example of the relationship which exists between the abstract science of numbers and natural causes.

When a metal bar is exposed at one end to the constant action of a fire and all its parts have reached their highest degree of heat, the system of fixed temperature corresponds exactly to a table of logarithms; the numbers are the elevations of thermometers placed at different points, and the logarithms are the distances of these points from the fire. In general, the heat distributes itself in the interior of solids, following a simple law expressed by an equation of partial differences, common to physical problems of a different order. Radiation of heat has a manifest relation to the table of sines; for the rays, which go out from any point of a heated surface, differ much among themselves, and their intensity is rigorously proportional to the sine of the angle which their direction makes with an element of the surface. If one could observe for every instant and at every point of a homogeneous solid mass, the changes of temperature, one could find in the series of these observations the properties of recurrent series, hose of sines and logarithms; one would find them, for example, in the diurnal or annual variations of temperatures of the different parts of the terrestrial globe which are near the surface.

One would recognize again the same results and all the principal elements of general analysis in the vibrations of elastic media, in the properties of lines or curved surfaces, in the movements of stars and in those of light or fluids. It is so also with the functions obtained by successive differentiations, which serve in the development of infinite series and in the numerical resolution of equations, corresponding also to some physical properties. The first of these functions, or fluxion properly so-called, expresses, in geometry, the inclination of the tangent of curved lines, and, in dynamics, the rate of motion during a variable movement: it measures, in the theory of heat, the quantity which is lost from every part of a body across a given surface. Mathematical analysis has thus the necessary connection with sensible phenomena; its object is never created by the mind of man; it is a pre-existing element of the universal order and has nothing of the contingent and the fortuitous; it is stamped on all nature.

Scienee News Letter, October 11, 1930

ENGINEERING

Use of Rubber Paving Brick Reported to Road Congress

RUBBER BRICKS have been used in slapstick movie comedies for years, but in some parts of Great Britain the streets are now paved with them. In a report to the Sixth International Road Congress held in Washington this week a British delegate told of the success that rubber paving has had in London, Newcastle, Edinburgh and Glasgow.

The first experiments to substitute rubber for brick and asphalt were made in 1913, it was stated. A rubber pavement in Glasgow, consisting of blocks of rubber 9x4½x1½ inches, was laid on a concrete base in 1923.

"Traffic in Glasgow is some of the heaviest and most trying class," the report states. "The cap of one block came away from its tread in 1925, this is the only defect reported. The paving is in good condition and shows no apparent wear after six years' use."

An installation in London was in New Bridge Street, which bears some of the city's heaviest traffic, with 17,623 vehicles, or 51,100 tons between 8 A. M. and 8 P. M., in addition to considerable night traffic. This was laid in 1926.

"After two years of wear, 416 blocks, or say four per cent., were renewed, and now at the end of the third year approximately another ten per cent. have to be renewed," the report states. "The defects are in the nature of blisters and the subsequent peeling off of thin layers of the cap where blisters appeared. The layers stripped off in no case extend the full surface of a block and are about one-fifth of an inch thick; the defects cause no inconvenience to traffic, but they collect dirt and are a blemish."

The paving costs about $22.00 a square yard, laid without foundation, it was stated.

Three Dots, Road Closed

Three black dots, on a white sign with a red border, mean "Road Closed," if you encounter them on a road in Germany. This has proven much more satisfactory than a more complicated international system of symbols that has been urged, it was stated in a report of a German delegation to the Road Congress.

"Attempts to indicate by various symbols on the face of the signs the particular types of vehicle to which the restriction is applicable, have not been entirely satisfactory, because single pictures do not stand out clearly from their background when viewed from a distance," the report states. "This was confirmed by experimental investigations carried out by the Psychological Research Board of the Police Institute for Technic and Traffic.

"These experiments, which so far have only been conducted in the laboratory and are not completed, have shown that the time required to grasp the meaning of the international symbol system is about twice that required in the case of the dot system. Even if the symbols on the signs were still more

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

Of SCIENCE NEWS LETTER published weekly at Baltimore, Md., for October 1, 1930.

Washington } ss.
District of Columbia }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Watson Davis, who, having been duly sworn according to law, deposes and says that he is the Editor of the SCIENCE NEWS LETTER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Editor, Watson Davis, 21st and B Sts., Washington, D. C.

