

# Scientific and Useful

## "ANCIENT" EGGS.

In China eggs are considered a delicacy only when they are decidedly "ancient." They reach perfection when they have become almost completely green, as the result of several years' buried in chalk or sandstone. The price for such eggs rivals that given in this country for the choicest wines.

## MOTOR-BOAT RACING.

At the Motor-boat Club's races in Korosene Bay, Sydney Harbour, recently, the extraordinary speed of over 21 miles per hour was attained by Mr. C. H. Relph's invincible. This wonderful little craft was built at Ford's Yards, Berry's Bay, about six months ago. Her measurements are 35ft. in length by a beam of 5ft. 6in., driven by a 60-horse power 4-cylinder engine designed by the owner, and turned out by Messrs. Broomhead and Sons, of Balmain. At the builders' official trial a speed at the rate of 21 1/2 miles per hour was made, with five persons on board, both with and against the tide.

## FIRED AT THE CLOUDS.

"Cloud-shooting" is becoming a regular form of artillery practice in many Continental countries. The object of this atmospheric gunnery is to dispel threatened hailstorms. The most recent form of gun is a funnel-shaped barrel of iron with a broad muzzle, so that the discharge shall be distributed over as large a space as possible. The effect of the discharge is to create a small but powerful whirlwind, which, it is found, disperses clouds that would otherwise descend in hail. So strong is the gust of wind sent upwards that it sometimes kills or disables birds flying at great heights overhead.

## FLUID MAGNIFYING LENSES.

The glass lens has been brought to a diameter of about five feet for astronomical purposes, but when of such size the costs thousands of pounds and several years of labour. The Hungarian chemist who has at last made a successful fluid lens claims that it equals the glass produced in performance. It consists of two curved plates of thin and unusually hard glass, between which is hermetically sealed the fluid substance, and the optical properties are so adjusted that the usual defects of lenses are overcome. Time and temperature do not affect the fluid, while the contraction and expansion are practically the same as those of the enclosing glass. A ten inch lens that has hitherto cost about £400 can be made by the new process for £8, or less. It is believed that, instead of having reached the highest possible limits, lenses can now be made three times as large as any yet produced.

## "TOE-NAILING."

The novice at carpenter work who experiences difficulty in driving a nail straight, will probably be at a loss to understand why anyone should go to the trouble of inventing a nail which would bend as it sinks into the wood, but such an article has been made the subject of a recent patent. This nail is designed especially for the fastening of abutting pieces of wood together, in the manner technically known as "toe-nailing." In this operation it is necessary to drive the nail at such an angle that it will enter the second board against which the first one abuts, so that the two will be held together. The difficulty in the use of the ordinary nail for this purpose, is to drive it at just the right angle, so that it will take a proper hold of both pieces. With the new nail this is accomplished by making use of a peculiar "bow-shaped" end, which causes the nail to describe an arc as it passes through the wood.

## STORMS BELOW THE SEA.

Scientists tell us that at the bottom of the sea it is always raining—or, rather, "hailing" for the downpour is not a liquid one, of course, but an incessant and steady drizzle of the dead bodies of countless myriads of tiny animalcules. These microscopic creatures are called "diatoms," and are more beautifully fashioned and coloured than their ugly scientific surnames—*globigarina*, *foraminifera*, etc.—would denote. They exist in incredible numbers, but have a short existence of a day or two only; then their skeletons sink rapidly to the bottom in a steady sleet, to form the soft mud that covers the ocean-bed in every part of the world. It has been calculated that a single square foot of sea-bottom, situated, say, three miles from the surface, receives a constant downpour of ten millions of these tiny creatures every hour. But so light is each tiny corpse that the fragile sea-anemones (that die at a rude touch) feel no inconvenience from their bombardment.—"Good Words."

## HOW PLATE-GLASS IS MADE.

The cast plate-glass of which mirrors, shop-windows, and such things are made is prepared from the whitest sand, broken plate-glass, soda, a small proportion of lime, and a much smaller amount of manganese and cobalt oxides. The glass, when perfectly melted, is poured upon an iron table of the size required, and the thickness is regulated by a strip of iron placed down each of the four sides of the table. Immediately after it is poured out the molten substance is flattened down by an iron roller, which lowers the glass to the thickness of the strips at the sides. It is then annealed, or tempered, for several days, after which it is ground perfectly level, and polished to transparent brilliancy. The first plate-glass was made in 1688, at St. Pierre, in France, where the process was found out by an accident, as so many other important methods in manufacture have been discovered, where there were eyes to see the accidents and minds to apply them, or the lessons they taught, to the advance of art or industry.

