

Transfusion of Blood in the Horse.

Mr. Farrall, an Irish veterinary surgeon, has published in the Dublin *Quarterly Journal of Medical Science*, a report of his successful experience in the transfusion of blood in the horse, in diseases attended with low vital action. The practice had reference to an epidemic prevalent near Dublin last year, of the nature of influenza, but of a low typhoid character, so debilitating in its influence as to entirely prostrate in strength the most healthy and vigorous horses in a few hours after the appearance of the first symptoms of the disease. With those cases which had been bled, an average amount of success only was obtained, it being found that everything that could be done to restore the vital powers was, in a majority of cases, useless, save in the instances of young and vigorous horses. In three of the cases the patients had been bled, and were so much weakened that they could scarcely walk. In the fourth case, a drastic purgative had been administered, causing super-purgation and great prostration of strength. In each of the cases the condition of the patient was nearly similar. The following is Mr. Farrall's account:—

"Having selected a healthy young horse from which to obtain the blood to be transfused, I opened the jugular vein in the patient and in the healthy subject, and having inserted the tube into the vein of the healthy horse, I placed the india rubber tube in the tin trough containing the hot water, to maintain its temperature, and the other curved tube into the descending portion of the vein in the patient. As soon as the current from the healthy horse had completely expelled all atmospheric air, the blood flowed freely from the vein of one horse into that of the other in an unbroken current. The average quantity of blood transferred in each of these cases was about three quarts. I observed no particular symptoms to follow from the transfusion until two quarts or more had passed from one to the other; but as soon as about that quantity had flowed into the diseased subject, there appeared to be produced an amount of stimulation indicated by an increased degree of action of the heart, at the same time the pupils began to dilate, and the countenance evinced an anxious expression. My former experiments led me to watch with great care the progressive dilation of the pupil, and I deemed it expedient in each case when this symptom was well developed, to compress the tube so as to diminish the current, and allow the transfusion to proceed more gradually. Occasionally I almost completely interrupted the current until the subsidence of this symptom, and I found that when about three quarts had been transfused, any additional quantity was followed by unpleasant symptoms, which indicated the necessity of stopping the operation. On removing the tube and closing the vein, all symptoms of irritation gradually subsided, and the pulse, from being rapid and irritable, became slower, stronger and fuller, gradually approaching the healthy standard. In every instance I found action in the healthy animal sufficiently strong to propel the blood into the vein of the patient; but if it be found requisite, the circulation may be strengthened by giving the horse from which the blood is to be abstracted, a little brisk exercise immediately before the performance of the operation.

In each of my four cases the reaction was steady and progressive. The natural warmth of the extremities was gradually restored, and in the course of ten or twelve hours the patients presented other equally unmistakable symptoms of amendment, such as returning appetite, more quiet and steady respiration, cheerfulness of countenance, willingness to move about, and in a short time they were pronounced cured."

The Manufacture of Coal Oil in Central Ohio.

Our friend, J. E. Holmes, of Newark, Ohio, sends us some valuable statistics in relation to the manufacture of coal oil in this region from the fine quality of cannel coal which the surrounding country produces. The first

establishment for the manufacture of coal oil in this portion of Ohio was started some two years since by Dillie & Robinson, in Perry co., who have recently increased their works to such an extent as to enable them to manufacture about 350 gallons of oil per day, a more than usual proportion of which is burning oil of superior quality. The vein of coal from which their works are supplied is of an excellent quality, but, like most good coal beds, very thin. In addition to this, the senior member of the firm is making arrangements to start similar works at Flint Ridge, in Licking county, which will be supplied by the extensive and available vein now in possession of the Great Western Oil and Coal Company, of Newark, Ohio. This latter company furnishes Newark with gas, which is said to be unsurpassed for its brilliancy, and will soon be prepared to produce one thousand gallons of oil per day.

The Newark Coal Oil Works, under the management of Messrs. Holmes & Hull, are also increasing the capacity of their works; and we are assured by the first-named proprietor that they will shortly be able to produce three hundred gallons of pure oil per day. The demand for this kind of oil, both for burning and lubricating purposes, would seem to justify the assertion that it will be generally used for both. It possesses but little odor, is of the same specific gravity as water, and is limpid in appearance. Mr. Holmes informs us that a single application of this oil to the slides of a large "iron planer," having a travel of 20 feet, and a width of 4 feet, lasted a whole week.

