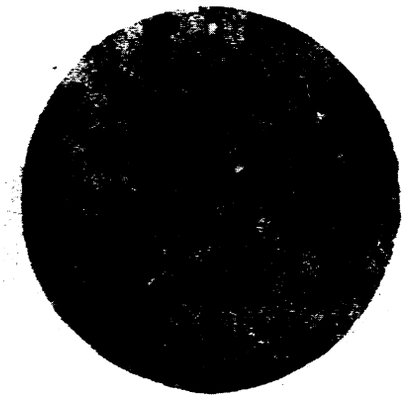

CARRARA

This pattern of crystals as seen through the microscope provided evidence that a suspected art treasure is no fraud.

ARCHAEOLOGY

Italian Tomb Cleared of Being Fraud After 9 Years

AN ITALIAN marble tomb, long suspected by critics of being an art fake palmed off on America, has been proved an authentic treasure, after nine years of scientific testing.

At the Boston Museum of Fine Arts, where the tomb aroused such violent controversy that it was removed from public exhibition, the case is settled.

Reporting its verdict, the Museum calls the tomb a fifteenth century monument of Tuscan workmanship, later restored in minor ways. A beautiful figure of a woman lying with folded hands is a feature of the monument.

Scientific tests included making paper-thin slices of samples from all fourteen pieces of marble in the tomb. These samples were studied under the microscope and compared with similar samples of known kinds of marble. This test, like that of human finger prints, is considered unmistakable. The tomb is of two kinds of marble, the famous Carrara marble and some from Olympia. Chisel marks were also examined by microscope, and ultraviolet tests were made.

The crystalline structure of the marble's surface was also studied, because scientists have learned that old marbles "breathe," that is, take in and give out air. In long years, this process leaves evidence in dark bands on the marble surface, visible through the microscope. This evidence of time and weathering was found on all parts of the tomb except where a new inscription was added, and a few restorations made.

Science News Letter, December 11, 1937

PHYSIOLOGY

Ultra-Speed Movies Capture Vibrations of Vocal Cords

Taken at Rate of 4,000 Frames Per Second With Special Lighting Show Speech at Its Origin

HIGH SPEED motion pictures of the little known vibrations of the human vocal cords, taken at the rate of 4,000 frames a second, were exhibited for the first time publicly at the meetings of the Acoustical Society of America in Ann Arbor, Mich.

The fundamental experiments in the origin of human speech have significance in solving that old, but basic, question of whether it is the cords or the shape of the mouth which predominate in determining speech characteristics.

Engineers D. Herriot and D. W. Farnsworth of the Bell Telephone Laboratories constructed the ingenious experimental arrangement which made possible these pioneer physiological pictures.

The method was to insert, far back in the mouth, a small dental mirror and by it and other mirrors to reflect an intense beam of light on the vocal cords. Light reflected by the cords came back out of the mouth, then through a small hole in one of the mirrors and finally into the special high-speed camera.

So fast is this camera, and so short the exposures for each frame, that it is useless for ordinary photography even out in bright sunlight. A large 2,000 watt bulb overloaded to gain greater brilliance was the light source employed.

Shining and glistening are the saliva-covered cords as they oscillate in speech. Their undulations start from the bottom as they close; then progress upward and finally and suddenly they open again to repeat the process.

Finally the subject, Mr. Farnsworth in this pioneer case, pauses for breath, the cords relax and the opening of the glottis enlarges as he inhales.

Interest of the telephone engineers in the work centers around potential improvements in equipment, for basic knowledge of human speech leads to the design of better apparatus. For the same reason the pictures should have significance for radio and sound motion pictures.

So new are the high speed speech movies that physicians have not yet seen them but they are believed to be of great interest to physiologists and anatomists.

Science News Letter, December 11, 1937

ENGINEERING

Vibrating Concrete Paving Increases Its Strength

SHAKING a concrete road into place, a novel method of road building developed only a short time ago, results in a stronger road with the same amount of material or enables considerable savings of cement, according to the experiences of highway engineers, reported before the Highway Research Board's annual meeting in Washington, D. C.

Giving a road the "shimmies" with a vibrator before the mixture has set enabled Illinois road builders to cut down on the amount of water mixed in with cement and obtain a firmer road as a result, V. L. Glover of the Illinois Department of Public Works informed his colleagues.

A second experiment in which the vibrator was used with a standard cement-water mixture resulted in a road that was 10 per cent. stronger than the ordinary type, he asserted.

The higher the frequency of the vibrator, R. D. Finney, Kansas State Highway Department engineer, declared, the more efficient it is.

A novel freezing-and-thawing test to show how different road-building materials will stand up under extremes of weather conditions was described by Prof. C. H. Scholer of Kansas State College. Since a given weight of ice occupies more space than the same amount of water, water seeping into a rock and