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#### Anatomy of the Teeth.

A nerve, an artery, and a vein, enter the root of every tooth; "and all through an opening just large enough to admit a human hair."

The dental pulp is the termination of the nerve in the crown of the tooth. In the molar teeth it is about the size of a small shot. Some anatomists call the whole of the nerve the dental pulp.

The ivory of the tooth (that part which lies under the enamel) is composed of an immense number of little pipes, or tubuli, which make that part of the tooth porous. This accounts for the rapid decay of a tooth when the enamal is gone. The acids of the saliva, heat and cold, penetrate these numerous cells and cause a sudden destruction of the tooth. Filling the cavity solid with some metal is the only cure.

The nerve from one tooth connects with the nerve to every tooth in either jaw. This is the reason why the pain is so often felt on the opposite side from where the cause exists. Pain is often felt in the upper jaw, when the cause exists in the lower.

The superior (upper) molar teeth have three roots. They sometimes (not frequently) have four and even five roots, while the inferior (lower) have but two.

The bicuspids usually have but one root, or two united, so as to have the appearance of but one. They sometimes, however, occur with two distinct roots.

The incisors and eye teeth never have more than one root.

#### Constitution of Butter.

Heintz has communicated an elaborate paper on the constitution of butter, the results of which are as follows:

The margaric acid prepared by Bromeis from butter is \*a mixture of stearic and palmitic acids.

The fixed fluid acid which is contained among the products of the saponification of butter con. sists chiefly of common oleic acid, and not as Bromeis believed, of a different acid. There is no butter-oleic acid. Butter therefore contains common olein.

Among the products of the saponification of butter there is found a fatty acid, the hydrate of which contains more than 38 equivalents of carbon to 4 equivalents of oxygen. This acid, butic acid, has very probably the formula C40 H40 O4. It is with great difficulty soluble in cold alcohol, and corresponds to a fat contained in butter which may be called butin.

Stearic acid is also contained among the products of the saponification of butter, though not in predominating quantity. Butter therefore contains stearin.

The largest proportion of the solid fatty acids

The portion of the solid fatty acids most sol-

es, and forces them round. As the stones vary adjustment, and its entering portion is screwed all the acids contained in butter, the number of in their speed on the inner and outer edges. externally, to correspond with the internal screw equivalents of carbon and of hydrogen is divisthere is a grinding as well as a crushing proin the neck-whilst beneath the expanded head ible by 4. The same law holds good with recess. When the machine is at work, a quantiis a groove, containing an annular jointing piece spect to cocoanut oil. Heintz considers it there ty of quicksilver is thrown into the trench, and of some soft or elastic material, as gutta percha, fore probable that the cetic and cocinic acids the quartz with it. A small stream of water MACHINERY, TOOLS, &c. &c. india-rubber, canvas, or other substance. In which he detected in small quantity in sperma-It is printed with newtype on beautiful paper, and beruns in, and at one portion of the rim there is a this way, when the stopper is screwed into the ceti are mixtures, since the numbers of equivahole for it to run over, which it does, carrying bottle, this elastic surface bears down on the lents of carbon which they contain are not di the floating mud with it. As it runs end surface of the neck, and preserves a light falls into a goat-skin, with quicksilver at the visible by 4 like those of the other acids in sper-VINGS. junction. Such stoppers are easily screwed in maceti: he proposes to resume the subject, opbottom. Out of this goat-skin it falls into a and out, whilst they are always present for use, erating upon 10 lbs. of spermaceti. second, with more quicksilver, and so on from and will last as long as the bottle. one to another, according to the amount of fall. to every inventor. Separation of Nickel from Cobalt. The figure is a longitudinal section of the When the quicksilver is supposed to be saturaneck of the bottle, with the stopper in its place. Liebig has found that when a current of ted, the mill is stopped, the quicksilver is taken The bottle, having been blown in the usual way, chlorine is passed into a cold solution of the One Copy, for One Year out of all the receptacles, and poured into a Six Months and being separated from the punty, a small double cyanides of cobalt and potassium, the linen bag of fine texture, and three or four Five copies, for Six Months liquid being kept alkaline by the addition of quantity of semifluid glass is taken upon the Ten Copies, for Six Months thicknesses. The quicksilver is squeezed caustic soda or potash, the nickel is completely neck to form the mouth, the bottle being held Ten Copies, for Twelve Months through this bag, and the thickening amalgam Fifteen Copies for Twelve Months converted into sesquioxyd and precipitated, by its bottom end. The workman there introis finally rammed down with a sort of rolling Twenty Copies for Twelve Months duces the screw, into the neck, and when enterwhile the cobalt remains in solution as unalterpin. ed double cyanid. The sesquioxyd of nickle ed up to the shoulder, he closes the shears, and Letters should be directed (post-paid) to may be washed and ignited, and the nickel turns the bottle round rapidly on his knee, the A Steep Railroad Grade. The steepest railroad grade in Europe, is upweighed in the form of protoxyd; it is perfect. rotation forming the smooth outside of the 2)

