DR. VICTOR JACQUES, a well-known Belgian anthropologist, honorary professor in the faculty of medicine of the University of Brussels, has died at the age of seventy-one years.

DR. W. H. JULIUS, professor of experimental physics since 1896 in the University of Utrecht and known for his work in astrophysics on anomalous dispersion, died on April 15, aged sixty-four years.

THE deaths are announced by *Nature* of Professor Eduard F. L. Mazelle, formerly director of the Observatory, Trieste, a corresponding member of the Vienna Academy of Sciences, distinguished for his work on meteorology and seismology, aged sixty-two years, and Dr. V. Ebner, Ritter v. Rofenstein, emeritus professor of histology in the University of Vienna, aged eighty-three years.

WE learn from *The Electrical World* that in the sudden and unexplained sinking of the Mississippi River boat *Norman* about 12 miles south of Memphis on May 8, twelve members of an inspection party from the first annual convention of Mid-South engineers at the city named lost their lives, as well as five women of their party, a boy and four members of the crew. The male passengers who lost their lives were civil engineers, some of them of prominence in the profession. They include Paul H. Norcross, consulting engineer, Atlanta; William M. Gardner, United States assistant engineer, Memphis; Walter G. Kirkpatrick, professor of municipal engineering, University of Mississippi, and Robert H. McNeilly, professor of civil engineering, Vanderbilt University, Nashville, Tenn. More than a hundred engineers and their friends had embarked on the doomed boat.

THE Rockefeller Foundation gave a dinner in New York City on April 24 in honor of the Latin-American health officials who are on a two months' visit in this country under the auspices of the health section of the League of Nations. George E. Vincent, president, Rockefeller Foundation, was toastmaster, and among the speakers were Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service; Dr. Andres Gubetich, of the faculty of medicine at Asuncion, Paraguay, and Dr. Anthony J. Lanza, executive officer of the National Health Council.

THE American Society for Testing Materials, which will hold its twenty-eighth annual meeting at Atlantic City, N. J., on June 23–26, will at that time take action upon a recommendation of the executive committee for the establishment, at a cost of about $6,000, to be subscribed by the membership, of a Charles B. Dudley medal and an Edgar Marburg lecture. The medal, to be named for the first president of the society, will, if authorized, be awarded to the author or authors of a paper of outstanding merit presented before the society and constituting an original contribution on research in materials, with the understanding that if no paper in any given year seems to merit this distinction, the award will not be made. The lecture, to be named for the society's first secretary, will, if authorized, afford an opportunity for the society to be addressed by leaders in the field of engineering materials who will present outstanding developments in the promotion of knowledge of such materials. It is proposed that in this selection consideration be given to the plan of engaging foreign lecturers at suitable intervals and as the funds permit.

UNIVERSITY AND EDUCATIONAL NOTES

APPROPRIATIONS made by the State Legislature to the University of Michigan include $900,000 for a new museum and $500,000 for land.

THE sum of $400,000 has been contributed by friends of Professor J. Bentley Squier, to Columbia University for a urological clinic, which will bear his name.

GIFTS to the University of Pennsylvania amounting to approximately $300,000 are provided for in the will of the late James R. Magee to create memorials for two brothers, who were graduates of the university.

THE dedication of the new building for biology at the University of Texas took place on May 11, 12 and 13, when addresses were made by Professor Charles Atwood Kofoid, of the University of California, and Professor William L. Bray, of Syracuse University.

DR. L. C. PETRY has been appointed professor of botany at Cornell University in the position recently vacated by Dr. J. R. Schramm. Dr. Petry has been for several years on the botany staff of Syracuse University, in which institution he has also been director of the summer session.

DR. ARTHUR J. HILL, of the Sterling Chemistry Laboratory of Yale University, has been promoted to a full professorship in organic chemistry by the Yale Corporation with assignment to the governing board of the Sheffield Scientific School.

DR. HARRY DEXTER KITSON, professor of psychology in the University of Indiana, has been appointed professor of education in Teachers College, Columbia University.

THE trustees of Columbia University have an-

nounced the appointment of Dr. Robert A. Lambert as professor of pathology and director of the School of Tropical Medicine in Porto Rico; Dr. Nathaniel R. Norton as professor in the department of diseases of children, and Drs. William C. Johnson and William C. Von Glahn, assistant professors of pathology to be associates in that department.

