

Should the spurs, from the untwisting of the strands, become loose and easily movable on their bearings, a few turns of the twisting-key will make them firm, besides straightening up the fence-wire.

What I claim as my invention, and desire to secure by Letters Patent, is—

A twisted fence-wire having the transverse spur-wire D bent at its middle portion about one of the wire strands *a* of said fence-wire, and clamped in position and placed by the other wire strand *z*, twisted upon its fellow, substantially as specified.

Science News Letter, July 29, 1933

PHYSICS

Photocell Tests Smoothness Of Polished Metal

DETERMINATIONS of the degree of smoothness of polished metals, important to scientists and engineers today, have recently been made by the French metallurgist, Dr. Albert Portevin, through the application of the photoelectric cell.

A beam of light is focused on the metal specimen so that it will be reflected to the sensitive cell. When the specimen is moved along in the path of the beam, any microscopic hills or valleys will register as fluctuations in the electric current produced by the cell due to variations in the reflected light.

Extensive use is made of smoothness determinations in the examination of machine parts subject to frictional wear. They are also valuable for indicating the relative efficiency of different abrasives employed in polishing metals.

Although numerous methods have been developed for studying the quality of polish, this latest adaptation of the ever popular photoelectric cell to the problem promises to supersede some of the laboratory methods now in vogue. This is particularly true in the case of the study of the surfaces of metals intended for corrosion tests. Here the initial degree of smoothness is of vital importance to the interpretation of the results of such tests.

Metals which have become colored during the process of corrosion, or upon heating as in the case of tempered steel, have to be examined with light consisting of only one wavelength (color) and a colored filter must be placed in the reflected ray to insure accuracy. If white light were used, the result would be unsatisfactory due to the presence of many different wavelengths.

Science News Letter, July 29, 1933

DENTISTRY

Exercise Good for Teeth Theory Seems Contradicted

THE EXPERIENCE of a South American Indian lad seems to contradict the modern theory that our teeth are bad because they do not get enough exercise from the soft foods we eat.

This lad, Moi-i by name, had never had any trouble with his teeth nor had he seen any signs of dental decay during the fifteen years he lived with his own people, the Makuxi Indians. His food during this period consisted of many fresh vegetables of different kinds, little meat, almost no salt and a good deal of hard cassava bread, which gave his teeth plenty of exercise, related Earl Hanson, who met Moi-i during the recent magnetic expedition of the Carnegie Institution of Washington. Mr. Hanson's observations are reported in the current issue of *Science*.

At the age of fifteen Moi-i was obliged to leave his people and go to work on the Brazilian National Ranch in the cattle plains. Here he ate the white men's food consisting of a great deal of meat, almost all dried and

salted; milk and cheese; almost no vegetables, and a great deal of salt. After a year and a half he had to go the dentist for repair of the ravages of a bad case of dental caries, or tooth decay.

The interesting point, Mr. Hanson comments, is that while Moi-i's teeth had plenty of exercise chewing his native hard cassava bread, they must have had much more exercise chewing the quantities of dried meat he ate later.

"If exercise is the determining factor, his teeth should have improved instead of deteriorating," Mr. Hanson remarked.

Mr. Hanson calls attention to two other interesting facts. One is that Moi-i ate very little salt until he lived with white people, and that the Indians of Southern Venezuela believe the white men have bad teeth because they eat so much salt. The other point is that Moi-i, when he lived with the white people, gave up his native habit of constantly cleaning his teeth with charcoal.

Science News Letter, July 29, 1933

"Dry ice" is one of the newer aids in fire-fighting, particularly when fire breaks out in an underground electrical conduit where it is hard to extinguish.

MEDICINE

One Treatment Replaces Three For Diphtheria Protection

PROTECTION against diphtheria may now be given to infants and children with a single injection of toxoid, instead of three, Dr. J. N. Baker, Alabama State Health Officer, has just announced.

The new protective toxoid is the result of years of research by the late Dr. Leon C. Havens, for 12 years director of the state laboratories. The perfection of it was the last piece of scientific work done by Dr. Havens and is considered by fellow health officers a fitting monument to the man.

The new toxoid has been developed from the old toxoid, already widely used in diphtheria prevention work. Dr. Havens knew as did other scientists that when toxoid is treated with alum it forms a precipitate which is very slowly soluble. This precipitated toxoid is absorbed in the body much more slowly than old-style toxoid. Dr. Havens believed that this would make

it more effective, since none of it would be wasted by elimination from the body before it had time to do its job of developing immunity or resistance to diphtheria. Investigations proved that this was correct and the use of the new toxoid has been approved by the U. S. National Institute of Health in Washington and the state public health committee.

"The finding by Dr. Havens of an immunizing agent for protection against diphtheria as potent as the present preparation will do much to revolutionize the campaign against diphtheria," Dr. Baker stated at a meeting in Montgomery, Alabama.

"Formerly it required three injections, a week apart, to secure adequate protection. With this new product one injection will immunize 95 to 98 per cent. of those susceptible."

Dr. Baker said further that with the reduction of the number (*Turn Page*)