

Correspondence.

Large Railway Maps.

To the Editor of the Scientific American:

I notice that a correspondent, in your issue of Nov. 13, calls attention to the use of railway maps on the walls of railway stations, and observes that they are only used by foreign railways. At least one American road adopted the practice some years ago; and if your correspondent has ever entered the Broad Street station of the Pennsylvania Railroad in Philadelphia, he could not fail to have noticed the excellent map of that road's lines and connections painted over the entire surface of the western wall of the main saloon.

Such maps are very effective as educators of the traveler, and well deserve a more general adoption.

F. N. BARKSDALE.

A Reminiscence of Audubon.

To the Editor of the Scientific American:

When John James Audubon, the great American naturalist, had finished his remarkable double elephant folio work on the "Birds of America," he turned his attention to our quadrupeds. In 1841, while living at 86 White St., New York, he asked permission of the Mayor to shoot rats on the Bowery to get specimens for study and illustration, and received permission to do so. The following is a copy of the order handed to him in person by the Mayor:

MAYOR'S OFFICE, NEW YORK, Aug. 20, 1841.

Permission is hereby given to Mr. [John James] Audubon or his son to shoot rats at the Bowery early in the morning, so as not to expose the inhabitants to danger.

ROBERT H. MORRIS, Mayor.

This was two years before Audubon undertook his remarkable expedition to the Upper Mississippi and Yellowstone River, to obtain material for his great work on quadrupeds.

JOS. M. WADE.

The Hygiene of Cycling.

According to Dr. Kunze, of Halle, cycling is a health stimulating exercise, which ought to be commended by medical men. It is a powerful means of strengthening the human body, and may even be considered an exercise acting as a preventive and curative, of no mean order, of certain bodily ailments. Looked upon in the latter light, cycling is a kind of gymnastic exercise, possessing specific effects which are absent in ordinary gymnastics. The velocipedist (especially the bicyclist) learns, first of all, the art of balancing himself, by practicing it on an instrument as sensitive as it is easily overturned. To acquire it, it is necessary to call into precise action certain muscles, every individual muscle being trained to do its particular work. Those who are thrown from a bicycle, as a rule—certain eventualities, against which even the most skilled velocipedist cannot guard, excepted—do not yet possess the required ability to balance themselves. This latter acquirement is of great use also in practical life. Those who possess it will be able to jump ditches with greater precision and safety, pass along narrow paths, mount more difficult staircases, climb up and descend precipitous mountains, and will also carry themselves more erect, than those who do not possess this power of preserving an equilibrium. A further effect of velocipede riding is to strengthen the muscles, not only of the lower extremities, but also those of the abdomen, the chest, and the arms, which are constantly being excited to contract. The muscles of the lower extremities contract and relax in the action of propelling the velocipede, and there is no other movement which requires such rapid and energetic contractions. We frequently find that the muscles of the thigh and lower leg of cyclists increase in size, and, consequently, cyclists are able to bear without fatigue long walking tours. As, however, every organ which becomes stronger is less liable to disease, strengthened muscles predispose velocipedists less to ailments than the relaxed muscles of non-velocipedists. It would be highly interesting if reliable statistics could be obtained from the various cycling clubs, showing whether and how frequently muscular rheumatism of the thigh, for instance, is met with among velocipedists. The effect of cycling exercise upon the abdomen is of very special importance. With the contractions and relaxations of the muscles of the thigh those of the abdomen stand in close relation, and it is evident that the latter must be equally benefited. Upon the chest, cycling exercise acts in two ways. In the first place, by the contraction of the muscles of the abdomen, the stagnant air in the lungs is more thoroughly expelled, and, in the second place, the apparatus of breathing is more powerfully acted upon by the greater difficulty of respiration and aspiration experienced in quickly propelling the velocipede. The more effectual expulsion of the stagnant air from the lungs must be of favorable influence upon the change of matter in the human body, in so far as the entry of oxygenated air into the lungs is thereby increased, oxygen forming one of our most important means of nourishment. Those who wish to expand their chests, Dr. Kunze says, should mount a velocipede.

The Navies of Britain and France.

