conditions generally throughout the North-west are very favorable to the cultivation of the flax fibre as well as the seed. After a short experience, as to the primary manipulation or handling of the flax fibre, our farmers would produce flax which would compare favorably with the best varieties of the fibre. It seems strange that a practical people like ourselves should for years have been satisfied to cultivate flax for the seed at a value of about fifteen dollars per acre, and at the same time allow six hundred pounds of flax fibre per acre to rot on the ground, this flax fibre having a value, after being manipulated, of \$186 per ton.

Familiar as our farmers are with the working of improved and expensive agricultural machinery, and the latest developments of the human intellect as applied to the soil, they may always learn something by watching the working of rude ideas as seen in a primitive and unsophisticated people. The main difference between the old and the new system of farming is not one of method, but of expense; and, as physicians never really know what a disease is capable of until they see an outbreak in virgin soil, so it is not possible to fathom all the possibilities of the most commonplace notions and devices until we see them applied with the unconventional freedom and simple directness that belong to comparatively primitive peoples. The Russian peasant is both simple-minded and ignorant. He clings to old methods as much from liking as for the expense which new methods involve. From the flax fibre, by the aid of his primitive and rude contrivance, the Russian peasant produces linen, thread, crash, and other valuable and necessary articles for the use of his family and for sale. It does not require the aid of expensive machinery to make the flax fibre either useful or valuable. The rude machines which the Russian peasant employs are the handiwork of some village carpenter or wheelwright, and are made at a comparatively small cost. If the Russian peasant farmer accomplishes such results, the American farmers, who possess like conditions of climate and soil, should accomplish much more.

The unsatisfactory condition of our farmers in our north-western States, which is certainly due to the overcultivation of wheat, with its yearly decreasing yield per acre, renders it all the more important that a speedy means be found to relieve a condition of things which affects the material interest and welfare of the great majority of the people of the United States. Such a means exists in the flax plant. It will not only enable farmers to make their own linen, rope, thread, crash, toweling, oil cake, and much besides, but will cause new industries to be established throughout the country in districts where the advent would be both profitable and new. There should be a general and persistent effort made to encourage the cultivation of the flax fibre throughout the United States, with the view of establishing factories for the manufacture of twine or textiles, and, if our consul's report should develop a proper interest in so important a subject, the result can not fail to be satisfactory.

HEALTH MATTERS.

The Anæsthetic Action of Nitrogen.

WHILE some writers maintain that the anæsthetic action of nitrous oxide is due to its preventing access of free oxygen to the system, others believe that it has a "specific anæsthetic action." It occurred to Dr. G. Johnson (*Lancet*, April 11) that some light might be thrown upon this subject by the administration of pure nitrogen. Accordingly he obtained a cylinder containing 100 cubic feet of compressed nitrogen, in which the proportion of oxygen present was only 0.5 per cent by volume, with 0.3 per cent of CO₂. As a preliminary trial, Mr. F. W. Braine administered this gas in five instances to members of the staff of King's College, who vol-

unteered to submit to the experiments. The result was in each case the production of complete anæsthesia and of general phenomena precisely similar to those observed from the inhalations of nitrous oxide. Encouraged by these results, Mr. Braine felt justified in administering the gas to patients at the Dental Hospital for anæsthetic purposes. Nine patients took the gas. In every case the result was the production of complete anæsthesia, with general phenomena similar to those observed during nitrous oxide inhalation. The pulse was first full and throbbing, then feeble. In the advanced stage the respiration was deep and rapid, and there was lividity of the surface; the pupils were dilated, and there was more or less jactitation of the limbs. The only difference, in the opinion of some of those present, being that the anæsthesia was less rapidly produced, and somewhat less durable, than that from nitrous oxide, though in each case the tooth was extracted without pain.

On a subsequent occasion the same gas was administered by Dr. Frederic Hewitt at the Dental Hospital. As before, nine patients took the gas. The maximum period required to produce anæsthesia was 70 seconds, the minimum 50 seconds, and the mean time 58.3 seconds. In one case two teeth were extracted without pain. In one case only was pain experienced, and in that case, the tooth having been broken up and not extracted, the patient said she felt a "smashing up."