It appears that one portion of the fissures or fractures in the beds of cannel coal situated in central Ohio, have one general direction or bearing, which is about five degrees west of south, the blocks being nearly square, and varying from two to three feet. This fact led Mr. Holmes to suppose that, at the time the deposit was hardening into coal, the magnetic attraction of the pole might have had some influence in producing this peculiarity. This observation has been made in the fissures of all coal beds, and they run in the same direction nearly all over the world. We do not profess to account for this, but we should not like to attribute it to polarity.

Laboratory—No. 3.

Affinity.—Every science, every art, every trade, has peculiar expressions or terms to signify certain things, certain effects, and certain results; but in every-day life these things are differently expressed, or have a different meaning. Thus the word *pie*, to you and me, dear reader, means some viand, savory or sour, as the case may be; but the printer uses the word *pi* to designate a pell-mell of type, all of a heap or wrongly placed, thus—*ri-eu-e-pi-or*. A miner's name for a basket is a corf or corve; a painter calls a paint-brush "a tool." Similar technicalities will be found in every branch of industry, and learning them is one part of the duty of an apprentice. In chemistry we have the word *affinity*, which means a liking of one substance for another, so that it will unite, forming by this union a body which is neutral between the two, whose affinity for each other causes their combination. Thus, caustic potash has a strong affinity for nitric acid, which is also very caustic and corrosive, but when combined, the harmless material, saltpeter (nitrate of potash), is the result. It is the affinity of iron for the oxygen in the air which causes it to rust (to produce oxyd of iron); and to prevent iron from rusting we cover it with oil, which, acting as a varnish, shuts out the oxygen. Gold does not rust, because it has no affinity for oxygen; so no coating of oil is necessary in this case. Some substances have a greater affinity for a particular material than the body with which it may be already united; when such is the case, and the addition of the former substance be made, the two bodies having the greatest affinity for each other unite, and that which has the least affinity is displaced. This is illustrated when tartaric acid is added to carbonate of soda;

the tartaric acid unites with the soda and turns out the carbonic acid, as is seen in mixing a seidlitz powder. Carbonic acid being a gas, causes the effervescence. If you have only affinity for philosophy, you will read this with attention; if not, there is no affinity between our ideas.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims:—

COMBINED BOOT-JACK AND BURGLAR ALARM.—This invention consists in the use of two adjustable movable jaws and a spring treadle, attached to a bed or plate, and used in connection with a catch. These parts are so arranged that the treadle is made to perform the double function of operating the jaws when forced down by the foot, and the implement used as a boot-jack, and also of sounding an alarm when the apparatus is used for that purpose and placed in proper position against a door. F. C. Goffin, of Newark, N. J. is the inventor.

CROSS-CUT SAWING MACHINE.—The object of this invention is to obtain a simple and economical device for sawing logs transversely into suitable lengths for fire-wood; one that can be operated by hand with a moderate expenditure of power, readily adjusted to the log, and easy of manipulation generally. H. H. Potter, of Carthage, N. Y., is the inventor.

REMOVABLE RAMROD FOR REVOLVERS.—This invention relates to that description of revolver whose chambered cylinder rotates on an axis parallel with the bore of the barrel. It consists in a novel, simple and effective method of applying a rammer to ram the charges in the chambers of the cylinders, and is the invention of H. S. North, of Middletown, Conn., assignor to Edward Savage, of the same place.

SPLITTING WOOD.—Franz Noette, Brooklyn, N. Y., has invented a machine for this purpose, which consists of an intermittingly rotating table and plunger provided with cutters, arranged so that wood may be sawed into proper lengths and split into kindling wood with great facility.

SAW GUMMER.—M. Ernsberger, of Bremen, Ohio, has invented an improved device for this purpose, which consists in the employment of a stock provided with set screw clamping it to the saw, in connection with a burr cutter peculiarly constructed and applied to the stock in such a manner that the same may be properly guided or held in proper position while in operation, and also fed to its work with the greatest facility, the whole forming a simple and efficient implement, well adapted, and more especially designed for gumming circular saws.

