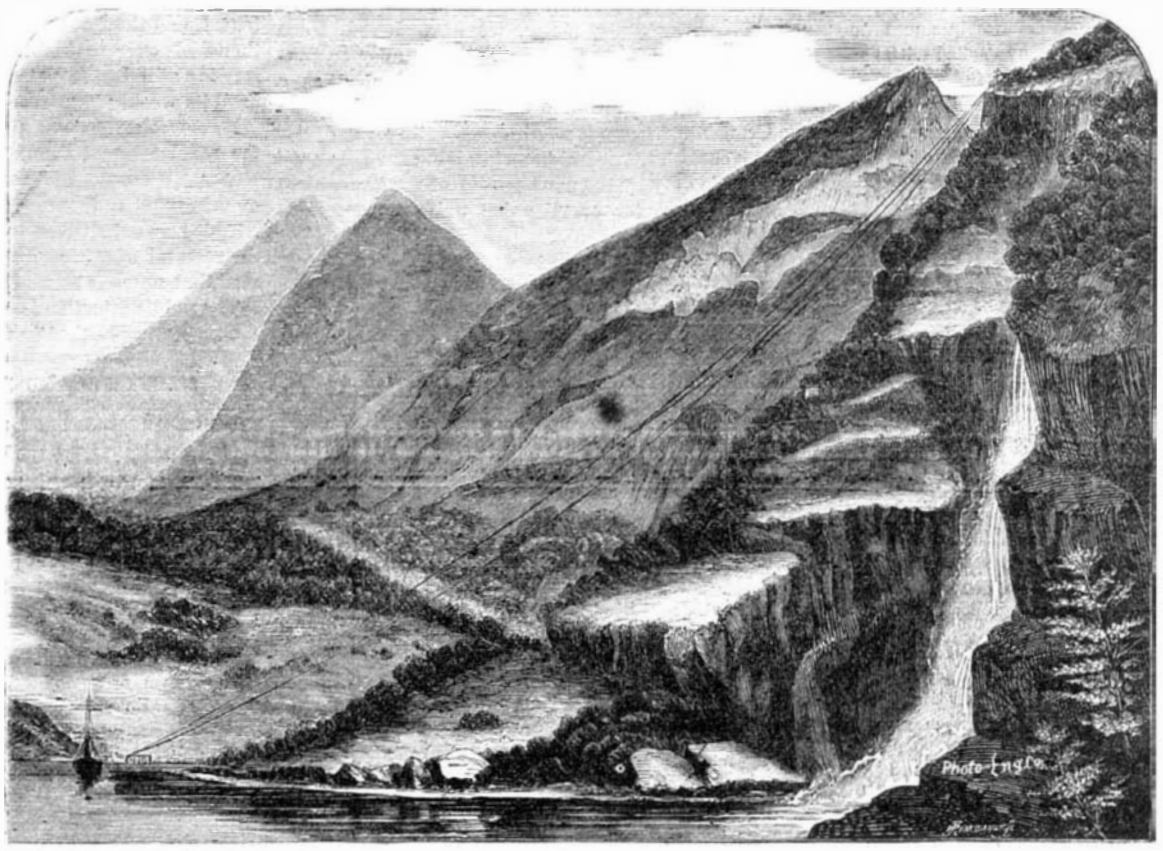
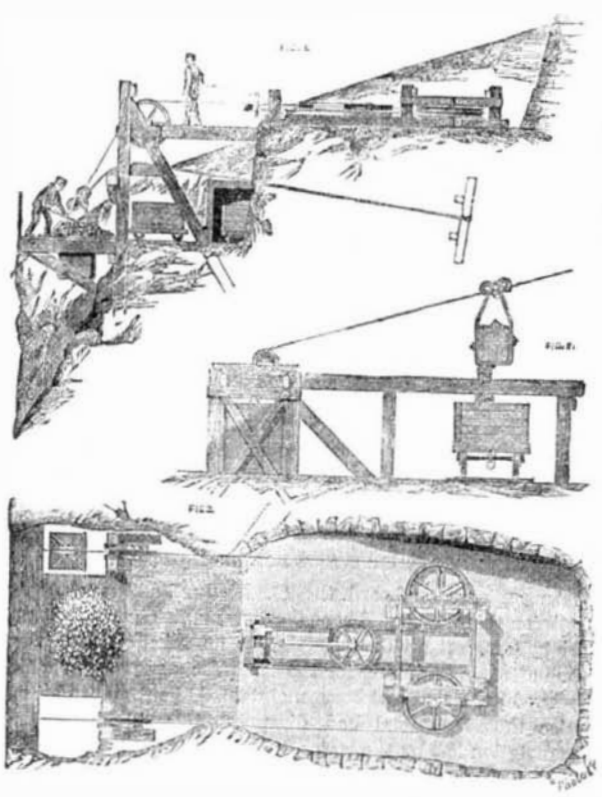
WIRE TRAMWAYS.

