

The building of this Indian house is established as the oldest dated event in United States history—until an older date is found.

Ages of Southwestern ruins are established by examining the house beams which serve as real corner-stones, authentically dated. Dates are read by matching the annual rings in a cross-section of timber with an unbroken series of tree-rings from present date back more than 1,200 years.

This announcement of the new earliest date in American history followed the addition of 300 years to the history of ancient Assyria by tablets discovered by a joint expedition of the University of Pennsylvania and the American Schools of Oriental Research. (SNL, Feb. 11, '33, p. 83). The discovery, which was made at Tell Billa in Mesopotamia reveals that the old Assyrian system of naming each year in honor of an official was practised as early as 1300 B.C.

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#### PSYCHOLOGY

### Employee Attitudes Important to Management

**D**ISSATISFIED workers are expensive. It pays the management to find out what is on the worker's mind, and attempts are now being made to analyze and measure employees' attitudes, members of the American Management Association learned from a round table discussion led by Prof. Arthur W. Kornhauser, of the University of Chicago, at the annual Personnel Conference held in Chicago.

Favorable feelings and attitudes make for efficiency—antagonistic attitudes or depressed emotions lead to unnecessary waste, friction, poor quality of work, withheld effort, and increased costs, it was brought out during the discussion.

"Skilled, sympathetic, sincere interviewing is required if employees are to talk frankly," it was said. "The interviews and question blanks must be planned with extreme care and must eliminate personal bias as far as is humanly possible. Moreover, employees must be fully convinced that the inquiry is honest, is in their own interests, and will harm none of them. Feelings of suspicion make the study worthless. Accordingly few concerns—especially in these days of stress—can be advised to conduct such inquiries."

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#### CHEMISTRY

## Alcohol-Gasoline Mixture Suggested as Motor Fuel

### Mixing With Dry Alcohol Successful, So Czechoslovakia Makes Dilution Imperative to Encourage Potato Industry

**A** COMPULSORY diet of alcohol is now prescribed by law for automobiles in Czechoslovakia. The strength is 20 per cent., suggestive of a decidedly intoxicating liquor; but the other 80 per cent. is gasoline. The Czechoslovakian government, far from prohibiting the manufacture of alcohol, has decided to give a national boost to the industry by requiring the use of spirits as motor fuel. The special aim is to encourage the potato industry. Potato starch yields the desired alcohol by hydrolysis and fermentation. Motor fuel is now required to be treated with the specified percentage of alcohol before retail sale.

Alcohol as motor fuel is no novelty, but in the past has suffered from at least from handicaps. In the first place it will not work under the same motor adjustment as gasoline, and thus is unable to compete with petroleum fuel at the corner service station. Its substantial cost of production and limited supply forbids the marketing of cars specially designed for alcohol alone. An obvious treatment of the problem, employed occasionally in various countries, is the mixing of alcohol with gasoline in amounts at least roughly proportioned to the probable supply. Motors are then adjusted to the uniform mixed fuel.

Unfortunately this scheme runs into the second handicap. Alcohol, as produced by economical distillation methods directly from fermented sugar solutions, insists on carrying along with it from four to six per cent. of water. Such water content makes it impossible to mix the alcohol with many of the straight-run gasolines, particularly fuel of the Pennsylvania or paraffin type.

Until recent years the water problem seriously interfered with blending schemes, as the riddance of water required an expensive chemical treatment. More recently a new distillation process, economical on a large scale, permits dry or "absolute" alcohol to be made with the aid of benzene. Such a product will of course be available un-

der the new Czechoslovakian edict. Under the new law common gasoline will go on the restricted list, like undenatured alcohol in the United States. Only pharmacies, scientific research laboratories and the like may receive permits to purchase pure gasoline. The alcohol-gasoline mixture will cost slightly more than straight gasoline, and will give slightly lower mileage per gallon.

A decade ago, before the discovery of the newer and greater oil fields in Texas and California, American automotive authorities were interested in the possibilities of alcohol with mounting consumption of gasoline. Preliminary surveys indicate that large areas in the Philippines are suited to the gross production of carbohydrates, perhaps from such a plant as the cassava. Such production, together with American corn, cane, beets, etc., now almost a drug on the market, could be made to carry a large part of the motor fuel burden through the alcohol route. Advices from the oil industry suggest that this enterprise will be delayed, as far as the United States is concerned, for some time.

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### Two Elements Have Atomic Weights Changed

**T**HE 1933 MODEL table of atomic weights of the chemical elements has two changed figures.

Iodine's atomic weight is changed from 126.932 to 126.92 and the figure for lanthanum is changed from 138.90 to 138.92.

Each year an international committee of the International Union of Chemistry reviews the research on atomic weights and makes necessary changes. Prof. G. P. Baxter of Harvard is chairman and the American member. Mme. M. Curie, discoverer of radium, is another member.

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