

Scientific and Useful

VERSATILITY OF CATTLE.

Cattle furnish, apart from meat, no end of articles in common use. Your toilet or laundry soap is made from their grease; the curled hair in your chair and the bristles in your shoe-brush are from their tails. As for the sheep again, your combs are made from his horns; your tooth-brush handle and mouth-piece of your pipe were once part of his thigh-bone; your knife handle comes from his shin-bone; the buttons on your coat, and your wife's hairpins are from his hoofs; neat's-foot oil represents his sinews; and the prepared food you throw to your chickens is reduced from his blood. Also, the pepsin you buy at the druggist's is made from a pig's stomach. The grease extracted from the wool of sheep, after slaughter, is converted into potash.

THE NOSE IN MUSIC.

Why are we able to use our right hands so freely and yet are so clumsy with our left? To remedy this, people are demanding that right and left-handedness should be taught in schools along with reading, writing and arithmetic. Dr. W. H. Cummings, the Principal of the Guildhall School of Music, in London, says that the knack of using both hands is essential to the proper playing of some instruments. In fact, an organist needs to employ many muscles. Besides both hands, he has to work stops and pedals with his feet, knees, and even with his back; while the pianist sometimes uses his nose "to get in a middle note." Carl Maria von Weber (1786-1826), the composer, wrote a piano piece which a friend pronounced unplayable, as one chord had a note in the centre which could not be reached by either hand. "Ach, see me do it," answered the author of "Oberon" and "Der Freischütz," and he struck the note with his nose.

VALUES OF SAWDUST.

Sawdust and wood waste form the raw material for a score of by-products. Your newspaper is made of wood-pulp from sawdust; your cabinetmaker uses solid blocks of fine highly polished wood made from sawdust mixed with gum or alum. Sawdust is also used in making certain acids, tar, charcoal, wood pavement, and for producing the naphtha with which you clean your gloves. Even the needles of pine trees are now made into a fibre used in stuffing sofa cushions and as a wedding for overcoats.

Acids which were formerly used to escape into the air as gases are now saved and used for bleaching your sheets. Good perfumes are made from the ill-smelling oils resulting from the distillation of whisky. Even the skin milk of commerce is prepared as a sizing for paper.

You may sell the old bottles and broken glass in your cellar by the way, to certain manufacturers, as material for the artificial stone which forms the pavement in front of your house.

RADIUM CLOCKS.

There does not appear to be any sufficient reason why radium "clocks" should be so called except that they are calculated to "go" for a long time without attention. This, in fact, is their most popular feature, and it is calculated that these interesting scientific toys contain in themselves sufficient energy to keep them in motion for about two thousand years. From a tiny glass tube containing a small quantity of radium two thin aluminium leaves depend. The negatively-charged rays continually emitted by the precious mineral cause a like charge of electricity to collect upon the metallic leaves, with the result that they repel one another until one of them touches the side of the containing vessel and loses its charge. Then the leaves fly together, and begin again. With a period of about 40 seconds, this process

goes on continuously, and will do so, it is believed, for a score or so of centuries unless the thin metal leaves wear out in the meantime. The little instrument, which it may be remembered, is the invention of the Hon. R. J. Strutt, is made by Martindale of London in convenient form for demonstration in the lantern, for which it makes an exceedingly interesting subject.

A NEW INDUSTRY.

The making of pillows and mattresses stuffed with sponges instead of feathers or horse-hair has been commenced in Florida, and according to a note in the "English Mechanic," results appear to be promising. Sponge is said to have all the springiness and resilience demanded of a material used for bedding, and to have certain advantages over feathers and other materials at present in use. It is said that the use of the new material results in the production of pillows and mattresses which cost only two-thirds the price of those made in the manner at present in vogue, and the sponge is very considerably lighter even than the proverbial feather with which a pillow is stuffed. The arrival of samples in England will be eagerly looked for by those unfortunates who are always seeking for a promising means with which to woo the fickle goddess of sleep.

WIND AND RAILWAY PUNCTUALITY.

The "man in the street" knows little of the tremendous deterrent effect a fresh gale of wind, blowing sideways, has upon the progress of a train. Take a modern bogie coach of average size as being 50 feet long, and about 10 feet high; consequently we had a superficial area of 500 square feet per carriage opposed to the wind, which multiplied by 8lb. representing the pressure of wind friction on each square foot, when the wind is travelling at just over 50 miles an hour, a total force of 4000 lbs. is bearing simultaneously throughout the train, which, if containing 10 vehicles, would equal 40,000 lbs., independent of engine and tender. The above pressure would be grinding the flanges of all the wheels against the rail, and if the cone of flange was at all worn, there would be a greater tendency for the wheel to grip, and thus act as a break. With this information before them, readers will understand why many heavily-loaded trains arrive, some 10 or 15 minutes late, when a strong wind is blowing.

THE PORT OF LIVERPOOL.

