

for astronomy, for aluminum surfaces make telescopes work so much better that a 60-inch mirror instrument is as good as a 100-inch instrument. The difference in cost is nearly a million dollars.

Coating of the present world's champion telescope mirror with aluminum is the culmination of a series of experiments rushed through in the last few weeks.

Just a few days ago the 60-inch mirror at Mt. Wilson was aluminized and hurried back into place to test its im-

proved reflecting power. Ten smaller auxiliary mirrors have likewise been coated.

The previous champion of aluminized telescopes was the 36-inch mirror at Lick Observatory, also coated by Dr. Strong with his vacuum evaporation apparatus. This mirror was found to give fifty per cent. better reflection than ordinary silver for photographic purposes. The aluminum surface does not need to be re-applied frequently as does silver.

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Use of short-wave radio in medicine is no new thing; it has been successfully employed for several years in the treatment of certain diseases requiring a rise in temperature. Hitherto, however, the whole patient has been put into a state of "artificial fever." Dr. Nagelschmidt's advance consists in finding a method for localizing the effect.

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ARCHAEOLOGY

Cornfield Discovered Beneath Georgia Mound

AN INDIAN cornfield of the "deep South" so old that, after it was abandoned, an Indian mound was built on the furrowed ground, has been discovered near Macon, Ga., in perfect condition.

The cornfield reveals a system of cultivation known to the ancient mound builders of the South but entirely different from the typical Indian method of corn-growing. The field, discovered under the mound, was preserved through perhaps a thousand years by the sand mound raised over it and a thick cap of red clay loam over that which shut out rain and weather influences.

Discovery of the field is announced by Dr. A. R. Kelly, who has been mak-

MEDICINE

Short Radio Waves Used For Treating Parts of Body

SHORT radio waves promise speedy relief for the particular kind of painful and often disabling lame shoulder or elbow which physicians call bursitis. This new medical use of short radio waves was announced by Dr. Willis R. Whitney, vice president in charge of research of the General Electric Company.

Bursitis was described by Dr. Whitney as "sand in the human bearings." A bursa is a small closed sac. There are many of them in the body, generally lying between muscles and tendons, and containing a little thin liquid. Their function seems to be that of lubrication, making the motion of muscles easier. Stony deposits which may be seen by X-ray pictures are sometimes found in these sacs—the sand in the bearings. Injury, infection or unusual exercise of an arm or shoulder are thought to be causes of the condition.

Until recently surgical removal of the deposit with the bursa has been the best method of treatment, Dr. Whitney pointed out. It now looks as if surgery would be unnecessary in the future because enough heat can be induced in the body by high frequency currents to dissolve the lime deposits.

Dr. Whitney reported successful treatment of two cases of bursitis by his high frequency apparatus. Some years ago he developed a high frequency induction method of producing artificial fever for the treatment of paresis. Further research on high frequency currents led to discovery of their usefulness for treating bursitis.

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SHORT radio waves can now be used in medical treatment of selected regions of the body, by a technique developed by Dr. Franz Nagelschmidt of St. Bartholomew's Hospital, London, England. Dr. Nagelschmidt interposes a cylinder of wax and ebonite between the radio generator and the patient, localizing the heating effects of the radiations, which have wave lengths of from three to twenty meters (*Nature*, Feb. 23)



TREATING LAME SHOULDER WITH RADIO WAVES

Patients suffering from the painful, disabling kind of lame shoulder known as bursitis may be treated by short radio waves instead of surgical operation. The coil wrapped around the shoulder of Dr. W. R. Whitney, General Electric Company researcher, carries the high frequency currents which induce enough heat in the body to dissolve the lime deposits that cause the trouble.

ing extensive explorations of Indian mounds and village sites near Macon for more than a year. The work was inaugurated as a Smithsonian C. W. A. project, and is now being continued by the State and local F. E. R. A. in cooperation with the Society for Georgia Archaeology.

Air views show the parallel rows of furrows that crossed the ancient field, as plain as the furrows in a modern cornfield near by. The ancient and modern fields look strikingly similar. But this is a superficial resemblance, says Dr. Kelly, for the straight rows today are achieved by the plow, something unknown to the prehistoric farmers of America.