## IS TOBACCO A POISON?

There is much in a point of view. Tobacco is out of favour with science in Great Britain just now. Sir Victor Horsley (who does not approve of alcohol, or strawberries, or cherries, or lettuce), denounces it as a nerve poison. Mr. Brudenell Carter, speaking as an ophthalmic surgeon of nearly fifty years' experience, it is certain that it is bad for the eyes, and may lead to nerve degeneration of other kinds. Finally, a Parliamentary Commission is sitting to determine how best to stop juvenile smoking. How different is the state of affairs in the United States! Their Department of Agriculture at Washington, having taken the attitude of the average man in regard to tobacco for granted, has been busy in determining how best his tobacco can be preserved at a right degree of moistness. In the States the smoker, unlike his British cousin, likes his cigars new and green, and his pipe tobacco fairly dry—in fact, the present writer once overheard an American in a London cigar shop, when offered some 1887 cigars, "dry and in good condition," respond, "Thunder. Haven't you got anything modern?" So the United States Department of Agriculture has been making a number of scientific experiments to find what chemical substances, when placed in the neighbourhood of cigars or tobacco, will keep them of just the right degree of moisture. Tobacco, like every other substance, has what is called a "vapour pressure," that is to say, every object tends to keep the air around it saturated with the vapour of that object. Thus water will always go on giving out its vapour unless the atmosphere is already saturated, and, if in the water we put solutions of chemicals, then the water will give out vapour

to a greater or less extent. The "vapour pressure" of the solution would be greater or less than the vapour pressure of water. Now, the tendency of tobacco to give out vapour is certainly less than that of water, but we might find a substance which, when placed in water, would make a solution with a vapour pressure equal to that of tobacco. So that when the solution was placed near tobacco the atmosphere would be just so much charged with moisture that the tobacco would not be impelled either to give out moisture or take it in. In other words, the tobacco would remain exactly as it originally was. The department, therefore, forthwith discovered, with painstaking accuracy, the vapour pressure of tobacco, and has now made out a list of chemical solutions, such as potassium sulphate, cadmium bromide, and manganese sulphate, which, when placed near tobacco or cigars, will keep them in the best condition.

## ANOTHER ALPINE TUNNEL.

Consul Edward Higgins, of Berne, reports that the legislature of the Canton Berne has accepted the project for a trunk line called the "Lötschberg," with electricity as motor power, to pass through the Bernese Alps and connect at Brig with the Simplon. This new road will require five and one-half years to build, and necessitates a tunnel 13 1/2 kilometers (kilometer equals 0.62137 mile) long out of an entire length of 56 kilometers. The cost will be about \$17,100,000. The steepest gradient will be twenty-seven one-thousandths. It will serve as the most direct means of communication between northern Italy (Milan and Genoa) and the vast district lying to the north and northwest of Switzerland. It will shorten the approach to the Simplon, that now must be reached via Lausanne, and will compete with the Gothard tunnel railroad. In addition to its value as an international trunk line it will prove of vast commercial importance to central Switzerland, and particularly to the Canton and city of Berne, by affording a direct line with the south that now has to be reached by means of the Gothard on the east or through the Simplon, which requires a roundabout deviation via Lausanne on the west. The road that has to be constructed will commence at Frutigen, a town near Spiez, a few miles from the lake of Thun, which is in direct communication with the towns of Thun and Pontarlier, and with the cities of Berne and Basle. It will merge into the Simplon at Brig and virtually form the completion of that great project. Its cost will be £3,500,000.

## FACE COVERED WITH ECZEMA.

A Sydney Lady's Remarkable Cure by Zam-Buk.

Wonderfully soothing and efficacious is the treatment of Eczema with Zam-Buk, which is best applied on a piece of clean lint, night and morning. The burning, itching pain will be allayed, and perseverance with the application will result in a new, soft, healthy skin, taking the place of the nasty scabs and scales. Mrs. A. Johnson, of 22 Water-view-street, Balmain, Sydney, was cured of this dreaded complaint by Zam-Buk, and writes: "I feel it my duty to express my gratitude for the great benefits I have received from Zam-Buk. I have been a sufferer for some time from that dreaded complaint, Eczema, all over my face. My face was so frightfully disfigured, that going out into the street was out of the question, and it was with difficulty I could do my house-work. I tried all the so-called remedies I could think of, and consulted several doctors, but without receiving any benefit. One day I received one of your samples of Zam-Buk, and as I was suffering very acutely from the Eczema, I decided to give it a trial. I did so, and was so pleased with the results that I obtained a larger supply. The good it did me in a very short time was marvellous, and my friends, one and all, ask me what I have been using. I cannot speak too well of your Zam-Buk. I always keep it in the house, and use it for everything—cuts, burns, and for the children. I wish Zam-Buk every success, and cannot praise it too highly." Zam-Buk should be in every home, and is obtainable from all medicine vendors, at 1/6, or 3/6 large pot (containing nearly four times the quantity).

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