Under this heading the *Engineer*, in a lengthy article, discusses the pros and cons of a possible war between England and France. We make a few extracts:

A portion of the French press has latterly adopted a threatening tone toward England. Our occupation of Egypt has lasted too long, and has excited the jealousy of our neighbors. Hence we are told a war with England would be popular, seeing that "no general mobilization would be necessary"—we quote from the *Standard*—"as an invasion of France was not to be apprehended, and any landing of a French army in England need not be contemplated. The object of the war would be to vindicate the rights and position of France as a Mediterranean power, and to effect this only the navy, and perhaps a *corps d'armee*, certainly not more, would be needed. The landing of twenty or thirty thousand men in Egypt would not be a work of insuperable difficulty, and this would entail the capitulation of the small British force engaged there. That once effected, England would probably be glad to sue for peace, especially as her navy was not now in a position to cope with that of France." Taking this as a sample, it is interesting to examine the data on which the soundness of this statement can be tested; that is to say, to look briefly at the relative strength of the French and British navies, and at our general position in the Mediterranean.

We submit lists of British armor-clad ships, which may, we think, be as fairly representative of their strength at the present moment as any we have seen. From this the British coast defenders of the Glatton class are omitted. The French are included as being available for European war generally.

Assuming, then, that the British fleet of regular fighting ships is about 20 per cent stronger than that of France, we may pass on to torpedo boats, and lastly transport and troop ships. In the former we fear the French are considerably in advance of us, though we know of no recent statistics published on the subject, and progress is rapid in this branch of building. In transports, on the other hand, France is very weak.

To place troops in Egypt, the French navy would have to force its way past our Mediterranean fleet, and make good a landing, which would constitute a serious operation of war. In seems to be thought in France that because their troops muster in hundreds of thousands, where our thousands are reckoned in tens and twenties, they would compare with us equally well in sending an expedition consisting of thirty thousand men across the seas. This is a great error. We believe that our blows would be found far reaching and quick, if not very heavy; and that no power could carry out this class of undertaking with the ease and speed of England. Abyssinia, Ashanti, Egypt, and the Zulu war have all called into play the necessary machinery for this class of operation, while such machinery is habitually working in India. At the present moment we have about thirty thousand men in Burmah. The state of the country, no doubt, has been the object of a considerable measure of public attention; but who has heard of any trouble or effort in sending the troops there, or supplying them? The French, who come next to ourselves, make more fuss about the transport of ten thousand men from Marseilles to Algiers than we do if we send double the number to the remotest habitable quarter of the globe.

To land thirty thousand men in Egypt, then, France would have to muster her fleet unperceived in the Mediterranean, to make war without a week's notice, and then, without any delay, to destroy the British Mediterranean fleet entirely.

If our power of supplying Egypt from India, without disturbance or trouble, be compared with the project of the French crushing our fleet and landing and supplying an expedition from the Mediterranean, it would be concluded that France could hardly devise an operation more calculated to fail than this attempt to drive us out of Egypt.

We must, however, look at war with France in a general aspect. It does not at all follow because Egypt is the provoking cause, that the fighting need take place in Egypt. What if France declares war, and at once strikes us, where she of all powers can hit hardest, in our soft place, our commerce? This, we confess, is a much more serious matter. This is the danger to which we and many in this country have long called attention. It is to meet this that we have latterly been so much more in earnest in building swift cruisers. Undoubtedly this is the question of the day as to England's defense, and in the case of France as the enemy, raised in its most serious shape. Suffering and loss would be entailed on England.

Then, again, other nations would suffer as well as ourselves. When we find that seven-eighths of the carrying trade of the world is in British vessels, it exposes a very vulnerable object to attack undoubtedly, but at the same time an object that concerns the world generally, and not England only.

France herself would feel the stoppage of her trade sufficiently to prevent such a war being popular for long, in spite of the light hearted way in which some French writers speak of it.

We have little doubt that there is too much good feeling and good sense in France to provoke such a catastrophe; but the bare possibility ought to spur us on to the construction of the classes of vessels specially suited to protect our commerce.

BRITISH ARMOR-CLADS AVAILABLE IN THE IMMEDIATE FUTURE.

