and Mechanical College of Texas, on the "Formative Processes in Certain Aluminum Bearing Concretions" was noteworthy.

The section of biological sciences introduced some new speakers, who presented papers dealing with the subject of "Teaching of Natural Sciences in the Public Schools." The most unique of these papers was the one by Dr. Don O. Baird, of State Teachers College, Huntsville, Texas, on "Birds that Go to School." Charles H. Gable and Ellen S. Quillen, of San Antonio, the authors of a series of "Nature Readers for Public Schools," presented a very interesting discussion of the "Place of Natures Study in Child Education." Dr. W. R. Horlacher and D. T. Killough discussed what may be done in improving the cotton plant in a paper entitled "Chlorophyll Deficiencies Induced in Cotton (*Gossypium hirsutum*) by Radiations." These and a number of other technical papers along the lines of biology made a full day's program.

After the annual dinner, which took place at the St. Anthony Hotel, the section of anthropological sciences gave their program. J. E. Pearce, head of the department of anthropology of the University of Texas, gave an account of the work done by his department during the past year. He told of the bringing to light or of "Finding a Civilization which Once Existed in East Texas and Hitherto Unsuspected by the Archeologists." He illustrated his talk by a large number of earthenware vessels recovered from village-sites, caches and burial places. This pottery is on a par with anything yet discovered in North America and is found in such numbers as to indicate a large population with fixed dwelling places. Another unique find was a peculiar form of arrow-heads, which are always associated with burials. So far as known, this type of arrow-head has not been observed before in the United States. Judging from the published accounts of similar work this find is the outstanding one for the past ten years. Miss Emma Gutzeit, secretary of the Museum Association of San Antonio, gave an interesting illustrated account of four expeditions sent from the museum into the Big Bend Country in search of specimens and information concerning the aboriginal inhabitants of that part of Texas. The pictures shown of pictographs and petroglyphs gave the audience some idea of the kind of records left by the civilizations which have preceded our own. Colonel M. L. Crimmins, curator of anthropology of the Witte Museum, took up the story of early West Texas and told of the migration of the Aztec people from Casa Grande, a now deserted town seventy miles southwest of El Paso, through a mountainous country of Northern Mexico and ending with the arrival of the Aztec people at the City of Mexico. His story was illustrated by copy of a chart made two centuries ago in Mexico and now preserved in Spain. He stated the Aztec people much resembled the Romans and showed how they had left their imprint on the other primitive people with whom they came in contact.

The final session was held on Saturday morning. The papers given were of a general nature. Miss Kethora Remy, of San Antonio, in a paper entitled "The Mineral Content of Honey" gave a summary of a year's investigation to ascertain if there was a relationship between the amounts of minerals contained in honey and other food value. After these papers the regular business meeting completed the program. The reports of officers and committee men showed a fine growth in membership and that the academy was in good financial condition. Ten fellows and a large number of new members were welcomed into the academy. It was ordered that a year book containing the outstanding papers presented at this meeting be printed as soon as possible and that the mimeographed monthly bulletin be continued. The officers for the ensuing year are:

Dr. H. Y. Benedict, University of Texas, *President.*

F. B. Plummer, University of Texas, *assistant to the president.*

W. E. Carter, A. and M. College, *vice-president, section 1.*

E. N. Jones, Baylor University, *vice-president, section 2.*

J. F. Sinclair, Texas College of Arts and Industries, *vice-president, section 3.*

H. B. Parks, Agricultural Experiment Stations, *secretary-treasurer.*

At the conclusion of the annual meeting the executive committee met and decided to hold the summer meeting at Austin, probably the first week in June. The time and place for the annual meeting for 1932 was not decided upon.

H. B. PARKS, *Secretary*

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE SUSPENDED MIRROR SEISMOGRAPH

DURING the last year of a very interesting and somewhat unusual seismograph was developed and used by two of the graduate students under the writer's supervision. Because of the extreme simplicity and high sensitivity of the apparatus, and in view of the rapidly growing interest in seismology a brief description of the instrument may be of interest.

It consists essentially of a light mirror about 3 mm

in diameter hung by means of two silk fibers in an F frame after the manner of Darwin. The frame is of brass mounted on a cast-iron platform with leveling screws. The mirror hangs in the frame as shown and its motion is traced on a photographic film, which is attached to a rotating drum in the usual manner.