Having on several occasions witnessed the administration by Dr. Hewitt of nitrous oxide mixed with ten per cent by volume of oxygen, with the result of producing anæsthesia without lividity or jactitation, Dr. Johnson determined to try a mixture of nitrogen with a small proportion of oxygen. He therefore obtained from the same source of supply a cylinder containing forty cubic feet of nitrogen mixed with three per cent by volume of oxygen, and a second cylinder equally charged with a mixture of nitrogen with five per cent by volume of oxygen. These gases were administered by Dr. Hewitt to patients at the Dental Hospital with the following results. In the case of the three per cent gas, which was given to five patients, the time required to produce anæsthesia varied from 60 to 75 seconds, the average time being 67.5 seconds. In each case the tooth was extracted without pain, the duration of anæsthesia being somewhat longer than with pure nitrogen. In each case there was lividity, dilatation of pupils, and more or less jactitation. On the same day Dr. Hewitt gave nitrogen with five per cent oxygen to four patients. With this mixture the time required for the production of anæsthesia ranged from 75 to 95 seconds, the average being 87.5 seconds. In each case there was complete anæsthesia, during which one patient had three molars extracted, and, although she said she "felt the two last," the sensation appears to have been that of a pull, and not of acute pain. In all of these four cases there was slight lividity before the face-piece was removed, but in only one case was there slight jactitation of the limbs. The other three patients were perfectly quiescent.

The experiments here recorded suffice to prove that nitrogen, pure or mixed with a small proportion of oxygen, is as complete and apparently as safe an anæsthetic as nitrous oxide. It is to be hoped that those who are engaged in the administration of anæsthetic gases will investigate this interesting subject further, with a view to ascertain whether atmospheric air, partially deprived of its oxygen, may be advantageously substituted as an anæsthetic for nitrous oxide.

Treatment of Phthisis.

According to the *Lancet*, Dr. Germain-Sée, in his new method of treating phthisis, shuts his patient up for two, three, or more hours daily in a hermetically closed metallic chamber, into which is slowly admitted a current of compressed air, which, having passed through a mixture of creosote and eucalyptol, is saturated with the vapor of these substances. Since August last ten cases of phthisis have been submitted to this treatment, all of which cases, with one exception, had reached the period of softening, and bacilli had been detected in the sputa. The results obtained were return of appetite, even in advanced cases, gain of weight and strength, fall of temperature to the normal in a week or two, disappearance of hæmoptysis, diminution of cough and of purulency.

of sputa, and cessation of dyspnoea. It is claimed that the method reduces the malady to a purely local lesion, all the general symptoms disappearing, even though *râles* may persist. M. Sée related the history of seven of his cases, all of which were relieved and some actually cured. The treatment has been efficacious in fetid bronchitis.

The Physiology of Asphyxia.

That the immediate cause of death from asphyxia, says a writer in the *Lancet*, is the arrest of the pulmonary circulation appears to be proved by the following facts: (1) When the chest of an animal is opened immediately after death caused by ligature on the trachea, the right cavities of the heart are found enormously distended, while the left are comparatively empty. (2) When the heart of an animal is exposed during the progress of asphyxia the right cavities are seen to become distended, while the left cavities, which had been previously gorged, are found to be collapsed and comparatively empty. (3) In the last stage of asphyxia there is a continuous increase of pressure in the pulmonary artery, while the systemic arterial pressure is falling. (4) That the arrest of the circulation through the lungs is due to contraction of the pulmonary arterioles appears to be proved by the influence of agents which are known to paralyze the arterioles,—e.g., nitrite of amyl, atropine, and an excessive dose of curare, the effect of which is that deprivation of air is unattended by distension of the right cavities of the heart, and other evidence of obstructed pulmonary circulation, the life of the animal is prolonged for several minutes, and death ultimately results from the toxic action of venous blood upon the cardiac and nervous tissues. (5) It is an acknowledged fact that these paralyzing agents act alike upon the systemic and the pulmonary arterioles, but the successive phenomena of asphyxia are absolutely inconsistent with the idea that the distension of the right side of the heart is a result of systemic arterial obstruction acting backwards through the left cavities of the heart and the lungs.

The Effect of Strychnine on the Stomach.

The effect of nitrate of strychnine on the functional activity of the stomach has been recently made the subject of a careful research by Dr. Gamper of St. Petersburg, who employed for the purpose of his experiments four healthy young hospital assistants. He found, as stated in the *Lancet*, that strychnine increased the amount of gastric juice secreted, the general acidity, and the quantity of free acid in the secretion. It also hastened the absorption from the stomach, and strengthened the mechanical movements. Its effect, too, continued for some time after its administration had been stopped. Like many other Russian observers, Dr. Gamper seems to have been highly impressed by the value of strychnine in chronic alcoholism, declaring that it is the most effective of all drugs in such cases. The thesis contains a long list of references to the literature of the stomach affections published in six or seven languages during the last ten years.

NOTES AND NEWS.

