

per cent., Dr. Howes indicated. Existing roads failed to keep abreast of this tremendous increase in the volume of traffic.

Now, however, a nation-wide survey of highways is under way which will look ten years ahead, forecast traffic needs of 1948 and plan roadways accordingly.

Right now, highway construction is going through a period of transition. The present period is characterized by less extension of roads and more reconstruction of out-moded earlier designs, Dr. Howes indicated.

Poor Maps Cause Waste

A large amount of the hundreds of millions of dollars that annually are spent for federal construction projects is wasted because the United States lacks adequate maps, said Dr. William Bowie, formerly chief of the division of geodesy, U. S. Coast and Geodetic Survey.

For only a fraction of the cost of the government's giant projects the whole area west of the Mississippi River could be accurately mapped in five years, Dr. Bowie indicated. Eleven million dollars would be the cost of this job. While the sum seems large it would be returned many times over, by the prevention of wasteful methods, due to poor maps.

While 48 per cent. of the nation is topographically mapped, only about 15 per cent. is adequately mapped. Most of the present maps are too old or on too small a scale to be useful in construction projects.

"Vast amounts of money are spent annually on the public works," said Dr. Bowie, "and yet they are carried on in most instances without a knowledge of the physical facts of the earth's surface, that can be shown on a modern topographic map. The waste involved is enormous and it is inexcusable."

Ancient Ways in China

China sticks to centuries-old methods of irrigation not because modern pumps and machinery are unappreciated, but because coolie labor, at 15 cents a day, still is cheaper.

This is the view of Oliver Julian Todd, American engineer who has spent years in China at the College of Chinese Studies, Peiping.

Mr. Todd, recently returned from the Orient, told the meeting that engineers would be amazed and perhaps disgusted with the antiquated methods of irrigation in China. But, he added:

"Where it can be shown that men can stand in a sump and bail up water in five gallon cans, passing it to a platform four feet up where other men can lift it another four feet, and can do this at a lower cost than can be secured by competing centrifugal pumps operated by gasoline or kerosene engines, there is no argument. The coolies win as they always have in years before.

"They must eat and must be considered wherever there is work to be accomplished if they can underbid a mule or a machine of modern make. This economic fact must be constantly kept in mind by the engineer who is trying to modernize irrigation practice in China. Man-power at 15 cents per day in such quantities as most parts of China can produce it, is a force to be reckoned with always."

Large dams, for irrigation purposes, are a rarity in China, Mr. Todd said, for two reasons. Their cost is large and China is ever poor. But, in addition, the rivers of China carry enormous quantities of silt and mud during the summer rainy seasons. Thus dams would quickly fill up and demand constant clearing to continue their usefulness.

Science News Letter, July 30, 1938

RADIO

Television In Color Covered by New Patent

A SYSTEM of producing television images in natural colors has been patented by Robert Harding, Jr., of White Plains, N. Y.

Operating on a combination of the basic principles of color photography and color printing and of television image transmission, the method relies on superposition of primary colored images to achieve the desired effect, according to the specifications accompanying Patent No. 2,109,773.

Color filters and suitable lenses break up the scene to be televised to produce one image for each of the basic colors. These images are then directed at a special scanning disc to be converted into electrical signals for radio transmission.

At the receiving end, the signals are converted into light signals in a similar manner, except that the process takes place in reverse. Separate primary color images are then combined to produce the colored image.

The patent has been assigned to the National Television Corporation of Wilmington, Del.

Mr. Harding's method differs from the Bell Telephone Company's color television system, demonstrated in 1929, in that the latter uses color filters placed before the photoelectric cells that turn light into electric current. In the latter three separate banks of light sensitive cells are required. In Mr. Harding's system, lenses and filters separate the colors even before scanning and a single set of photoelectric cells is used.

Color television has not received nearly the same attention as has black-and-white radiovision because of the necessity felt by radio engineers of solving the relatively simpler problem first. In addition, color television as worked out both by Mr. Harding and the Bell engineers requires the use of a mechanical scanning disc, no longer in general television use because of serious mechanical difficulties.

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MEDICINE

May Inherit Tendency To Rheumatic Disease

THE IDEA that rheumatic disease runs in families is pretty old, but it takes on new significance in the light of recent studies by a research team from the children's department of the Johns Hopkins Hospital, the Johns Hopkins School of Hygiene and Public Health and the U. S. Public Health Service.

The figures reported by this group, Drs. Frances E. M. Read, Antonio Ciocco and Helen B. Taussig, show such a strong family tendency to the disease that it suggests a constitutional susceptibility to the condition. If scientists, following this lead, can find definite characteristics of body build or reaction which are associated with rheumatic disease or can learn the order in which cases develop in a family, it might solve some of the unknowns about this disease and even perhaps point the way to control.

The rheumatic condition under discussion is not arthritis, which also used to be called rheumatism, but the kind which appears as St. Vitus' dance, rheumatic fever or rheumatic heart disease. The seriousness of the problem is apparent from the estimate that rheumatic heart disease alone kills between 25,000 and 30,000 persons every year, nearly all of whom are under 30 years of age.

Germ infection is considered by most scientists to be the cause of the condition, but cold climate, dietary lack and