

plete Assyrian chronology, which has heretofore been carried back only to 963 B.C. These Assyrian name-years form the main basis for fixed dates in early Bible history.

All the cuneiform tablets found at Tell Billa are dated to the earlier eponyms, including King Shalmaneser the First, who reigned in the first quarter of the thirteenth century B.C.

The clay tablets were discovered last year under leadership of Dr. E. A. Speiser. They were so poorly preserved that at first he could decipher just enough to convince him of their importance. For eight months the tablets were set aside to dry, and then were sent to Dr. Edward Chiera of the Oriental Institute of the University of Chicago, who treated them by special processes so that they could be more clearly read. His reading now confirms and amplifies Dr. Speiser's brief examination.

Name Found

It is also announced that the Tell Billa expedition has discovered the ancient name of the city being unearthed. A bronze bowl bearing the name Shibaniba has been found. The expedition had thought this might prove to be the name of the city, for one of the gates of Nineveh, fifteen miles away, was called the Shibaniba gate. The gate faced north and opened directly to the road toward Tell Billa.

By identifying the ruins as Shibaniba, an important Assyrian province is added to the definitely known section of the old Assyrian Empire.

Science News Letter, February 11, 1933

▼ The Science Service radio address next week will be on the subject

R **TRANSPLANTING YOUR MIND**

by

A **Dr. A. T. Poffenberger**

D Chairman of the Division of Anthropology and Psychology of the National Research Council and Professor of Psychology at Columbia University

I **FRIDAY, FEB. 17**

O at 1:15 P. M. Eastern Standard Time

Over Stations of

▲ The Columbia Broadcasting System

PHYSIOLOGY

Electrical Control of Cancer Suggested by Yale Professor

A METHOD for the control of cancerous growth, based on the knowledge of the electrical currents present in all living tissue, is suggested by Dr. Raymond Dodge, professor of psychology and a member of the Institute of Human Relations at Yale University, in the *Yale Journal of Biology and Medicine*. Experimental work thus far, Dr. Dodge says, supports his presumptions, which are published, he adds, so that investigators in the field of cancer research may substantiate or destroy his hypothesis.

This method of cancer control is still in the laboratory stage and has not reached the point where it can be used on actual cancer patients. Consequently do not let anyone sell you or your relatives an electrical cancer cure or diagnosis on the strength of Dr. Dodge's announcement. It will be years, probably, before any practical application of his theory can be made.

Current From Tissue

It is well known that any living tissue is internally electrically positive with reference to its surroundings, giving rise to a detectable negative current of action, Dr. Dodge says. When a direct current comes in contact with a tissue, he explains, there is a decrease in the metabolic activity at the positive, or anode end, causing death of the tissue if the current is of sufficient intensity.

"The obvious bearings of these facts on the study of cancer are three," Dr. Dodge says. "The negative current of action should provide a precise measure of the activity of the cancerous tissue. If, and when, any treatment is adequate to delay the growth, the negative current of action should be decreased or be reversed. If the growth is actually being decomposed by any necrotizing therapeutics the negative current of action should be transformed into a positive current. So far as I know, this should be the most precise and most reliable indication of the cancerous activity and its control. An appropriate electrical exploration of the regions should enable the experimenter to determine the margins of the growth and hypermetabolic activity by the points at

which the negative current of action ceases."

The fast rate of growth of cancerous tissue, producing a powerful positive charge giving rise to a strong negative current, depresses the metabolic activity of the surrounding cells, and actually kills them, a characteristic of all serious cancerous growths, Dr. Dodge says, in describing the electrical picture presented in cancer.

Electrical Control of Growth

"This gradient of electrical charge with corresponding currents gives the hint of an experimental attack on the treatment of cancer by the reversal of pathological currents. If a direct current is applied so that a positive superficial charge is superposed on the active area it should develop an anode block, producing depression of the metabolic activity or death of the cells within the area to which the current is applied, according to the amount and the direction of the current.

"If a corresponding positive charge is superposed on the immediate surroundings of the cancerous growth the disease gradient should be reversed and the normal activity of the surrounding tissue might be expected to be reinstated. The desired results and the magnitude of current employed might be kept under constant empirical control by the measurement of the metabolic activity of the cancerous region through its negative current of action. It should thus be possible at will merely to retard growth, to stop growth, or to produce necrosis of the growth, as circumstances seem desirable."

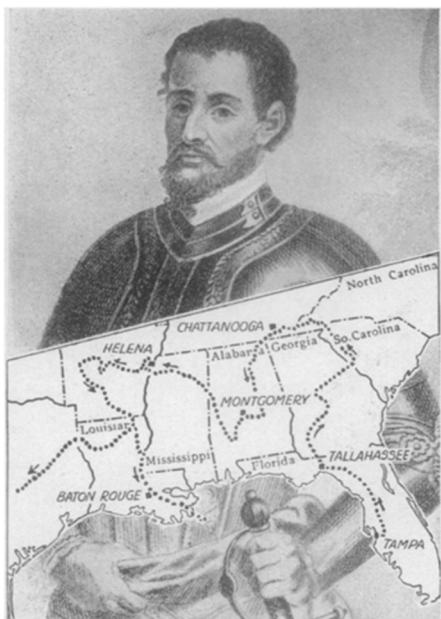
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HISTORY-ARCHAEOLOGY

De Soto's Famous Route To Mississippi Traced

PICKING up a cold track, almost 400 years old, science has traced with remarkable success the wanderings of that romantic Spanish adventurer Hernando De Soto.