The use of wire rope ways for transporting minerals, etc., especially in hilly countries, is becoming very general, and a company is now constructing them in many parts of the world, an improved design by its engineer, Mr. W. T. H. Carrington, being usually adopted. We give herewith a view of the line erected in Norway, in the iron mines at Aalsund. Many such mines have been for a long time worked only to a very small extent, or even left unworked, owing to their being placed at such inaccessible spots as to preclude the possibility of economically transporting the ore to a port of shipment. Frequent examples of such are found on the coast of Norway, situated high up among the mountains, which tower above the numerous fiords which indent its seaboard The only approach to these mines consists of a rugged and zigzag road, quite unfit for the carriage of any large quantity of mineral, and, owing to the extreme steepness of the mountain side, often leading a circuit of many miles to reach a spot which is less than half a mile distant in a straight line. To accommodate such cases an arrangement of wire rope incline has been designed and successfully worked, as shown in the engravings, the details being represented in the second illustration. It consists of two steel ropes of about 40 tuns breaking strain, fixed at the mines and stretching direct to the small pier at the foot of the mountain, spanning a distance of 750 yards without support. On it are run two cages with small grooved wheels, in which are placed about 12 cwt. of iron ore, the fixed ropes being kept in tension by means of weight boxes at the bottom. The loaded cage is made to draw up the light one by means of a light steel rope, which passes round suitable brake sheaves at the mine, and by which the speed of the descending load is governed. On arriving at the bottom, the cage is discharged into a large truck ready to receive the ore, which, when full, is, in its turn, discharged into the ship to be loaded. The light cage has, meantime, arrived at the top, and, being filled, is allowed to descend, and to draw the emptied cage up. Theincline is an angle of 45 degrees, and the speed at which the cages are run is about 15 to 20 miles per hour. By this means about 100 tuns per ten hours are transported at a very low cost, the only expense being the men required to work it, namely, about three at the top and two at the bottom.



WIRE TRAMWAY AT THE IRON MINES, AALSUND, NORWAY.



The Detection of Suet Butter.

We have had occasion repeatedly to allude to the various imitations of butter, mainly compounded of suet, which have found their way into our markets, sometimes under fanciful names which indicate their composition, and in some cases marked as and purporting to be the genuine article. Owing to the determined opposition of the butter and cheese trade of this city, but little, we believe, is here consumed; but it is credibly stated that quantities are shipped to the South and to other sections of the country, where a less careful supervision is exercised over the quality of the staple or the condition of the markets. We also learn that, of late, various disagreeable compounds, known in England as "French" and "Australian" butter, have been imported into this country by British dealers desirous of avoiding penalties under the adulteration acts of their own nation; so that altogether it would appear that there is sufficient of the artificial material in the United States to render the following method for its detection valuable to merchants or consumers who desire to avoid investments in it.

Mr. John Horsley, F. C. S., furnishes to the *Chemical News* a record of the results of recent experiments, which were directed toward the detection of meat fats mixed with butter, and therefore the process indicated will prove useful both to those suspecting such adulteration in genuine butter, as well as to others who are not sufficiently expert to distinguish the artificial from the inferior qualities of the real article.

Fresh butter is permanently soluble in methylated ether of specific gravity 0·730 at the temperature of 65° Fah. With the view of determining whether any other substance contained in the butter could be precipitated from it, Mr. Horsley first placed 25 grains of the fresh material in a test tube with 1 dram of methylated ether, in which ready solution took place. Thirty drops of methylated alcohol, 63° over proof, were added, and the whole agituted, but nothing was precipitated. The experimenter then mixed 10 grains of fresh butter with 15 grains of mutton fat, and added the liquids as before, when, in less than half an hour, the fat was precipitated, the heat of the room being 68° Fah. Lard, beef, mutton, and tallow fats, properly melted together in proportions of 60 grains of butter and 40 of fat and stirred until cold, can each, by a similar operation, be precipitated in a few minutes. As much as 30 per cent of the fat first used has thus been recovered. This is a simple and direct way of dealing with such adulterations, and is superior to the process of estimating the butyric acid. It should be observed, however, that crystalization of butter out of the ethereal solution at a lower temperature than 65° must not be mistaken for the fats precipitated by the alcohol alluded to, since the butter, besides being so much lighter, occupies the upper layer, and is different in character and easily remelted by the application of the warm hand for a minute or so.

The One Rail System.

A contract has been taken by Messrs. Whittaker & Woodward to build a railroad on Crew's prismoidal one track system, from the depot in Austin, Tex., to some quarries near that city. It is built by the contractors at their own risk, as an experiment, and, if successful, is to be paid for at the rate of $4,000 per mile.