Name.	Date of launch.	Displacement.	Speed.	Maximum armor.	Armament. Primary guns.
		Tons.	Knots.	In.	
Hercules.....	1868	8,680	14.0	9	8-18-ton M.L.
Monarch.....	1868	8,320	14.9	10	2-24 "
Audacious.....	1869	6,010	12.8	8	10-12 "
Invincible.....	1869	6,010	14.1	8	10-12 "
Sultan.....	1870	9,200	14.1	9	8-18 "
Iron Duke.....	1870	6,010	13.6	8	10-12 "
Hotspur.....	1870	4,010	12.7	11	2-25 "
Swiftsure.....	1870	6,910	13.8	8	10-12 "
Triumph.....	1870	6,640	12.0	8	10-12 "
Devastation.....	1871	9,330	13.8	14	4-35 "
Thunderer.....	1872	9,330	13.4	14	2-38 "
Rupert.....	1872	5,440	13.6	14	2-38 "
Alexandra.....	1875	9,490	15.0	12	2-25 "
Dreadnought.....	1875	10,820	14.2	14	4-38 "
Shannon.....	1875	5,380	12.4	9	2-18 "
Indefatigable.....	1876	11,880	13.8	24	4-80 "
Temeraire.....	1876	8,540	14.5	11	4-25 "
Belleisle.....	1876	4,870	12.2	12	4-25 "
Nelson.....	1876	7,630	14.4	9	4-18 "
Northampton.....	1876	7,630	13.2	9	4-18 "
Neptune.....	1878	9,310	14.2	13	4-38 "
Superb.....	1878	9,170	13.8	12	16-18 "
Agamemnon.....	1879	8,510	13.3	18	4-38 "
Orion.....	1879	4,810	13.0	12	4-25 "
Ajax.....	1880	8,510	13.3	18	4-38 "
Conqueror.....	1881	6,200	15.5	12	2-43-ton B. L.
Collingwood.....	1882	9,150	16.4	18	4-43 "
Colossus.....	1882	9,150	15.5	18	4-43 "
Edinburgh.....	1882	9,150	15.5	18	4-43 "
Imperieuse.....	1883	7,390	17.0	10	4-18 "
Rodney.....	1884	9,700	17.0	18	4-68 "
Warspite.....	1884	7,390	17.0	10	4-18 "
		250,640			

FRENCH ARMOR-CLADS AVAILABLE IN THE IMMEDIATE FUTURE.

Name.	Date of launch.	Displacement.	Speed.	Maximum armor.	Armament. Primary guns.
		Tons.	Knots.	In.	
Ocean.....	1868	7,500	13.7	8	4-23-ton.
Marengo.....	1869	7,187	12.0	8	4-23 "
Suffren.....	1870	7,600	14.3	8	4-23 "
Richelieu.....	1873	9,100	14.0	8	6-23 "
Friedland.....	1873	8,540	13.4	8	8-23 "
Colbert.....	1875	8,457	14.4	8	8-23 "
Tonnerre.....	1875	5,574	12.3	13	2-28 "
Redoutable.....	1876	9,200	14.7	14	4-28 "
Trident.....	1876	8,800	14.3	6	8-23 "
Fulminant.....	1877	5,574	12.0	13	2-28 "
Amiral Duperre.....	1879	11,100	14.5	12	4-48 "
Devastation.....	1879	10,100	15.2	15	4-48 "
Turenne.....	1879	6,400	14.1	10	4-15
Bayard.....	1880	5,881	14.5	10	4-15
Terrible.....	1881	7,200	14.5	19	2-75 "
Courbet.....	1882	9,700	15.0	15	4-49 "
Vauban.....	1882	5,900	14.0	10	4-18
Amiral Baudin.....	1883	11,380	15.0	21	3-75 "
Furieux.....	1883	5,560	12.0	17	2-47 "
Indomptable.....	1883	7,168	14.5	19	2-75 "
Duguesclin.....	1883	5,869	14.0	10	4-18
		163,790			

NOTE.—French ships are generally better furnished with secondary armaments of guns than the British.

Slipping of Leather Belts.