At a recent meeting of the Mersey Docks and Harbour Board, it was mentioned that they were proposing to make a new dock at the Victoria Wharf, Birkenhead. The dredging at the bar and sea channels was continued, and ninety-two million tons of sand had been removed since 1890. The depth was now twenty-seven feet at low-water spring tides. The probable cost of their contemplated new works would be a little over £4,000,000, and it would take seven or eight years to complete the works; but they considered the expenditure was wise and necessary to meet the requirements of business. With regard to the controversy continually going on about the position of Liverpool among the ports of the world, Mr. Robt. Gladstone, who presided, thought they might take it as pretty well established that Liverpool had the second place at any rate, if not the first. Lately he had seen some very interesting figures prepared at Washington. The figures referred to the trade of the great ports of the world, and showed that the trade of London was worth £261,000,000 a year; of Liverpool, £237,000,000, since corrected to £260,000,000; New York, £221,000,000; Hamburg, £198,000,000; Antwerp, £147,000,000; Marseilles, £86,

000,000; Calcutta, £59,000,000; Bombay, £51,000,000; Singapore, £43,000,000; and Sydney, £38,000,000. He thought that showed the position of Liverpool in the world's trade to be very satisfactory. With reference to the enormous number of passengers—emigrants and ordinary passengers—who arrived and departed from Liverpool in the course of the year, the total was 274,000, of whom 37,000 were cabin passengers. At London the total was 23,000, including 16,000 cabin passengers, and Southampton 72,000, and of these 27,000 were cabin passengers.

CHECKING CONSUMPTION.

A practical step has been taken by the Borough Council of St. Pancras, London, with a view to checking the spread of pulmonary tuberculosis, which is so often unwittingly propagated by sufferers who are ignorant of even the simplest precautions. The Council have inaugurated a system of voluntary notifications, and have provided the doctors of the district with the necessary forms. They have pointed out that the consent of the patients should always be obtained before the forms are filled in, and they undertake that the information so obtained will be treated perfectly confidentially, and will in no wise be used to the detriment of the invalid. That is to say, nothing will be done to prejudice his or her chances of obtaining further employment. On receipt of the notification by the Council, the sufferer will be supplied with instruction as to the best way of preventing the complaint from spreading to others, and those interested will learn from the same source how to disinfect the apartment recently occupied by a consumptive. Those who desire it will be given information regarding the societies and institutions through which segregation may be obtained, but no action will be taken to secure segregation except on the written request of the patient. The Borough Council intend to render sufferers all the assistance they can, while, at the same time, not in any way interfering with the patient's prospects of employment or acting against his wishes. In other words, they do not contemplate interfering in any way with the liberty of the subject, whether or not that liberty is prejudicial to the interests of the rest of the community, but where they can they will do good by ensuring that the patient shall not do harm through ignorance.

THE CHANNEL TUNNEL.

The relations between Frenchmen and Englishmen are now of such a cordial nature that it seems an opportune moment to revive the ancient scheme for connecting the two countries by a tunnel under the Strait of Dover. Despite the new turbine steamers and the reduction of the sea passage to less than an hour (in favourable circumstances), the fear of mal de mer still exerts a powerful deterrent influence on would-be travellers. It would be a very different thing if it were possible to take train straight from Charing Cross to the Gare du Nord without so much as a change of carriages. The old objection to the project that it makes our island more vulnerable to Continental enemies in time of war is really of little account in these days of submarine mines, for the tunnel could be blown to atoms at an hour's notice should the exigencies of warfare demand it. The scheme has been modified lately in the light of modern conditions, and it is now proposed to construct a twin-tube like the "Twopenny Tube" in London, the trains being run by electricity. The route has been altered so as to make use of a stratum of grey chalk which runs all the way under the Channel, and offers good facilities for boring and tunnel construction. It is proposed that the tunnel should rise from the sea at both ends, and enter the cliffs at a considerable height above the beach. This alone would appear to settle the military objection at once, for a couple of well-directed shots from a battleship would destroy the connection between the tunnel and the land, and cut off the submarine communication between the two countries. It is to be hoped that the scheme will now be allowed to go through.

PILES FOR MANY YEARS.

Zam-Buk successful where operations fail.

The wonderful healing and soothing effects of Zam-Buk make it an ideal remedy for Piles. With the first application the irritation and pain is abated, and a continuation of the treatment ensures a prompt and permanent cure. Many past sufferers have proved this. Here is one:—Mr. H. L. Smith, a Farmer, Quentown, Charters Towers, Queensland, says:—"I was troubled with Piles for many years; in fact, I do not think I exaggerate when I say that no man in Australia could have suffered more than myself. I have been under two operations, but the agonising misery returned again. In the end I was happily induced to try Zam-Buk Balm, and can confidently assert that its applications thoroughly cured me, as I have had no return of the Piles since using Zam-Buk. Since then my son, Roy, who is a well-known rider in the Towers, was thrown from his horse against a post, and received a severe gash in the leg. Zam-Buk was applied and in ten days his leg was entirely healed. I also found Zam-Buk invaluable as a household remedy for Sunburn, Chapped Hands and Lips, and Ringworm, and would never be without a pot in the house." Zam-Buk is invaluable for Eczema, Ulcers, Scalds, Discharges, Ringworm, Paralysis, Bad Legs, Inflammation, Rash, Eruptions, Pimples, Sores, Scabs, Scabies, Pains, Swellings, Chapped Hands, Sore Faces, Cold Sores, Chills, Cold in the Head, Cuts, Burns, Festerings, Gathings, Poisoned Wounds, etc. Of all chemists, or post free from the Zam-Buk Co., 39 Pitt-street, Sydney, price 1/6, or 3/6 family size (containing nearly four times the quantity).

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PLASMON

Dr. Robert Hutchison says:—"A diet which is provided with the most valuable mineral element, to give children a deficiency of protein is especially dangerous."

FOOTBALLERS should have PLASMON before every game.