THE ALBION COAL MINES.

BY H. C. HOVEY.

The series of startling disasters by which these famous mines have lately been overwhelmed with loss, and perhaps with utter ruin, serves to recall a memorable visit I made to these same collieries only three months ago. They are worth describing, independently of the painful interest awakened by recent distressing events.

The Albion Mines are located in Pictou County, in the province of Nova Scotia, about 100 miles north of Halifax, and one mile from the village of Stellarton. The entire coal field of the province, so far as explored, occupies an area of about 685 square miles; but the portion lying in Pictou County is a basin by itself, irregular in form, inclosed by much older geological formations, and covers only some 35 square miles. Although thus limited in extent, as compared with other fields, it possesses great value on account of the extraordinary thickness of its beds. According to Hon. Mr. Gilpin, Inspector of Mines for Nova Scotia, to whom I am indebted for much of my information, as well as for personal attentions, the section of measures in the district of the Albion Mines has a vertical thickness of 2,450 feet, holding 100 feet of coal, lying at an angle of 18 degrees.

The group on the western side of East River exists in several seams of varying thickness and quality. Those most extensively worked are known as the deep seam, which is reached by the "Cage Pit," and the main seam, pierced by the "Foord Pit." The deep seam is nearly 23 feet thick; the main seam actually attains the enormous thickness of 35 feet, although the portion worked does not exceed 22 feet. I was conducted to a spot where the workmen had cut through the entire seam and had taken out a section 35 feet high for exhibition in the Provincial House at Halifax, where I afterward had opportunity to verify the statement by actual measurement. For 22 feet it is clear coal, without a particle of foreign material that I could discover; and the balance has only here and there an intruding stratum of slate or clay.

It should be stated that all the coal thus far found in Nova Scotia is of the bituminous variety; no anthracite having yet been discovered. It has much firmness, however, and though burning freely does not readily slack or crumble. These qualities make it a favorite steam coal on the Atlantic and other steamers. It has also been extensively used for domestic purposes, and it is admirably suitable for coking. Large quantities were formerly exported to the United States for gas making. Analyses made by the London Gas Company, in 1879, gave 10,300 cubic feet of candle power gas, and 14 cwt. 2 qrs. of good coke per ton of coal. The gas is also represented as remarkably free from sulphur and other deleterious ingredients, when the purifiers were attended to.

These mines were formerly owned by the General Mining Association, of England, which also owned other mines in the Provinces; but a few years ago they sold out to what is known as the Halifax Mining Company, chiefly, however, London capitalists. The Acadia Company, working what is regarded as an extension of the main seam at Westville, is the only American company in the region. Some idea of the importance of this field may be had from the official statement that the area of the Halifax Company alone contains 67,365,000 tons of available coal. The entire coal produce of Nova Scotia for 1879 was reported to be 788,271 tons; of which aggregate the Albion Mines produced 171,534 tons, being a larger quantity than was taken that year from any other single mine in the Dominion. In the year 1862 the yield was about 200,000 tons, and the current year promised to exceed even that showing. The company, under the able management of Superintendent James Hudson, has a line of steamers of their own, and were filling large orders in Montreal and elsewhere. With the improvements recently made, a daily extraction of 500 tons had been reached from the Foord Pit alone, besides what came up from the Cage Pit; and other enterprises were under contract that would operate to increase even this very large yield. Several fine engines had been sent over from England, just prior to my visit, the design of which was to introduce compressed air as a substitute for horse power on the underground railways. To facilitate work further the principal inclines had been regraded. In fine, everything pertaining to the mines was in as perfect order as human ingenuity could compass; and the terrible disaster that now has wrought such havoc was wholly unexpected.

The upper works of the Cage Pit present nothing of unusual interest; but after descending a shaft 300 feet deep, one is led to the head of a wonderful inclined plane, half a mile long, up and down which cars are drawn by a steel rope. The rope itself is a heavy load to be hauled up many times a day, without taking into consideration the string of cars full of coal. Another curiosity that the foreman took some pride in exhibiting was the system of lighting the portion of the mine near the engine. This was done by utilizing a natural supply of gas flowing from a crevice in the wall. I asked the question, if there was not a degree of danger attending this; but was reassured on being told that the gas was thoroughly headed up in a reservoir, and that those very jets had been burning *seven years*. Yet when tidings came of the explosions in and flames issuing from the neighboring pit, it occurred to me that such a steady stream of gas as I saw must proceed from a hidden and dangerous source. Undoubtedly it was so, though there may have been no immediate connection between those pretty jets and that destructive conflagration.