The so-called Indian way of planting corn, taught to colonists of New England by friendly Indians, was to heap up little hills of earth at intervals all over a field. Each hill was planted with a few kernels, and manured, hoed, and tended as a separate farm unit.

The cornfield discovery, explains Dr. Kelly, shows that prehistoric agriculturists of Georgia hoed their corn, pulling up the soil around the plants in close-set hillocks arranged in furrows. So regular was the pattern of hillocks that only a slight curving contour shows when the field is seen from a height or distance.

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no alteration in the Heaviside layer could account for the large size of the time discrepancies. In considering these aspects it was found that the average length of time required for trans-Atlantic transmission is approximately .04 second.

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ENGINEERING

Use Colored Concrete in Fight Against Accidents

ROADS the hue of the gay, orange-colored marigold flowers are the latest idea tried by British highway engineers in their intensive campaign to reduce the toll of accidents.

Short experimental stretches of this marigold road have already been laid down in several parts of the country, and Leslie Hore-Belisha, Britain's energetic Minister of Transport, has approved further trials on a large scale.

The chief advantage claimed for this coloring is that it reduces sunlight glare during the day and dazzle at night, while it is also suggested that these colored roads will give pleasure to the traveler's eye.

This experiment has already been tried out in the Channel Islands—Britain's small islands off the coast of France. Here the marigold roads were bordered by a white curb, an effective combination which was found to prevent glare, define the road in all lights and to allow cyclists and pedestrians to be easily picked out by the headlights.

Brown and green roads are also being tried, but the marigold shade seems to be favored, at least from the optical viewpoint.

A further advantage of the marigold road is that pedestrian crossings or "safety lanes" could then be marked out in different colored concrete and so lie flush with the road. This would be an improvement on the steel-stud system at present used in Britain for marking crossings.

It is believed that the problem of providing colored concrete that will last has been overcome, but this will not be known for certain until further time has elapsed.

Military and air force authorities are naturally watching these tests with interest for their bearing on the camouflage question. Concrete roads colored to tone with the surroundings would be far less visible from the air—an added protection for airdromes and military bases.

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GEODESY

Moon Varies Distance Between Europe and U. S.

63-Foot Difference Found by Harvard Astronomer And New York Scientist By Study of Radio Signals

TIDES in the solid earth which alter the distance between the North American and European continents by as much as 63 feet have been discovered by Prof. Harlan T. Stetson, visiting research associate in astronomy at Harvard University, and Dr. A. L. Loomis, New York banker and scientist who operates as a serious hobby the Loomis Laboratory, Tuxedo Park, New York. These tides in the earth are believed to be caused by the moon through its gravitational pull much in the same manner as it causes ocean tides.

They were discovered by the two scientists when discrepancies in astronomically checked clocks in Europe and in North America increased and decreased regularly with changes in the moon's position.

According to Dr. Stetson and Dr. Loomis, discrepancies between European and American clocks, astronomically checked, indicate that the average difference between the two continents may be increased by as much as 32 feet when the moon is pulling them apart. When the moon pulls them together they may be closer to each other by the same distance.

In conducting their experiments, the two used United States time signals checked at Washington and broadcast

from the Naval Station at Arlington, Va., English time signals checked at Greenwich and broadcast from Rugby, and French time signals checked at Paris and broadcast from Bordeaux. At specified times, each station picks up the signals of the other two.

Discrepancies between time signals from Arlington and from Rugby were found to rise and fall with the moon's position. A very similar curve designated the differences between Arlington and Bordeaux signals. Between Rugby and Bordeaux, however, no such relationship was found, indicating that the phenomenon does not take place between England and France.

By a stretching of rocks, Dr. Stetson says, it is well within the realm of possibility for the two continents to move as much as 63 feet apart. Such a movement would be equivalent to stretching a rock a yard long less than .0004 inch, an amount well within the elastic limit even of solid granite.

It was at first thought that changes in the amount of time required for trans-Atlantic radio transmission might be the cause of the discrepancies, or that the moon might lift the Heaviside ionized layer which reflects radio waves and thus give them a longer distance to travel.

Upon checking this, it appeared that