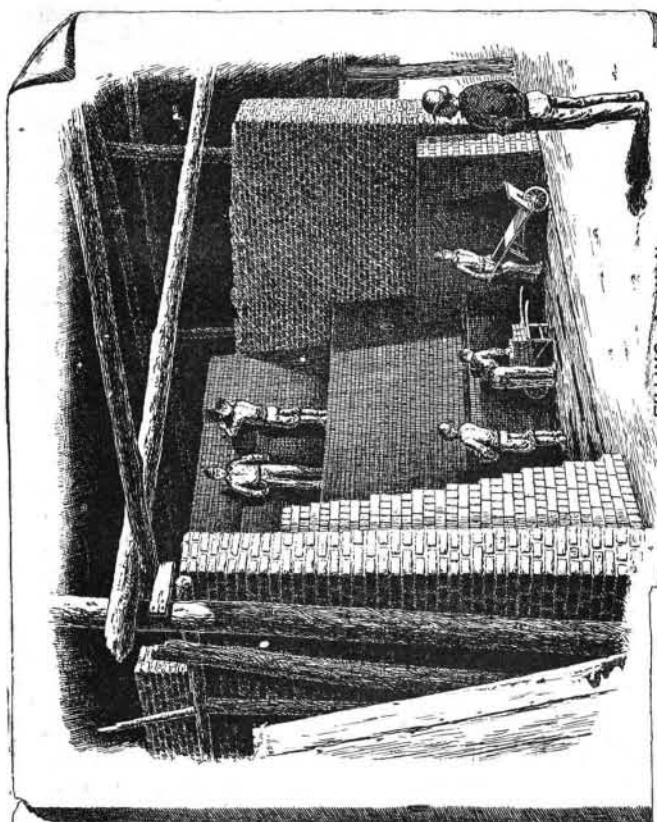
The slipping of belts is a great annoyance, not always remedied by tightening. The writer has known a slipping belt to be so shortened as to spring the shaft without preventing the slipping. The radical remedy is to keep the belt pliable, so as to lug the faces of the pulleys; but this is not always feasible. The belt may be softened by neat's foot oil or hy-castor oil. A siccativ oil, like linseed oil, is unfit for a leather belt, as it has an affinity for the oxygen of the atmosphere and reverts to its acid base, which is injurious to the leather.

When a ready remedy is demanded for a slipping belt, the powder known as whiting, sprinkled sparingly on the inside of the belt, is least harmful of any similar application. Powdered resin is bad, as it soon dries the leather and cracks the belt, while it is difficult to get it out of the leather; whereas whiting may be wiped off or washed out with water. The use of water on belts, preliminary to oiling, is good. The belt should be washed on shutting down at night—or Saturday, after the close of work, is better—and then the oil applied when the belt is partially dry. Never oil or wash a belt while stretched on the pulleys. If iron-faced pulleys were always lagged with leather, there would be little complaint of the slipping of belts. But often this slipping is due to too much strain on the belt: there is economy in running wide belts—wider than is the usual practice. Many a three inch belt has to do duty for a four inch belt, to the annoyance of the operator and the ruin of the belt.

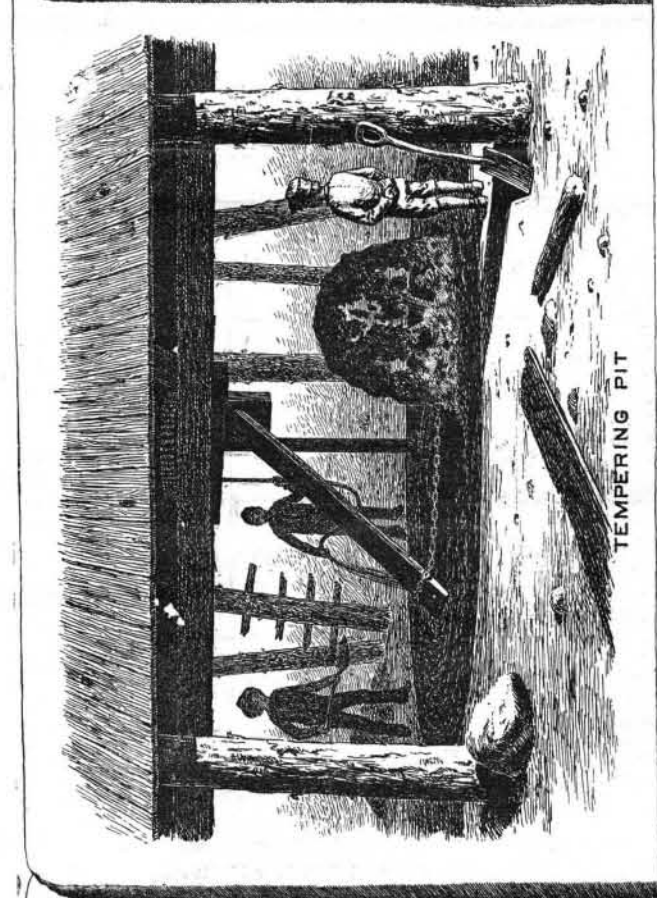
Neuralgic Ointment.