Before entering the Foord Pit I gave some time to an examination of the works above ground. In doing so I had the company of Mr. Gilpin and Mr. Joseph Hudson (the son of the superintendent). They showed me the old engine "Hercules," the first locomotive run on any railroad in British America. It was still in use; and the man who ran it on its trial trip, so long ago, is still employed by the company. A duplicate engine of the same age, called the "Samson," stood on a side track near by, in good repair and daily use. In proximity to these antiquated affairs was one of the latest and most highly improved English locomotives; the contrast furnishing an instructive object lesson in the progress of modern mechanism.

We found the patriarchal engineer himself at his post of duty in the pump house, running the gigantic steam pump by whose powerful strokes a volume of water is continually discharged as large as a man's body. The buckets, about two feet in diameter, are brought up in three successive lifts of a little more than 300 feet each, making 1,000 feet in all. At the time of my visit the water from the old workings had been nearly exhausted, and the great pump was relied on to raise the water from both the main and deep seams. Who could then foresee the bursting in of a flood in September, from an old and long disused pit, and another on the 12th of October, drowning six men besides several horses? Or that later explosion of fire-damp, making it necessary to pour *into* the mine all the water that could be obtained? This pump was at that time considered equal to all emergencies that might arise.

The ventilating fan, of the Guibal pattern, having, I believe, a diameter of 30 feet and a width of 10, was in a building by itself, and was run by steam acting on a crank turning the fan at the rate of 40 revolutions a minute, with a capacity of 50 or more, and drawing from 65,000 to 70,000 cubic feet of air from the mine. So strong was the suction that ingress to the fan house could be had only through an air-lock. The object was twofold, to withdraw inflammable gases from the pit, and to supply the men working there with fresh air. The Cage Pit is ventilated by a furnace. The atmosphere, as we afterward ascertained, is kept as pure as could be desired by either method under ordinary circumstances.

The actual conveyance of the current thus forced underground to the places where it is most needed is by shutting off the old passages not now worked by brattices or thin partitions toward the working faces, and in many cases by air-proof cloth curtains hung in such a manner as to guide the current, even to the extent of splitting it and making the sub-currents travel in opposite directions. But, as recent events have shown, the best precautions cannot prevent the sudden release, at times, of hidden magazines of explosive material stored up in the coal, which by superior force overpower the ventilation, and, as in the Albion disaster, destroy the fan itself, hurling its fragments to a distance and demolishing the building covering it.

The original method of entering the mine was, of course, by the inclined plane, through which the horses are still let in; but the drawing arrangements of the colliery at present are clustered around a pit, and the coal is drawn to the surface in cages. The cage is an open framework of steel bars holding a double deck, two trams being carried on each deck. It is raised by a steel rope fastened to the top bar; and while one cage is lifted another is lowered. The cages are guided by vertical rails to hold them steady in passage.

The loaded cars are run from the cage on to a wide platform, where they are first weighed, then dumped and returned. The steel rope is 6 inches in circumference and 1,200 feet in length. It runs over a drum 22 feet in diameter, revolving at a rate wholly under the control of the engineer. Entering an empty cage with Mr. Hudson, we were let down the vertical shaft, 1,000 feet in 70 seconds, and found ourselves among the swarthy miners. The number employed varies according to circumstances. The published statement in 1879 showed the number at work underground to be 384, of whom 84 were boys; there were 200 surface workers, of whom 37 were boys; a total of 584 employes. The horses used were 38 below and 17 above. The cutters numbered 259, and the average per cutter per annum was 662 tons of coal.

Those whom we conversed with seemed contented, and said that they made a comfortable living, getting from $1.25 to $1.75 per day, besides rent and fuel at greatly reduced rates. They surprised me by their intelligence, of which there was at least one ready explanation, viz., they were, many of them, faithful readers of the SCIENTIFIC AMERICAN; and some of the very men who have since met a terrible fate spoke most warmly of the pleasure and profit they derived from its contents.

