student or students working for the advancement of science. The fund will be administered by the council of the association, and when possible assistance will be given, preferably to a Leicester or Leicestershire student or worker. The council, in accepting the gift, has conveyed to the committee its appreciation of the action of the committee "as thus confirming, in a manner without precedent in the history of the association, their interest in the advancement of science."

IT is announced at St. John's College, University of Cambridge, that a Strathcona research scholarship (value £150 a year) and two Strathcona research exhibitions (value £40 a year) are offered for competition in July among research students who are graduates of any university other than Cambridge. Particulars can be obtained on application to the Senior Tutor, St. John's College, Cambridge.

MISS NINA SYMINGTON, daughter of the late Professor Symington, of Belfast, has bequeathed the residue of her estate, amounting to some £9,000, and to be known as the Johnson Symington Memorial Bequest, to the Anatomical Society of Great Britain and Ireland for anatomical research.

THE gradual closing up of the operation of the Civil Works Administration, which involves the dismissal of 400,000 employees at the rate of ten per cent. a week until May 21, immediately affects the scientific departments of the government as follows: The Department of Agriculture is reduced from 91,147 employees to 48,000; the Fisheries Commission from 2,349 to 650; the Bureau of Mines from 446 to 225. In addition, the Coast and Geodetic Survey must discontinue its supplementary control survey, employing about 15,030 men; the Smithsonian Institution its archeological excavations, employing 1,104, in Florida, North Carolina and other places, the one exception being the undertaking in Shiloh National Park; the Tennessee Valley Authority a large number of the 16,588 men at work on improvement projects; the Interior Department 1,762 men on soil erosion work, and the Public Health Bureau 29,779 men on malaria control work, 32,010 on rural sanitation, and 6,572 sealing mines to stop water acidity in the Ohio Valley. Projects under the Department of Agriculture which must be stopped include cattle tick eradication, involving 6,000 men; typhus-fever control operated cooperatively with the Public Health Service, 17,033 men; citrus canker control in Texas, 88; Dutch elm disease control in several New England states, 1,057; wild peach eradication, 1,112; potato weevil eradication, 211; spotted fever control, 369; mosquito pest control, 25,646, and brown-tail moth control, 5,000.

THE number of visitors received at the Field Museum, Chicago, during 1933, with the numbers reached by the extra-mural activities of the institution, such as those conducted by the N. W. Harris Public School Extension Department and the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, was approximately 4,000,000 persons. The total number of visitors received during the year was 3,269,390. In addition to these, approximately 661,000 children received natural history instruction outside the museum building through the activities of the Harris Extension and the Raymond Foundation. The Harris Extension circulates some 1,300 traveling exhibits throughout the Chicago school system which are seen daily by about 500,000 children, and the Raymond Foundation sends out lecturers who were heard in 1933 by about 161,000 children in their classrooms and assemblies. The foundation also presents series of free motion pictures for children in the James Simpson Theater, which were attended by 25,950 children, and provides lecture tours of the exhibits for groups of children visiting the museum, in which 11,470 participated. The lectures for adults given in the Simpson Theater were attended by 22,787 persons and 13,312 participated in the guide-lecture tours provided for adults.

THE Department of the Interior of the Canadian Government has informed the fish and game department of the Canadian National Railways that a federal bird sanctuary has been established at Aero Lake, a few miles from Moncton. This lake has an area of approximately 200 acres and is visited annually by thousands of water fowl during the migratory periods. The establishment of game sanctuaries of this kind is being carried forward in accordance with the Migratory Birds Convention Act.

DISCUSSION

SCARPS IN TULAROSA VALLEY, NEW MEXICO

IN a recent number of SCIENCE the suggestion is made that two scarps lying a few miles east of the San Andres (not San Andreas) mountains are due to faulting in the floor of the bolson known as Tularosa Valley.[1] This suggestion seemed so at variance with the opinions held by some of us who had worked in that region as to justify some further field examination. I revisited the region, with the results outlined below, and at my request Professor Evan Just, with a

[1] C. L. Dake and L. A. Nelson, "Post-Bolson Faulting in New Mexico," SCIENCE, 78: 2017, p. 168, August 25, 1933.

party of students, also examined the scarps under discussion; his conclusions are in essential agreement with mine.