Menthol.....	45 grains.
Cocaine.....	15 "
Chloral.....	10 "
Vaseline.....	5 drachms.

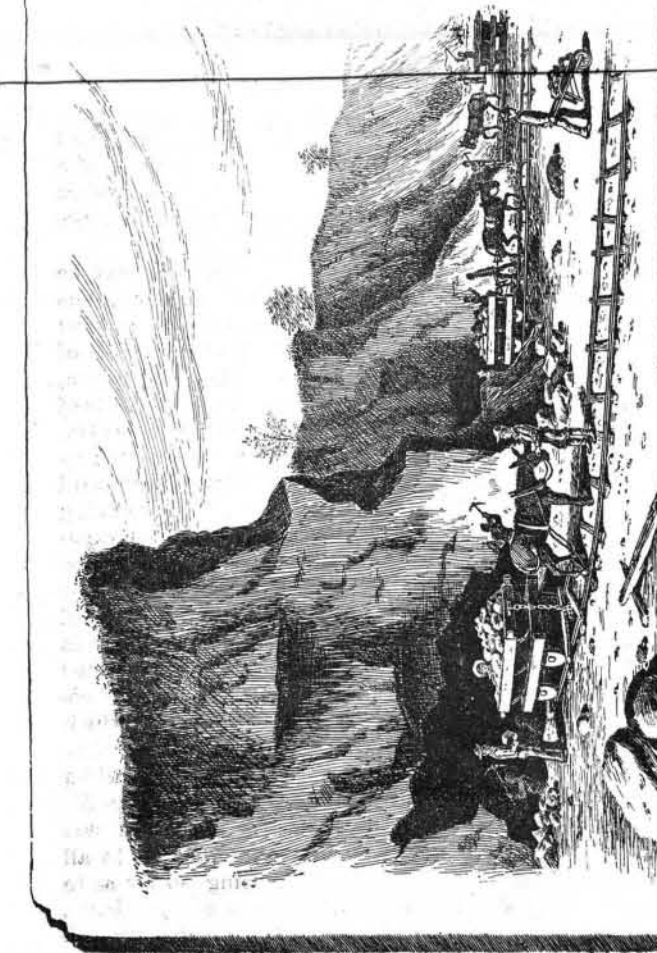
To be applied to the painful part (Galezowski).—*Jnl. Pharm. et Chim.*