A few feet from the bottom of the shaft is the lamp cabin, where stood Mr. William Dunbar, a man 70 years of age, who for 40 years had been a miner, and during most of that long period had been responsible for the safety lamps. He explained to me the improvements made in the old-fashioned Davy lamps, whereby the gauze is protected by a glass cylinder from being overheated, and the construction is such that when the air is dangerously charged with gas, the light is infallibly extinguished. As an additional precaution each lamp is locked when given out, so that a careless workman cannot get at the blaze to light his pipe, or for any other purpose. When Mr. Dunbar handed me my lamp he was in fine health, and boasted that mining agreed with him well. It pains me to see it stated that the fine old man is among the victims. He was in his cabin as usual, at the time of the explosion, dealing out lamps to the men, when the flames burst in at his back door. He rushed out the front door and fell on his face. His oil-soaked garments instantly caught fire, and though by his own efforts and the aid of others he finally extinguished them, it was not until he was so badly burned as to be beyond recovery.

My guide and I traveled around in the mine for what he said was about six miles; finding, of course, considerable sameness of scenery, yet seeing many things novel to one more used to exploring natural caverns than such artificial excavations. My main anxiety was to keep from being run over by the horses which went at full trot through the darkness as fearlessly as if above ground. Their stables were below, but extensive and comfortable; and the horses were seldom taken to the surface, except in case of sickness, till they died. At the time of the explosion 17 horses were found dead in their stalls. Suffice it to say that our trip was without accident.

The only indication of the presence of deleterious gas observed by us was an occasional hissing sound, like the singing of a teakettle, caused, as we perceived, by leakage of gas through fissures in the seam, but not in quantity sufficient to make an explosive mixture before being carried off by the current of ventilation. Everything seemed as safe as could be desired. No serious accident has occurred since the great fire of 1861, when the East River had to be turned into the mine to extinguish the flames.

In order to an understanding of the late calamity, some idea should be given of the method of working the field. The entire excavation, judging from the official survey I saw in the possession of Mr. Hudson, must equal 100 miles; and the tramways alone extend for about 20 miles. There is also an underground connection between the Foord Pit and the Cage Pit, as a workman told me who had gone through it. Most of these workings are now abandoned and closed up by masonry. The system adopted is a form of pillar-working, ribs of solid coal being left between the "bords," or openings at right angles with the main or gate level; and these again are intersected by bords parallel to the main level. The result when spread on a chart looks like an irregular checker-board. The side passages are usually at a steep slope from the main level, and advantage is taken of this to arrange for delivering the coal to the tramways by a system of counter balances, the full cars as they run down carrying the empty ones up to the place where the coal is being cut. The pillars vary from 16 to 18 feet in thickness, and the bords are about 20 feet wide; hence it is evident that, as mining proceeds, only about one-half the coal in the field is removed, the remainder being left as a support for the roof. The custom of "robbing the mine" has not here been introduced; by which is meant taking out the pillars, one at a time, and letting the roof fall to the floor. The practice is attended with some danger, and also shuts off access to portions of the field lying beyond the passages thus closed.

The Foord Pit is divided into the north and the south stope; the one to the north extending for a mile and three-quarters, and the south stope for more than a mile, numerous bords being worked in each. The explosion of November 12 took place in the south portion, at half-past six o'clock A.M., when 150 men had just begun their day's labor. At first it was supposed that this entire number had been destroyed; but those in the north stope escaped uninjured, and the number of the lost as last reported was thought not to exceed 50 men and boys, of whom, however, 33 are married men.

The first to volunteer to explore the mine was Mr. Joseph Hudson, who, together with Mr. Tupper, overman, and Messrs. Poole, Greene, and others from the Acadia and Vale collieries, ventured in for a quarter of a mile, four hours after the explosion. They found the stoppings on the south side blown off, and did something to facilitate ventilation, but peril from accumulating gas was too great to allow of their remaining more than two hours or so, and they came to the surface at noon to await further developments. At the same time the men at work in the north stope came up to dinner and learned the fate of their companions.

The alarm spread until the mines were stopped in all Pictou County, and the people came in crowds about the pit. Attempts to flood the mine during the day were made, and many thought the danger over. But at 10 P.M. an explosion more violent than ever shook the ground, tore off the roof of the fan house, and the descending fragments riddled the roofs of adjacent buildings. The report was heard a long distance. This was followed by another explosion at 2 A.M., and similar outbursts were repeated at intervals till the ruin of the mine seemed inevitable. Volumes of smoke poured forth from the shafts, showing what a conflagration was raging below. Fire engines from Pictou and New Glasgow were brought and set to pumping water into the shafts. Men were set to work to fill the main shaft with spruce boughs, clay sods, hay, etc., to stop the air from the mine; and for the same purpose the shafts of the Cage Pit were closed up, and orifices into old mines in the vicinity. A trench was opened from East River to the fan shaft, through which it was hoped to extinguish the subterranean fires.