over Liebig's second method which, it will be remembered, consists in boiling the mixed precipitates the nickel but not the cobalt.

#### Equilibrated Ship's Tables.



A curious contrivance has been lately patented by Mr. John Sayers, of Poplar, England, in connection with ship furniture, such as tables and apparatus for supporting loose articles. With an ordinary table, the sea-going passenger constantly runs the risk of unshipping his teacup, or losing sight of his newly-charged cover at the dinner-table, from the lurching of the vessel, Mr. Sayers mitigates this evil, by arranging his tables so that their supporting surfaces shall always maintain their horizontal level.

The accompanying engraving represents an end view of a ship's dining-table thus fitted. and placed fore-and-aft. At A are small tables, or platforms, supported at each end on hinge joints, B, attached to the table framing; and to the under sides of these tables, A, are attached the vertical pieces, C, sliding freely through the holes in the fixed top of the table framing, and resting on the ends of the angular suspension pieces, D, beneath. These suspension nieces are carried on hinge pieces, E, fast to the underside of the ordinary table top. From the centre of the suspension pieces, D, arms, F, project downards to carry the weight. G. It is evident that the surfaces. A. which are the supporting platforms for the loose articles in use, are thus kept at their exact level under all circumstances of the ship's motion, just as the common lamp or compass is sustained upon its universal joint.



ngmatter, and is illustrated with over This is a contrivance for improving upon the in butter consist of palmitic acid. The largest stones, with their faces bearing on the flat granold, ineffective, and very inconvenient system of proportion of the solid fats consists therefore of ite below. The water being turned on the of NEW INVENTIONS. closing bottles by corking. A screw-thread is palmitin. spoons, the paving stones are drawn round by moulded on the inner surface of the bottle-neck, NAL of the Concinic acid cannot be detected in butter. the motion of the shaft, and grind the quartz .or opening, at the time of moulding the neck; An improvement on this is to use two vertical and into this screwed neck is fitted a corresponduble in alchohol consist of myristic acid. The roller stones, eighteen inches thick and five feet ingly screwed stopper of wood, glass, earthenpresence of myristin in butter is therefore to be in diameter, with a circular hole in the centre. AND INVENTORS. ware, or other convenient material. This stopinferred. through which the horizontalshaft or arm pass per is formed with a suitable head to facilitate Heintz points out the remarkable fact that in

ly free from cobalt. The solution after passing | mouth, whilst the pressure forces the glass into | on the Piedmontese Railroad, between Turin the chlorine must still be alkaline. The smal- the thread of the screw. The stopper, A, in lest trace of nickel gives an inky black color this view, is formed with an external screwwhen dissolved in cyanid of potassium, and thread, corresponding to the internal one in the treated with chlorine. This method of separating mouth of the bottle, B; and beneath the excobalt and nickel has perhaps some advantages panded head is a ring, c, of india-rubber, gutta el cars, weighing altogether 100 tons, ascended percha, or other elastic substance, let into an annular groove in the head, and forming a tight double cyanids with oxyd of mercury, which joint. Quite an ingenious invention. It is pa- miles an hour. tented in England by Joseph Scott.