2. That the owner is:

Science Service, Inc., 21st and B Sts., Washington, D. C., an endowed non-profit making corporation operating as the institution for the popularization of science, with no stock.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Watson Davis,
Editor.

Sworn to and subscribed before me this 13th day of September, 1930.

[SEAL]

Charles L. Wade.

(My commission expires April 6, 1933.)

conventional, the dot system would still be preferable. The dot is the symbol of wheels and motion. Under this system all wording is eliminated and increase in the number of dots expresses increasing degrees of traffic restriction."

Pedestrian Regulations in Paris

After many years in which no effort was made in Paris to force pedestrians to submit to traffic regulations when crossing streets, rules to that end are now in effect. In a report to the Congress, E. Lorieux and H. Giraud describe these regulations.

One light, instead of the three commonly used in American cities, was recommended by G. Luyssen and J. Hansez, Belgian engineers.

A plea for keeping roads and streets as narrow as possible and the declaration that unnecessarily wide roadways are a liability rather than an asset was made by Ignacy Drexler, professor of city management at the Polytechnic School at Lwów, Poland.

Science News Letter, October 11, 1930

MEDICINE

Possible Paralysis Epidemic Depends on Next Reports

Turning Point is at Hand For a Disease Which is Hard to Recognize Early When It Can Be Treated Best

WHETHER or not the country will be stricken by a widespread epidemic of infantile paralysis will probably be determined within the next few days. The U. S. Public Health Service is anxiously awaiting reports from the various states covering new cases. For the week ending September 27, there were 594 cases. This represents an increase of about 100 cases over the preceding week.

Normally the seasonal increase in cases of this disease would have reached its peak by this time and additional reports should begin to show a decline in the number of cases. If the figures show an increase, public health officials will know that they are facing an outbreak of epidemic proportions. There are more cases of this disease in the country than there have been for the last three years. The last large outbreak was in 1927, when at the peak some 800 cases were reported. In the great epidemic of 1916, however, the cases were reported by the thousands.

Ohio reported 100 cases recently, the largest number for any state. Other high figures were 65 for New York, 65 for California, 43 in Illinois, 32 in Massachusetts, 21 in Maine, 21 in Iowa, 26 in Nebraska, 20 in Wisconsin, and 18 in Missouri.

Mothers Can Suspect

Cure of infantile paralysis, or poliomyelitis as it is called technically, depends on early recognition of the disease, for the methods of treating it are most successful when applied in the first stages. Mothers are always pretty much doctors to their children, and while they cannot hope to make a diagnosis of this disease unaided, they can learn to suspect its presence so as to call for medical aid in time.

Unfortunately, neither the cause nor the method of transmission of the disease are known. Control methods depend on isolating the patient. Prevention also depends on keeping children and young people away from persons suspected or known to be suffering from the disease. In times of epidemics, it is wise to keep children away from strangers, also.

"The paralysis itself is due to the destruction of the nerve cells in the spinal cord which govern the movement of muscles," Dr. Lloyd W. Aycock of the Harvard Medical School has explained. "When these nerve cells are destroyed, the muscle with which they are connected loses entirely its power to function. It is like a telephone which may be in perfect order itself but which cannot function without a wire leading to it from the telephone exchange."

Definite Symptoms

Consequently treatment for the disease must be begun before the nerve cells have been destroyed, if paralysis is to be avoided. Once it has occurred, it is too late to cure it although patient treatment and care and exercise can do much for the affected muscles. Skillful treatment, if paralysis has occurred, is of great importance, because in growing children the pull of unparalyzed muscles against those which are paralyzed tends to produce serious deformity.

The paralysis is practically always preceded by certain definite symptoms. It is during this preparalytic stage before the nerves have been destroyed, that there is a chance of cure. Serum from the blood of persons who have passed through an attack of the disease is the one remedy at present available for treating the disease in the paralytic stage. Doctors speak of this as convalescent serum.

The onset of poliomyelitis is usually abrupt with fever, headache and stomach and intestinal upset. The child is drowsy and wants to be let alone. Usually he seems sicker and more prostrated than would be expected with the degree of fever, which is generally not over 102 degrees Fahrenheit. An anxious expression of the face, tremors and twitchings of the muscles and a sort of uncertainty in the movement of the arms and legs are characteristic of the early stages of the disease.