No one seems to know how the fire originated, though several theories have been suggested. In Mr. Gilpin's report on the Department of Mines for 1879, he gave a warning note to increase the systematic ventilation of the collieries, and not to reason that "because fire-damp is present only in traces a very slight circulation of air is all that is required." He also points out the defects of the kinds of

safety-lamps in general use. But the mystery of the calamity at the Albion Mines is that every precaution imaginable seems to have been taken, and all the machinery made after the best patterns, and yet in vain. The deposit of coal is too valuable to be abandoned, being one of the finest in the world, and it is probable that at some time operations will be resumed. But it is certain that this cannot be done for a long time to come.

Meanwhile there are left to the charity of the public, it is said, "33 widows, 110 orphans, and 700 men, representing a population of 2,000 people, thrown out of employment in the face of a Canadian winter." An appeal on their behalf has been sent out by the managers of Nova Scotia mines, clergymen, and others. The case is certainly one that calls for an immediate and generous expression of popular sympathy.

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THE MANUFACTURE OF BOLTS AND NUTS.

Perhaps there is no other one cause so potential for the cheapening of production nowadays as the minute division of labor carried out in every leading branch of manufacture. And the cost of making is not only thereby greatly reduced, but the quality of the product is improved in yet greater proportion. The industry which forms the subject of the first page illustrations in this paper affords a conspicuous example of this course of development in modern manufactures. There is hardly a large manufacturing establishment or a respectable machine shop in the country which has not the available facilities for forging bolts, turning screws, or making nuts, yet it is comparatively seldom that one of either of these is made by the mechanics who put them in their machines or the manufacturers who use them in a thousand different articles of which they form an indispensable part. The reason is obvious: the manufacturer who has constituted this his especial business can not only make them far better than an ordinary mechanic, but so much cheaper that it seems like wasting time to do even trifling work of this kind in a general machine shop, the ready-made bolts and nuts being of such uniform good quality that a flaw or a weak spot can rarely be found in them, and of almost every desired size required for use in all kinds of work.

It is now nearly forty years since two of the present proprietors of the great bolt and nut factory of Russell, Burdsall & Ward, commenced business in this line, at a point on the Byram river just within the Connecticut State line, about two miles from the village of Port Chester, N. Y., and twenty-five miles from New York city. The site selected was one of romantic beauty, in a picturesquely wooded dell, but their location here was for the purpose of utilizing the water power which over forty feet fall in the Byram river afforded. The contrast between their business of thirty-five years ago and its extent to day is well illustrated by the two views, which show their factory as it was then and is now. Then one horse and wagon was sufficient for the bringing of all their iron and the shipping of all their products from Port Chester, and every detail of the work not only received the personal attention of the proprietors, but the most important portions were the results of their own skill and handicraft. Even greater, however, than the difference in the amount of business, is the contrast between the way of making bolts and nuts at the commencement of their manufacture and that which is followed to-day, the many elaborate machines now used producing results which were hardly imagined possible at that day, and a large proportion of these machines, either in all their parts or in important improvements, being the invention of members of the firm.

The iron used is received in the form of bars or rods, both square and round, and in great hanks or coils, a large stock being always kept on hand. Iron only is worked here, and a considerable proportion of the goods are made from the best charcoal iron. In the main bolt making room, shown at the bottom of the page, there is probably as great a variety of machines for making bolts, and the capacity for as large a production, as can be found in any single establishment in the world. Nearly all the iron is worked cold, an improvement which has, within a few years past, been finding steadily increased favor, from the great additional strength which this manner of working gives to the goods, as against the former method of making all the blanks by the old-fashioned method of forging. Care is necessary, of course, that a bar of cold iron be not submitted to too many manipulations, but there is never any danger of this kind in the methodical operations of bolt making, where every blow the iron receives, and every time it is to be submitted to pressure, are accurately determined before the commencement of the work. The increase in strength in bolts, from working the metal cold, is estimated at between 50 and 100 per cent, and the effect in general is to give the iron a good deal of the qualities of hard steel.