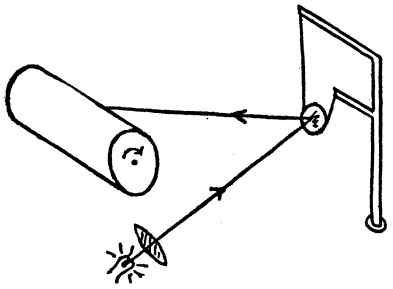

FIG. 1

This drum was made in the laboratory and is driven by a synchronous motor which was bought from one of the numerous radio-wrecking concerns.

The mirror on its support was mounted on a large brick column which was not in contact with the floor of the room. The estimated mass of this column is something like ten tons.

The apparatus has been used thus far in the study of earth tremors and disturbances of a minor nature. It detects with ease the footsteps of a person 100 yards from the building. It records the passing of a street car or an automobile half a mile away and it records (with what a physician says is fair accuracy) the heart beats of a person lying on the heavy column.

Although the apparatus is in a large empty room, remote from the walls, in a large building, it is in continual motion throughout the day. Records made when any part of the building is in use show that the ground under it is in a state of almost steady vibration.

It seems to the writer that this apparatus is particularly well adapted to the study of tremors which do not penetrate the earth very deeply. It is light, simple, inexpensive and easily portable; and it can be set up with a minimum of adjustment.

Results obtained thus far seem to justify the further use of this apparatus in the work for which it was designed.

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APPARATUS FOR TAKING WATER SAMPLES FROM DIFFERENT LEVELS

MANY of the apparatus designed to take water samples from different levels are difficult to manipulate and, in many instances, are not accurate. This is especially true with makeshift apparatus constructed from ordinary laboratory materials. The apparatus described in this paper was used by the author in bacteriological work which required the taking, accurately, of bottom samples. Larger models of the apparatus have since been constructed and used in protozoological work with excellent results. It is easily put together with materials found in every laboratory.

The apparatus as used in bacteriology consists of a glass test-tube with the bottom cut off. This tube is fitted with two rubber stoppers which are drilled to take a piece of glass tubing an inch and a half longer than the rubber stopper. Small wire loops are fastened near each end of the test-tube and are bound in place with thread which is then shellaced or varnished. A piece of short gum rubber tubing about two inches long is slipped over each glass tube which protrudes from the rubber stopper. Other straight pieces of glass tubing with their ends bulged are pushed into

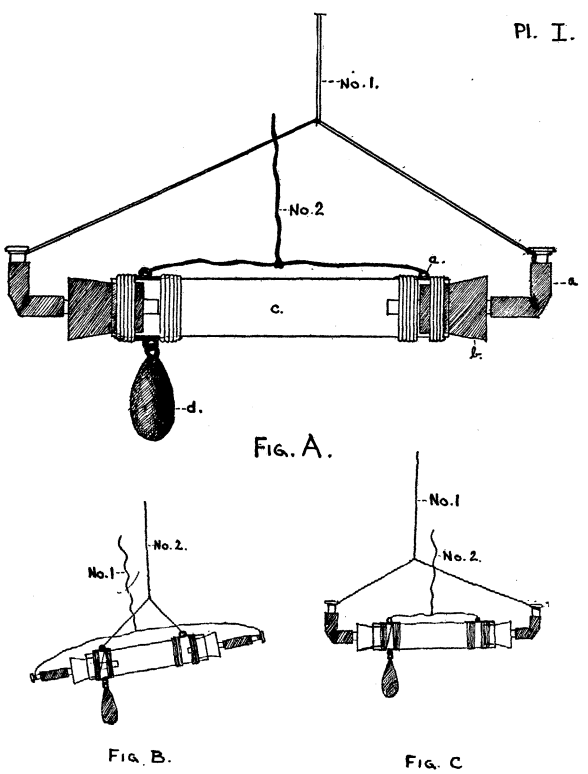

FIG. A. Detail construction: a, rubber connection acting as a valve; b, rubber stopper; c, glass body of instrument; d, lead weight; e, wire loop; No. 1, hand cord for operating the instrument valves; No. 2, hand cord for raising and lowering the apparatus. FIG. B. Apparatus with valves open and weight suspended by cord No. 2. FIG. C. Apparatus with valves closed and weight suspended by cord No. 1.