Your school book history doubtless showed a rough sketch of the Spanish leader's wanderings. Thirst for gold



AS DE SOTO TRAVELED

Superimposed over a likeness of the famous Spanish explorer is a map showing his route through the Southeast as reconstructed from the latest evidence.

and Indian treasures, such as Peru had yielded, led De Soto on a wild goose chase over the entire Southeast. All he won was the fame of discovering the Mississippi River. Recently, science has been mapping precisely the famous expedition, identifying modern towns and landmarks with the Indian names and places that De Soto encountered.

Dr. John R. Swanton of the Bureau of American Ethnology has produced a map of the journey which he calls, in jest, the 1933 model. Next year, he says, there may be improvements, slight shifts of the line here and there as new information is gained. Dr. Swanton, noted authority on Indians of Southeastern States, said that his interest in the De Soto route was aroused by Col. John R. Fordyce of the Arkansas Historical Commission. Col. Fordyce has paced out De Soto's route in some sections, figuring the distance the Spaniards would travel each day and checking his computations by landmarks or Indian sites.

De Soto landed near Tampa, in 1539. Two years later, he reached the Mississippi and, crossing over, wandered still farther west. In 1542, when he and his band were returning down the Mississippi River, De Soto died and his body was lowered into the great river he had discovered. His followers later attempted to strike out west for Mexico City, but the venture failed.

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GEOLOGY

Unevenly Distributed Minerals Said to Threaten World Peace

Japan and Italy Present Problem in Lack of Minerals; British Empire and United States Best Supplied

UNEVEN distribution of minerals essential to modern civilization threatens the peace of the world, Prof. Richard M. Field, Princeton geologist, warned in a Science Service radio talk over the Columbia Broadcasting System. Until the geographical location of important metals, coal, oil, nitrates, phosphates and potash is seriously considered from an international point of view, Prof. Field predicted, there never can be a reasonable amity among nations, no matter what other factors may affect international affairs.

U. S. Government statistics show that 28 minerals constitute more than 70 per cent. of the gross value of the mineral raw materials of commerce. English speaking people in the United States and the British Empire have, Prof. Field said, "by one means or another gradually acquired the absolute or partial control of two-thirds of the essential mineral resources of the world."

The Japanese situation is the present outstanding problem in mineral resources, Prof. Field said. Japan has barely enough copper and zinc for domestic consumption, with an inadequate supply of iron, chromite and manganese. She is entirely dependent on other nations for all other mineral supplies, except for coal and petroleum, which she controls through mandates.

Italy, another first class power, is in about the same position as Japan, except that she has no control over petroleum and coal and is a little better off as to iron and lead. Both Japan and Italy are in a worse position than England would be if she were divorced from the British Empire.

Possible Trouble in Spain

Spain is described by Prof. Field as "a nation that is not making the most of her natural resources." This country, he predicted, may become a source of trouble in the international affairs of Europe. With the exception of certain ferro-alloys and petroleum, Spain has adequate deposits of the important min-

erals and an excess of copper, iron, lead, manganese and mercury for export.

Germany has inadequate supplies of metallic minerals but excesses of coal, nitrates and potash. France is only a little better off than Germany, Prof. Field said, with more aluminum and iron than she needs but no petroleum.

"In normal business times the United States has all the minerals which she needs within her own sovereign territory, with the exception of tin, platinum and some of the alloy metals and nitrates," he stated. "It is perhaps news to some that, in spite of the fact that the United States produces nearly 71 per cent. of the world's petroleum, in good business times she consumes nearly this amount. The only net excess of raw mineral commodities which the United States has for export are copper, coal, phosphates, and sulphur.

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BACTERIOLOGY

Germs Not Killed By Liquid Helium

EXTREMELY low temperatures, approaching those believed to exist in interstellar space, failed to kill bacteria in tests at the University of Toronto. Germs frozen for weeks in liquid helium, at a temperature of about 450 degrees below zero Fahrenheit, proved to be alive and able to multiply as though nothing had happened to them, as soon as they were thawed out.

These results are taken as indicating at least the possibility of the lower forms of life migrating through space, perhaps attached to bits of dust. They are of more immediate practical value as demonstrations of the fact that though cold will preserve foodstuffs it will not kill the germs of decay that lurk on them.

The experiments were performed by Dr. J. O. Wilhelm, physicist, Dr. H. Wastenays, biochemist, and Dr. W. L. Holman, bacteriologist.

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