For this cold working, however, powerful machines are necessary, as every portion of the labor of forming the iron is done by them, the labor of the hands being confined almost exclusively to the feeding of the machines. There are different patterns of machines here for doing the same work, but in the making of a blank for a bolt, either the wire or rod is fed into the machine so as to pass between a pair of feed rolls, which hold the metal by friction, and convey it into a steel tube or die in the central part of the machine, where the length of the bolt is accurately determined by an adjustable gauge, and is cut off in lengths sufficient to allow enough surplus metal for the forming of the pattern of head the bolt is to receive. As it is cut off it is grasped between fingers and carried to the opposite end of the die, where it is pushed back into a hole having the form of the bolt head, where a hammer strikes it and forces the surplus stock into the desired shape, after which the blank is driven from the die and drops into a box beneath.

When these blanks so headed are of square iron, they are taken to another machine, where they are suspended by their heads in a long row, between two parallel tines, from which they feed themselves into the machine, where they are grasped, one at a time, by fingers, and each one is held between the jaws of powerful revolving cam formers, being advanced and withdrawn three or four times, until the square iron is perfectly rounded, either entirely up to the head or so as to leave a square shank. The fingers then drop the rounded blank to one side, and, reaching back, pick up another one, to go through the same operation, the whole process impressing one with the idea that the machine is almost possessed of reasoning powers, so careful, deliberate, and intelligent seems to be its imitation of the motions which a workman would go through in performing a similar part of the work.

The forming of the point and the cutting of the thread are done by other machines, in which are the same feeding device and similar automatic working, these operations, however, sometimes requiring two machines, while for some goods only one operation is necessary. When the blank is fed into the jaws, which seize the end bearing the head, it is advanced against a tool which forms the point, if that part is to be completed here, and, this work being done, the blank is then passed to a chasing tool, which cuts the thread as in an engine lathe, varying the number of cuts to the size and the amount of metal to be removed. This machine, as also the blank formers and headers, are so arranged as to guard against accidents as completely as if they were possessed of intelligence. If any one part ceases to operate, or to properly fulfill its functions, the machines will stop of themselves, or have self-adjusting contrivances to remedy the difficulty; if the blanks are too long or too short they cannot be worked, and if too great strain is brought on any part, from any displacement of the machinery or the introduction of foreign matter, the machine stops and makes a noise readily distinguished from that caused by regular working.

The above describes the main features of all the bolt-making machines, although, from the great variety of goods made here, no less than from the many improvements which have been successively introduced by the firm, there are many differences in the details of the operations in swaging and finishing. All of the work, however, is performed by machines which work automatically, and some of the machines here for forming particular patterns of bolts are different from those in use anywhere else. The firm have a large machine shop, in which they make their own machinery, and besides several patents which Mr. Ward has obtained, they have made other improvements, not patented, more especially valuable in the making of goods of which they have the almost exclusive production.

In the nut-forging shop, represented in one of the illustrations, the bars are heated, the workman keeping one bar in the forge fire while he feeds the heated end of another into the jaws of a machine which cuts off the required length and punches it, while at the same time the nut is formed by hammers striking it rapidly on the bottom, top, and sides, to compress the metal and give the nuts the desired shape. This machine works very rapidly, and the goods are certain to be perfectly uniform in quality and shape, whether the nuts are square, hexagonal, or any other form.

The packing room, represented in one of the views, occupies a large department, for here are put up in paper boxes each day no less than 125,000 bolts and nuts of the smaller sizes, the larger ones being generally shipped in bulk. This work is done principally by girls, who, in long practice, acquire a degree of manual dexterity in this part of the work which is surprising to any one who has not previously noted the results of such training.

It would be impossible to enumerate, in anything less than an elaborate catalogue, the number of different kinds and patterns of bolts and nuts made at this establishment. Every standard article in this line forms a part of their regular production, in all the lengths and sizes ordinarily used. A large business has been done from the first in carriage, tire, and sleigh bolts of every description known to the trade; stove bolts are made in large quantities; plow bolts are an important specialty, and bolts for mowing machines, cultivators, and elevators, with nearly all kinds of machine bolts, knob screws, etc., are a portion of the staple goods regularly manufactured. Besides these, however, the firm do a large business in the making of special sizes and lengths, to order, for use in particular departments of manufacture, their long experience, and the high quality of their goods, which it has always been their first care to maintain, giving them special advantages for filling the large trade of this kind which comes to them.