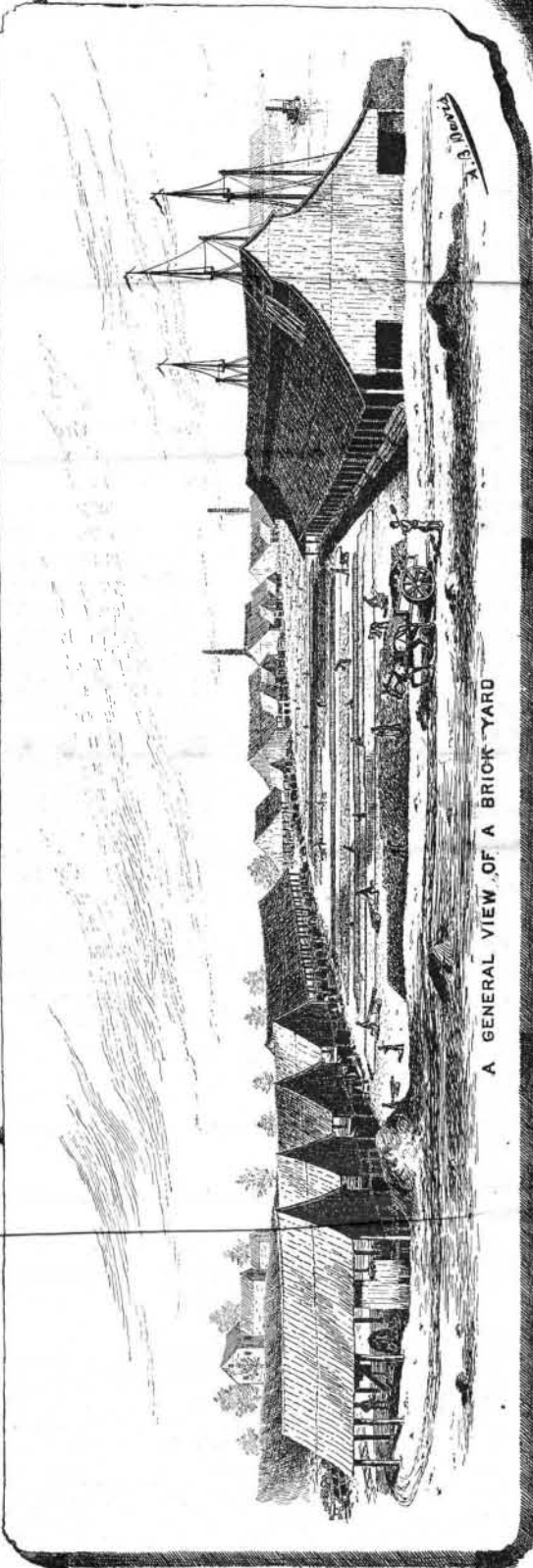
FILLING A KILN



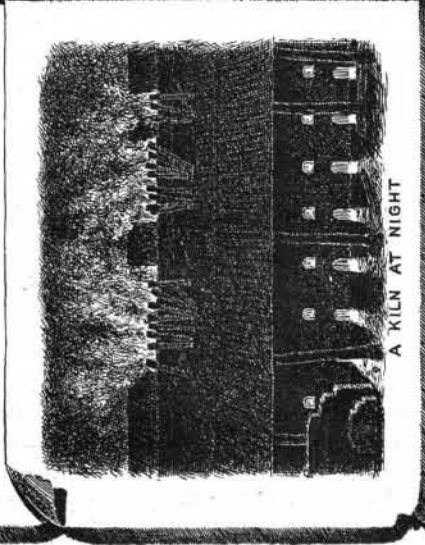
TEMPERING PIT



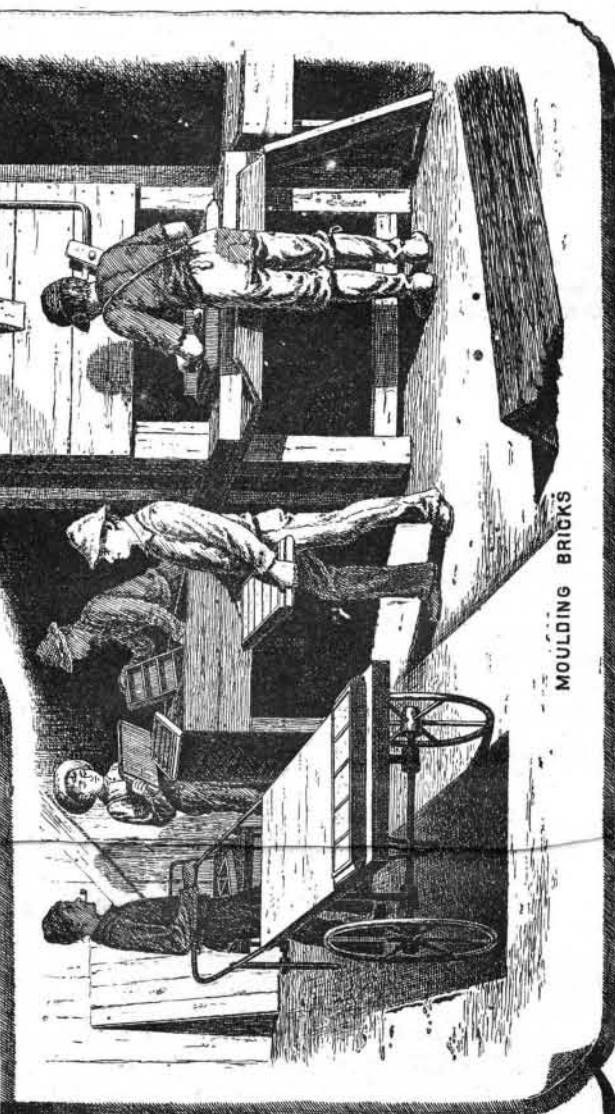
CLAY BEDS