The easternmost scarp described by Dake and Nelson was readily located, as the road measurement checked their stated figures within a tenth of a mile. The road here runs west on a section line, and the scarp is only a few hundred feet west of the recently established corner common to sections 4, 5, 8 and 9 of T. 14 S., R 6 E. Reference to the Tularosa quadrangle topographic sheet shows that this township was unsurveyed at the time that the map was made, and the present road is not mapped. Projection from adjoining township lines on the map shows that this particular section corner is located almost exactly on the shore line mapped as surrounding the area designated "Alkali Flat." This flat is the lowest part of the basin crossed by this road. The near-coincidence and essential parallelism of this shore line and the escarpment are too striking to be ignored.

Dake and Nelson make the point that both of these scarps are "considerably west of the center of the Tularosa basin." This is true; but the scarps lie immediately adjacent to, and in fact form part of the boundaries of, the flat at the bottom of the basin, and are within less than a mile west of the lowest point in this latitude. The asymmetry of the basin produces some surprising optical illusions with regard to slope and level.

Dake and Nelson say of these scarps, "Neither one, at least within sight of the highway, shows any indication of an opposite facing cliff." The observer is quite willing to agree with this statement; but a sight with a telescopic level revealed an unmistakable water-line, across the flat to the east at a distance of 1.2 miles, on the same level as the base of the easternmost escarpment. The illusion is such that this water line appears to be fully forty feet below the observer, and the evidence of the telescopic sight was doubted until it was checked from the other side. Later scaling from the topographic map showed that this water-line checked in position with the line mapped as the opposite shore of the Alkali Flat.

Near the point where the road crossed it, this easternmost scarp had its face covered by wash and slump material from the top, but less than a mile to the north from the road the face of the scarp is fully exposed. It shows at the bottom a layer of very dense water-laid clay, overlain by several inches of medium coarse stratified sand, and topped by several feet of unstratified gypsiferous wind-blown silt. The sandy layer is wet, apparently from water seeping eastward, and dips easterly at about two degrees; if this scarp were the face of a fault block, the beds would have been tilted toward the west.

Dake and Nelson have apparently overlooked one feature, which is not very prominent along this road, but is the dominant topographic factor in other parts of Tularosa Valley; that is, the fact that the actual floor of the valley is exposed only at its lowest points, and is covered elsewhere, very irregularly, with wind-blown material. These aeolian mounds vary in substance, ranging from the fine silt in Estancia Valley to the north, through dune sands carrying a high gypsum content, to the unique White Sands, of nearly pure gypsum, at the southern end of Tularosa Valley. The material at the top of the scarp under discussion is intermediate in character between the fine silt found farther north and the sand found farther south; but it contains enough gypsum to show, in a subdued degree, the tendency toward cementation previously mentioned[2] for the gypsite hills in the White Sands area. There are in Tularosa Valley literally hundreds of large and small flats that occupy low places rimmed by such wind-built mounds. Many of these flats show a steep east- or southeast-facing bank, which is the steep leeward front of the aeolian deposit, perhaps oversteepened by wave-cutting. The opposite bank, in most cases, slopes very gently; if it ever had a wave-cut cliff, this cliff has been buried under the fresh wind-blown material cast up from the flat after each period of drying.

The scarp under discussion can be followed north of the road for nearly a mile, where it swings around to the west, and passes gradually into an ordinary water-line on a gently sloping surface. This water-line was not followed throughout its length, but it appears to swing around to the north and join with the westernmost scarp described by Dake and Nelson. Reference to the topographic map shows that this shore-line is so plotted.

Dake and Nelson say: "The fact, also, that though both of these scarps face east,[3] the crest of the western one is at a lower elevation than that of the eastern is . . . indicative of fault origin." This argument is not entirely clear, even on the faulting hypothesis; and, inasmuch as these crests are wind-built mounds, any difference of elevation is indicative of nothing at all, except that one was built higher than the other. A telescopic level sight, taken from the water-line north and west of the easternmost scarp, cut the westernmost scarp near its base, indicating substantial coincidence of level, and not a fifty-foot difference, as estimated by Dake and Nelson.

The back-slopes, from the tops of these scarps toward the west, do not indicate any tilting of the floor of the valley, but are simply the back-slopes of

[2] S. B. Talmage, "The White Sands of Tularosa Valley" (abstract), *Bulletin of the Geological Society of America*, 43: 1, p. 185, 1932.