The Library Hall is a building erected by the firm for the purpose of affording their employes better opportunities of self-culture. It contains a choicely selected library of about 2,000 volumes, and the scientific portion of the books were chosen by Prof. Youmans with especial reference to the needs of such a class of working readers. There is here, also, a warmed and lighted room, intended to make a comfortable place in which the hands can profitably and pleasantly pass their spare hours. No intoxicating liquors are to be had within two miles of the establishment, and it is the design of the proprietors to make the surroundings of those who live in the immediate neighborhood, and who earn their living there, so pleasant that there will never be any call from their hands for a place where liquor can be bought.

The firm have no city warehouse, but do all their business from the factory at Port Chester, N. Y., where the partners reside and give their personal attention unremittingly to the workof the establishment.

DECISIONS RELATING TO PATENTS.

Supreme Court of the United States.

BALL *et al. vs.* LANGLES *et al.*

1. Reissued letters patent No. 4,026, granted to Hosea Ball, June 14, 1870, for an improvement in ovens, declared to be invalid, it being for a different invention from that covered by the original patent.

2. The Commissioner of Patents is invested by law with authority to determine whether surrendered patents are invalid by reason of defective or insufficient specifications or by reason of the patentee's claiming as his own invention or discovery more than he had a right to claim as new, and whether these errors have arisen by inadvertence, accident, or mistake, and without fraudulent intention. His decision as to the existence of these prerequisites is conclusive, and not subject to review by the courts.

3. The Commissioner, however, has no authority to grant a reissue embracing new matter or a broader invention than what was revealed in the original specifications, drawings, or models.

4. The question of identity of invention is to be determined by an inspection of the two instruments.

5. Where an original patent described an interior baking chamber as provided with perforations in its sides and back, whereby its interior had communication with the fire space only *indirectly* through side and back flues, *Held*, that a reissue removing the restriction as to the location of the perforations, so that the interior of the chamber may communicate *directly* or *indirectly* with the fire space, is void for containing a different invention.

Appeal from the Circuit Court of the United States for the District of Louisiana.

Mr. Justice Strong delivered the opinion of the court.

We cannot doubt, says the court, that the purpose of the reissue was not to cure defects in the original specification, or any deficiency in describing the invention, but to cover other devices which the patentee had not in mind when he first applied for his patent, and which may have subsequently come to his knowledge. Thirteen years after the patent was granted had elapsed before he applied for any reissue. However this may be, the reissued letters are so clearly for a different invention from that for which the patentee first applied, containing new matter, and so much broader, that we are constrained to hold that the Commissioner of Patents had no authority to grant them, and consequently that they are void.

The complainants' bill was, therefore, rightly dismissed, and the decree of the court below is affirmed, with costs.

Large Telegraph Wires.

At the recent meeting of the American Electrical Society in Chicago, Col. C. H. Wilson read a paper on the use of large telegraph wires. He held that the employment of large gauge wires for the quadruplex circuit was an advantage. A No. 4 wire recently laid between New York and St. Louis, was giving entire satisfaction. The question had been raised whether, in the desire to increase the conductivity of the wires, there was any limit to their size. There was a limit, and the conductivity could be increased by employing different conductors, copper instead of iron wire, for instance.

In a discussion which followed, Mr. Somers advocated the use of large wires, and said that their employment had simplified the quadruplex problem.

Phosphor Bronze Telegraph Wires.

M. E. Bède, formerly Professor at the Liége University, has recommended the use of phosphor brouze for wires instead of iron, phosphor bronze having four times the conductibility of iron, and being from three to four times as strong as steel. Aerial lines had the advantage of being easily inspected, but the disadvantage of being liable to accident, while underground lines were almost free from accident, but difficult of inspection. That inventor would render great service to telephonic communication who should devise a cheap method of constructing underground lines, that should at the same time permit of easy and complete inspection.

Lard Butter.

The success of butter made from beef fat (oleomargarine butter) has led to the use in Chicago of pork fat or lard for the same purpose. It has been reported that large quantities of this fraudulent butter have been shipped to England, seriously injuring the market for genuine American butter. The report is disputed by exporters, though it is admitted that sample lots have been sent by New York and Chicago dealers. Obviously if lard butter is wholesome and of good flavor it can be sold on its merits; if bad it should not be sold at all. In either case its sale as genuine butter would be a fraud and should be prevented.