We have heretofore illustrated this novel style of railway. We have no doubt as to the success of the above example. The Crew plan is one of the cheapest and best plans for railways that has been devised.

A Large Trip Hammer.

The largest trip hammer in the United States has recently been completed at Nashua, N. H., at an expense of $75,000. The weight of iron used in it is about two hundred tuns. The ram weighs twelve tuns, its striking force is about one hundred tuns, and four large boilers are brought into use to furnish steam to run the six hundred horse power engine required to successfully operate it. The immense crane, with which the iron that is manipulated is hoisted into position, is the largest in the country, and is rigged with modern mechanism, so nicely that two men can easily hoist fifty tuns dead weight.

The above devices are pigmies in comparison with some of those used in England and on the Continent. For example, the new hammer at Woolwich, Eng., made by Nasmyth, Wilson & Co., weighs forty tuns, and its blow under steam is equivalent to a fall of that weight from a hight of 80 feet. The actual force of the blow has not yet been determined. The total weight of the machine is 665 tuns, and its cost $250,000.

Coppering of Iron Rollers for Calico Printing.

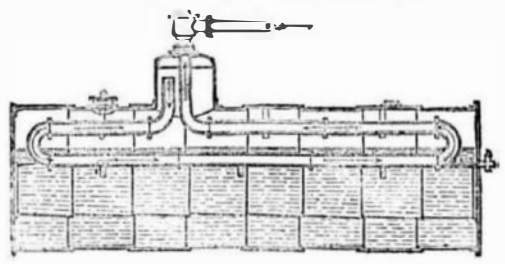
Th. Schlumberger cleanses the iron cylinders with a concentrated alkaline ley, washes well in water, and goes over the whole surface with the file. The surface is then very bright, and is not to be touched with the finger or soiled with the breath. It is then plunged in an alkaline bath composed of : Sulphate of copper, 1 part, dissolved in water, 12 parts; cyanide of potassium, 3 parts; carbonate of soda, 4 parts, sulphate of soda, 2 parts, dissolved in water, 16 parts. Or: Ammonia, 3 parts, acetate of copper, 2 parts, dissolved in water, 10 parts; cyanide of potassium, 3 parts, carbonate of soda, 4 parts, sulphate of soda, 2 parts, dissolved in water, 10 parts. The cylinder is allowed to remain twenty-four hours in one of these baths, subject to the action of a battery of four or six pairs, till the surface is coated with a slender but adherent layer of copper. It is washed and cleansed with pumice stone. If in this operation the iron should be laid bare in any part, the cylinder must be anew submitted to the alkaline bath. As soon as the coating of copper is uniform, it is washed in acidulated water and immersed in an acid bath of sulphate of copper. This bath is composed of solution of copper at 20° B., to which $\frac{1}{300}$ of its volume of sulphuric acid is added to facilitate the solution of some metallic copper, which is also immersed in the bath for the purpose of maintaining the solution in a uniform state of concentration. Here the cylinder is left till the layer of copper has attained the desired thickness, a galvanic current being kept up by a battery of four pairs. If the temperature is between 60° and 65°, three to four weeks are required to produce a deposit of one thirty-third of an inch in thickness. The cylinder is turned one quarter round daily to change the portion of its surface which faces the sheet of copper used as a positive electrode.

A Good Suggestion.

A writer in the London *Builder* suggests that thick glass might be easily and cheaply cemented to the walls of hospitals, etc. It would be non-absorbent, imperishable, easily cleaned, readily repaired if damaged by accident, and, unlike paper and paint, would always be as good as at first. Glass can be cut or bent to conform to any required shape. If desired, the plates may colored any cheerful tint. The non-absorbent quality is the most important for hospitals and prisons, and, we should think, is worthy the consideration of architects.

A DEVICE FOR PREVENTING PRIMING.

The difficulty of securing the dryness of steam, as it leaves the boiler, has lately engaged much attention, and many devices for the purpose have been invented. We give herewith a sectional view of one of the latest, which is the idea of Mr. Robert Johnson, of Haughton Place, Bradford, England, and which has already been successfully applied by him to a number of boilers. The arrangement—to which Mr. Johnson gives the name of anti-primer—consists simply of a pipe extending from the dome down into the barrel of the boiler, the whole length of which it traverses below the water line, then returning again to the dome, where it joins the stop valve through which the steam is drawn off. As seen from the engraving, the steam on its way from the boiler has to traverse the pipe, and during its course any water which may be mixed with it is evaporated by the heat communicated from the surrounding steam and water through which the pipe passes. The arrangement can be easily fitted to existing boilers, and we hear, says *Engineering*, that it has given very good results.



THE *jaborandi* is the name of a Brazilian plant, which, it is said, has lately been found to be the most powerful known sudorific. It is stated that the medicine therefrom is effective against even *rabies*.