GAS PIPE COUPLING.—This invention consists of an open coupling for gas and water pipe, whereby the necessity of cutting away a portion of the main pipe and forming a running joint to attach the branch pipe is avoided. The operation of attaching branch pipes is also greatly facilitated, and labor and expense lessened, and facilities for cutting off the supply by detaching the branch and plugging up the main, likewise afforded. This is certainly a simple and good coupling, and is the invention of W. Hudgin, of Washington, D. C.

PROTECTING TILLER ROPES OF VESSELS FROM FIRE.—Should a ship take fire, so long as the rudder is under the command of the pilot there is a chance to still preserve the passengers and cargo, but the moment the tiller ropes are burnt the ship must be given up to the mercy of the fire, and the tempestuous waves. This invention is designed to prevent this calamity by fitting the tiller ropes in metal tubes, which are again enclosed in tubes of larger diameter, so that a space is left between them that can be filled with any non-conducting material. These tubes are to extend from the wheel-house to the tiller, so that the whole length of the ropes will be protected. W. Y. Gill, of Henderson, Ky., is the inventor.

ICE PITCHER.—This invention relates to that description of pitcher which is surround-

ed with a hollow jacket, or, in other words, is provided with double bottom and sides. Such pitchers as usually constructed, have the inner part or lining soldered or otherwise attached at the top part of the outer casing, and in consequence when the inner part or lining is worn through or accidentally perforated, as it generally is, while the outer part or lining remains good, there is no, or very little, facility for repairing it, and the pitcher becomes in a measure worthless. Ernest Kauffman, of Philadelphia, has invented one which consists in fitting the inner part or lining into the outer part or case, with screw threads or their equivalents, which provides for making a tight joint between the two parts when together, and for the ready removal of the inner part or lining for the purpose of replacing it by a new one or repairing it when damaged.

FILE CUTTING MACHINE.—It has often been attempted to cut files with accuracy by machinery, but we are not aware that any of the devices proposed, have been able to overcome the chief difficulty until the one of which we will try to give some idea, was invented by J. Nelson Jacobs, of Worcester, Mass. This difficulty is, that all files having somewhat of a curved profile, when they are cut with a chisel having a definite stroke, it cuts deeper into the raised part of the curve than any other part, and so weakens the file, now this machine cuts the file to the same depth, whatever be its profile, by means of a profile model which acts as a stop to the chisel, and so allows it to cut only the right depth the whole length of the chisel. Fine or coarse chisels can be cut with equal facility on this machine, and also any size. We have seen some files which have been cut by this machine that were to all appearance equal to any hand cut, and much more regular in the distances of the serrations.

REEFING SAILS.—In most of the plans heretofore used for reefing topsails from the decks of ships, the sail has been rolled on a roller, or, as it is termed, a "jackyard," attached to the yard, to avoid the necessity of dividing the sail vertically, as has been done in most, if not in all cases where the sail has been rolled on the yard itself. The advantage that would result from rolling the sail upon the yard itself, if it could be done without dividing the sail, and the yard be made to work freely, are very generally admitted by nautical men, and the object of this invention is to obtain this result. The method which the inventors, Lewis Higgins, of Jersey City, N. J., and Alexander Brown, of New York, pursue to attain this end is simple. They suspend the yard by means of a double C-shaped truss frame from the mast, and between the two C's a number of small rollers are placed in which the yard can rotate freely and between which and the yard the sail can be snugly coiled. Thus all necessity for dividing the sail is taken away, and a very good and simple method of reefing sails from the deck is provided.

RAILROAD INDICATOR.—This invention consists of a transparent faced box placed in each car. In this box two square rollers with a flexible endless chain of cards having the different stations printed on them, are arranged. A forked lever extends down from the upper roller to the rails of the track, and comes in contact with inclines at the different stations. These inclines raise the lever, and cause it to turn the upper roller, and thereby bring cards separately and successively opposite the transparent front of the box. When the card thus appears to view, the passengers read the station to which they have arrived. With this arrangement provision is made for sounding a bell to call the passengers attention as soon as the card comes in view. The endless chain of cards is operated both in the forward and return trips of the train. This appears to be a very useful and perfect arrangement, as much confusion and annoyance to passengers and conductors will be avoided by its use in cars. John M. Harvey, of Amsterdam, N. Y., and N. J. Becker, of Florida, N. Y., are the inventors.