THE wonderful properties of nitrate of soda are just now being strikingly exhibited at the Ohio Agricultural Experiment Station, where wheat is being grown continuously under different methods of fertilizing. Although the nitrate was not applied until the middle of April, yet it has stimulated such a tremendous growth that the plots which have received nitrate in large quantity carry nearly twice as great a weight of vegetation as can be found on those which have had no nitrate.

—Four trials were conducted at the Wisconsin Agricultural Experiment Station during the fall and winter of 1890-91, under the direction of W. A. Henry, for the purpose of ascertaining the value of sweet whey for pig feeding. The results of the trials show: (1) That pigs can not be successfully maintained on whey alone. (2) Pigs fed on corn-meal and shorts with water required 552 pounds of the mixture for 100 pounds of gain. (3) When whey was added to the corn-meal and shorts mixture, it produced a marked saving in the amount of grain required for good gains.

This was true for mixtures varying from two pounds of whey to one of grain, up to ten pounds of whey to one of grain. (4) It was found when using whey as a partial substitute for grain, that 760 pounds of whey effected a saving of 100 pounds of the corn-meal and shorts mixture. (5) Using these figures, if corn-meal and shorts are valued at twelve dollars per ton, then whey is worth eight cents per hundred pounds; at fifteen dollars per ton for the corn-meal and shorts, whey would be worth ten cents per hundred pounds. (6) Shorts, pea-meal, and oil-meal, or like feeds, should be mixed with whey for growing animals. Some corn may be fed at all times, the proportion increasing as the animal approaches maturity.

—On Feb. 15 there occurred at Glasgow, Scotland, says *Fire and Water*, one of the most remarkable explosions of gas upon record. The illuminating-gas plant of Glasgow is the property of the municipality, and comprises three different stations. The one in question, known as Dawsholm, is situated in a somewhat isolated position outside the town, and includes three gas-holders arranged in line, about twenty-five feet apart, but fortunately as it turns out, at some little distance from the rest of the buildings and plant. The three gas-holders are all similar in respect to diameter, being 160 feet across. Two of these have lately been enlarged by the addition of a third lift, which made them 90 feet in height, and equal to containing more than 1,500,000 cubic feet of gas each. The third remained a double lift, consequently about 60 feet high, and holding something over 1,000,000 cubic feet of gas when full. At about 4.30 in the afternoon the outlet valve of No. 1 was open for the supply of the district, No. 2 shut off, and the inlet of No. 3 was open to receive the make of gas. The valve man opened the inlet of No. 2, with a view, apparently, of diverting the make from No. 3. At this time No. 1 was three parts or more full, No. 2 a little less, but sufficient to cup the lower lift, and No. 3 was not far from being full. Before the man could complete his purpose by closing No. 3 inlet, a large mass of flame was observed shooting high into the air, over the roof of No. 2, the centre holder. It was accompanied by a loud rumbling noise like the shock of an earthquake, together with a concussion that caused windows to rattle violently, and greatly alarmed the inhabitants of the neighboring part of the town. This appears to have been caused by the bursting of the roof of the gas-holder in all parts. It was quickly followed by the destruction, with a second concussion, of No. 1 holder, and in a few minutes the whole structure of both holders lay in a confused mass at the bottom of the tanks. Fortunately this was unattended with loss of life or serious injury. Workmen who happened to be in the vicinity were scorched, and some haystacks one hundred yards off were set on fire; but the enormous volume of some 3,000,000 cubic feet of gas appears to have passed steadily up into the air, and burnt away as fast as it could meet with sufficient oxygen to support combustion. The whole affair was over in four or five minutes. The experts report that they are satisfied that the holders did not contain any explosive mixture, nor did they possess structural defects. But there were "indications of an explosive material having been placed on the crown of No. 2." The explosive power, striking inward, ruptured No. 2, and the concussion was considered sufficient to account for the damage to No. 1. The "indications" appear to be an irregular fracture, having the edges bent inward, and corroded as if by the action of chemicals.

—On Feb. 6 a discovery was made in the necropolis of Thebes which the *Academy* considers second only in importance to the discovery of the royal mummies at Dehr-el-Bahari by M. Maspero, in 1881. About half a mile from Dehr-el-Bahari a pit has been found containing several hundred magnificent mummies. These, like the royal mummies, had evidently been removed from the tombs and concealed in this receptacle, as a precaution, by the servants of the priests, probably at the same time and for the same reasons which caused the royal mummies to be placed in the receptacle where they were found by M. Maspero. This removal is believed by M. Maspero to have taken place in the reign of Aaputh, son of Shasang, of the Twenty-second Dynasty. The coffins hitherto found all belong to the Twenty-first Dynasty, and are those of the priests Ra Amun and their families. The pit is