## Gold Assaying in South America.

The process of gold assaying amongst the na tive miners of South America is very simple.-A fragment of quartz is pounded, and rubbed to powder between two pieces of granite. A bullock's horn, of black color, is the only assay instrument. It is cut longitudinally into two equal pieces, partly on the curve, so that one half forms a kind of long spoon, the inside of which being polished. The powder being placed in the spoon, the water is poured in it and shaken, and then poured off. A second and a third water being applied, nothing is left but the coarser particles at the bottom, and at one edge of them, conspicous on the black horn, is seen a fringe of gold powder, if gold be present. With a keg of water at his back, and his spoon in his wallet, and a little parched meal, the mine hunter wanders among the barren rocks in search of a treasure, which he sells when discovered, and seeks another; the claims of labor being practically regulated by natural aptitudes. The man who buys the mine, digs the ore, breaks it up into the size of walnuts, loads it into hide sacks, borne on mules. and sells it to the "beneficiador," or benefitter in the valley below, who passes it through his mill. Having settled upon a small stream, with a fall from four to five feet, he builds up two walls to enclose it on each side, and a back wall to form a small reservoir, with a spout and plug to let out the water at his plaesure. Over the side walls, with considerable labor, he contrives to lay a flat circular granite stone, some five feet in diameter, with a hole of some fifteen inches through the middle. The middle of the stone is hooped round with staves, which stand up eighteen inches in the form of a tube. The outside is surrounded with similar staves, so that a water-tight circular trench is formed, with a granite bottom. Through the central hole is passed the straight stem of a tree, shod with an iron pivot, standing on an iron shoe, fast to a block below. The upper part of the tree is steadied in a beam above, supported by two upright posts. Through the middle of thever tical shaft is a horizontal hole, with a horizontal shaft projecting on each side. In this horizontal shaft, at nearly the level of the foot below, are affixed in a circle, like the spokes of a wheel, a number of wooden spoons, about three feet in length. To the horizontal arms above are tied, by raw hide cordage, a sort of large flag paving

and Genoa. It is near the town of Gleni, and the ascent is 185 feet to a mile! Experiments which have been made have shown that two locomotives, drawing a train of six loaded gravthe grade at a time when the rails were exceedingly wet and slippery, at a speed of nineteen

## A Spiritual Machine.

We learn that Mr. J. T. Pease, of Thompsonville, Connecticut, has succeeded in inventing a machine which he denominates the Spiritual Telegraph Dial. This apparatus is contrived with a dial face, on which are marked the letters of the alphabet, the Arabic numerals, the words Yes and No, and some other convenient signs. A moveable hand, or pointer, is fixed in the centre; and when a ghost wants to communicate with its pupils and friends in the body, all that is requisite is for it to give a gentle twitch to the pointer, and the revelation is accomplished. Mr. Pease states that with a good tipping medium to facilitate the movements of the pointer by agitating the table, letters will be indicated to the dial as fast as an amanuesis can write them down. There is also an arangement by which the dial may be concealed from the sight of the medium, so that he cannot know what it is that is being said by the ghost .--Exchange.

[Will Mr. P. interrogate his machine respecting the future of the Ericsson, and send us the result of his observation. If he will foretell the destiny of this ship we are ready to endorse his invention, but until we see some such evidence of its skill we must remain chary of it.

# Preparation of Ferrocyanhydric Acid.

Liebig gives the following simple method of preparing this acid. When a cold saturated solution of ferrocyanate of potash is mixed with its own volume of fuming muriatic acid added in small portions at a time, a snow-white precipitate of pure ferrocyanhydric acid is thrown down. These are to be washed with muriatic acid, dried upon a brick, and dissolved in alcohol; from the alcoholic solution the acid may be obtained in beautiful crystals.



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