DISCUSSION AND CORRESPONDENCE

THE KENNELLY-HEAVISIDE LAYER

IN connection with the transmission of electric waves, we now hear much concerning a reflecting atmospheric layer some forty kilometers above the earth's surface, and quite generally known as the Heaviside layer. It is not so generally known that Professor A. E. Kennelly announced the probable existence of such a layer prior to its announcement by Oliver Heaviside. The latter some time in December, 1902, in Vol. XXXIII, tenth edition, Encyclopedia Britannica, in an article on telegraphy, suggested a conducting layer in the upper air.

Kennelly published his paper "On the elevation of the electrically-conducting strata of the earth's atmosphere" in the *Electrical World and Engineer,* New York, March 15, 1902. It deals directly with the problem of long distance wireless wave transmission, and includes a remark which is of significance to aerographers; namely, that

> As soon as long distance wireless waves come under the sway of accurate measurement, we may hope to find from the observed attenuations, data for computing the electrical conditions of the upper atmosphere.

An interesting sidelight on the matter is the remark of C. Bouthillon, in *L'Onde Électrique,* June, 1923, where, in a critical review of the theory of propagation of these waves, it is stated:

> Le premier savant qui ait précisé l'idée est Kennelly, qui, dès 1902, fixait à 80 km. environ la hauteur de la coche refléchissante. Vers la même époque, O. Heaviside, Henri Poincaré, A. Blondel, Ch.-Ed. Guillaume, émettaient des hypothèses semblables.

This layer is destined to play an important part in future studies of the stratification of our atmosphere, especially at great heights.

I have in some lectures compared the atmosphere to a six-story building.

The first story, with ground floor, is the troposphere, in which the temperature falls at a fairly constant rate with elevation. This story is not of equal height around the world, but bulges up near the equator and slopes down near the poles. In our latitudes the ceiling is about 10 km (6 miles) above the floor. There is a mezzanine gallery about 0.5 km above the floor; and just as in the big buildings we are familiar with, the accounting offices are placed here. Notwithstanding those who regard variation in solar radiation as the source of weather and take the elevator to the roof, we will continue to do business and settle our weather accounts at these offices on the lower floors.

The second floor is the stratosphere, discovered and named by Teisserenc de Bort. The temperature gradients are horizontal instead of vertical. There are no clouds on this floor.

Somewhere about 40 km high is the third story; and in all probability this will be found to be the Kennelly-Heaviside region.

As yet the floor and ceiling are conjectural.

The fourth floor is the domain of meteors—and if we are to follow recent estimates, the temperature is actually warmer than in the mezzanine offices thirty-six miles below. This also is conjecture.

The fifth floor is the old top of the atmosphere—the twilight arch region, which comes out by triangulation about 80 km, but is more likely 65 to 70 km because of refraction errors.

The sixth floor is the region of auroral displays. The upper edges of auroral arcs according to Störmer are as high as 150 km; but the rays go still higher, often to 300 km.

The sixth story is also the roof. All above we call the Empyrean and turn the space over to astronomers.

So it seems that our six-story airshell is not such a skyscraper, after all. If we represent the distance from the earth's center to the surface by 1,000 bricks laid end to end, then the thickness of the sensible atmosphere could be represented by one brick. The highest level yet reached by man would need a trifle more, the highest actual record obtained by man would need about six bricks; and to reach an aurora sixteen bricks would be needed.

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MUSICAL ECHOES

SOME time ago there appeared in SCIENCE an interesting article on "Musical echoes." The author of the article might be glad to have his attention called to another example of such echoes reported in the April number of *Blackwood's Magazine,* on page 469, "In Lapland," by Jan Gordon and Cora J. Gordon.

> Under the high and purplish cliffs of the other side of the lake, we had a peculiar experience in acoustics; the clatter of the motor was gathered up and reflected back by these scarped rocks in a hundred echoes, but by some strange trick blended in so peculiar a fashion that the vulgar rattle and roar came to us sweetened into the chiming of cathedral bells, pastoral England's Sunday morning unbelievably imitated, now surging louder, now