[3] Actually, south 50 degrees east.

the wind-laid cover; the actual floor of the valley is the east-dipping sand layer on top of the clay.

The profiles of these escarpments are distinctly suggestive of new fault blocks, and according to their own statement, Dake and Nelson based their fault hypothesis on profiles only, as viewed from the road. Further study of alignment, continuation into water-lines, character of material, structure and coincidence of levels makes the fault hypothesis wholly untenable.

These are not fault scarps. They are simply two wave-cut cliffs in wind-built mounds, lying essentially parallel and arranged *en echelon* on the zigzag shoreline of the same lake.

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LIGHTNING PROTECTION FOR TREES

REFERRING to my brief article on this subject in the December 1, 1933, issue of SCIENCE, Dr. M. G. Lloyd, of the Bureau of Standards, takes exception, in the issue of December 29, to my statement that the slow discharge from the point of a lightning rod tends to minimize the probability of a direct stroke to the rod. The grounds for his criticism are apparently limited to a belief, which he states is held by those who have studied the general experience with lightning rods, that the points do not function as indicated. Dr. Lloyd quotes no specific observations, experiments nor measurements. On the other hand, he admits that the results of controlled laboratory studies indicate the effectiveness of point discharge to the lowering of over-all potential difference.

In my article, it is clearly pointed out that the protective value of a lightning rod point is directly related to the rate at which it discharges, and that often the accumulation of potential difference by the approach of a thunder cloud may be so rapid as to offset completely any lowering due to point discharge, with resulting direct stroke to the rod. This certainly happens in many and perhaps the majority of cases. There are, however, no certain records and apparently no available methods for determining whether, even in these cases, the intensity of the stroke is not diminished by the foregoing discharge of the point.

Certainly the claim that the rod point has no value in reducing over-all potential would appear to be an extreme one. There is in fact much indirect experience to the contrary. Laboratory experiments readily show such value. Visual discharge from elevated points of all character is frequently visible, even in the absence of storm clouds, as, for example, in St. Elmo's fire, the discharges from mountain peaks and particularly from lightning rods. Experimental points on the latter have been found to be melted without any evidence of lightning stroke. Even in storms, lightning rods have been frequently seen to discharge with streamers of varying length, some of them reaching to great heights, thus giving evidence of moderate discharges, which do not, however, mount to the magnitude of a direct stroke or completed cloud discharge. Certainly the most important return from the initial cost of a lightning rod is in its function of receiving the stroke when it comes. On the other hand, the view that the rod never serves to prevent a direct stroke nor to minimize its intensity seems to me to be somewhat extreme and to be not justified by existing record.

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WEIGHTS AND MEASURES AND THE PUBLIC

A FEW years ago a butcher drowned himself in one of Minneapolis' million dollar reclaimed lakes because he was indicted on the ground that his pounds of meat were not sixteen ounces. Had he taken the trouble to can his meat he might have saved himself this disagreeable experience, as I understand that during the Hoover administration the "pound can" was "standardized" to fifteen ounces.

Few people know that the United States Government does not possess a standard yard, and there is no assurance that the yard standards of the different states are the same. The land surveys in Texas are made on the Spanish yard or "vara," whereas when one crosses the border into Mexico he finds the meter is used rather extensively. A typical American reaction to the metric system is expressed in a remark made by our mechanic, who stated that a professor asked him to cut a metal bar exactly one meter and one inch long. In 1916 there was a bill before a Congressional committee on the legalizing of the Centigrade thermometer. At the same time millions of Centigrade thermometers were being manufactured in this country and sold abroad. Americans have claimed that it is impossible to change to the metric system because of the expense of changing machinery. At the Baltimore fire, the fire apparatus sent from New York, Washington and Philadelphia did not fit, and a meeting of fire chiefs was held, but they could not agree, and so they called in Stratton, director of the Bureau of Standards, to suggest a standard coupling. He gave them a figure in fractions of an inch, but it was really a metric thread and his suggestion was accepted without question.

In Tokyo in 1932 I saw a procession which was said to be a celebration of Buddha's birthday. The next day I traveled to Sendai; the day following I saw a procession which looked similar to the one seen at Tokyo since I could not read the Chinese characters, and I asked my interpreter if Buddha's birthday was on a different day in Sendai from Tokyo. He replied