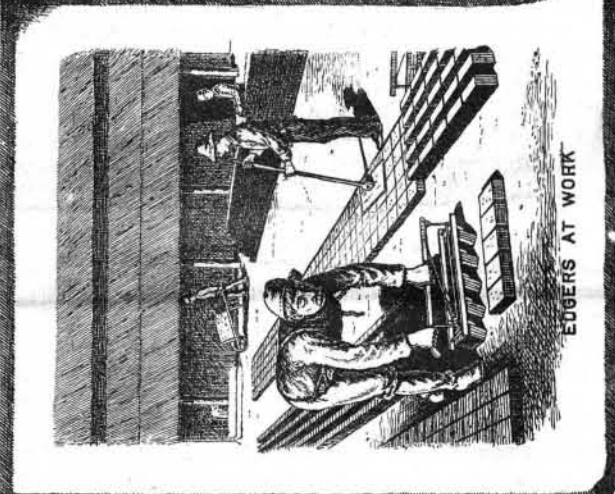
A GENERAL VIEW OF A BRICK YARD



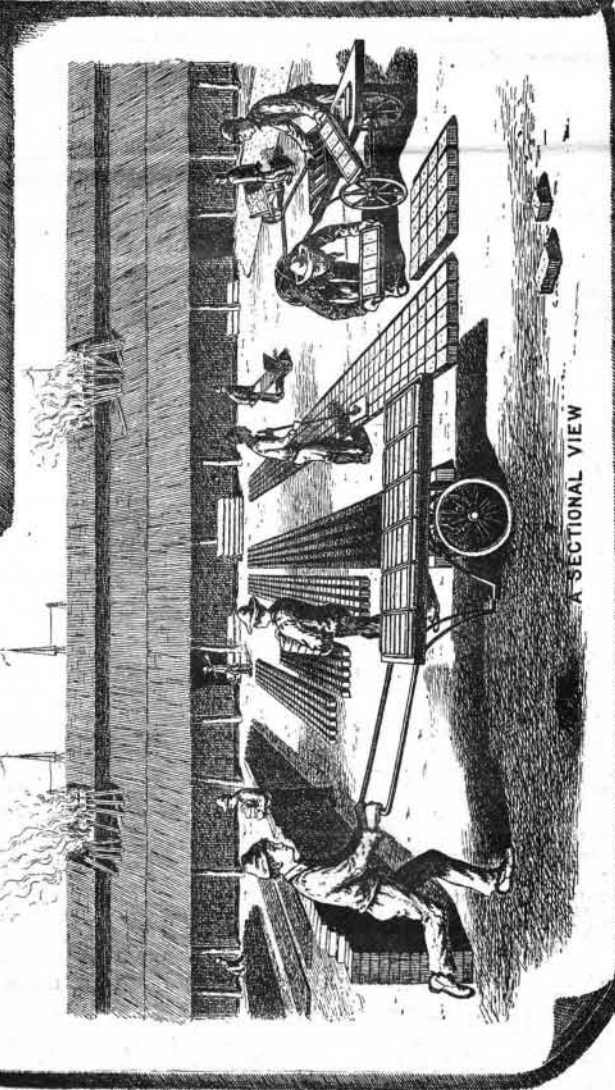
A KILN AT NIGHT



MOULDING BRICKS



EDGERS AT WORK



A SECTIONAL VIEW

BRICK MAKING.