fort, in favor of it. The latter exhibited standard text-books on zoology, and grew quite excited as he quoted evolutionary statements from them.

A representative, whose vote against the bill made it a tie, called up his pastor by long distance telephone, while the balloting was yet in progress, and asked for advice as to how to cast his final vote.

The representative from Breathitt County, one of the counties of the mountain section, where anti-evolution sentiment is strong, surprised everybody by voting against the bill; indeed it was he who cast the deciding ballot. This county is known as "Bloody Breathitt," because of its distinctive lead in homicides growing out of private feuds. This member can scarcely be said to represent the sentiment on evolution in this county, which has an illiteracy of 21.6 per cent. It is doubtless more correctly represented by the editor of the *Jackson News* of that county, who recently said, "The professors at the state university may believe they are descended from apes and baboons, but let it be known that the good people of Breathitt are pure Anglo-Saxon."

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ROTERTIA

IN the mind of the student the word "moment" is unalterably connected with the idea of a very short space of time. Such an expression as "moment of force" is, therefore, on the face of it, meaningless. It is useless for the teacher to point out that "moment" also means importance, and that the moment of a force is merely its importance or effectiveness in producing rotation. Calling it a "moment of force" makes "a tendency to produce rotation" a difficult physical conception for the student to grasp. This difficulty has been recognized by teachers of physics, who have at last very generally discarded the expression "moment of force," in favor of the shorter, simpler, and clearer term "torque." A torque is a twist. There you have the whole thing in a nut-shell, and the student knows what you are talking about.

Why not keep up the good work by accepting suitable substitutes for "moment of momentum" and "moment of inertia" as well? If "moment of force" is bad, these are worse. Some text-book writers have already seen the wisdom of using "angular momentum" for "moment of momentum." This is a distinct improvement, since "angular momentum" carries its meaning on its face. But so far I have failed to find any serious attempt made to use a substitute for "moment of inertia," although, to my mind, this is the worst offender of the three. The magnitude of a moment of force is calculated by multiplying a force by a distance ($f \times r$); similarly that of a moment of momentum by multiplying a momentum by a distance ($mv \times r$); but the magnitude of a moment of inertia is *not* equivalent to the product of an inertia times a distance ($m \times r$), but times the square of a distance ($m \times r^2$). The use of the word "moment" in all three cases, therefore, misleads the student to expect an analogy which does not exist in the case of moment of inertia, thus making the term particularly inappropriate. My experience has been that the word "rotertia" immediately conveys to a student the physical conception buried in the expression "moment of inertia"; and in such a way that it is not easily forgotten. I therefore seriously urge its adoption. "Rotertia" on the face of it is equivalent to rotational inertia; and, hybrid though its stock may be, what more can we demand of a technical term than unambiguity, clarity, and force?

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NOVEMBER 14, 1921.

THE VALUE OF TILTH IN AGRICULTURE

DR. JEROME ALEXANDER (in SCIENCE, February 10, 1922) criticises a statement made by the present writer (SCIENCE, September 2, 1921) that "the comminution of the surface of the soil, *more or less perfectly stops evaporation and thus conserves the store of soil water.*" This statement is said by Dr. Alexander to be "quite contrary to all engineering

and practical experience"—the fact being, according to him, that such breaking of the upper surface "causes or tends to cause *increased* evaporation."

The statement made by the present writer may possibly be contrary to "engineering" experience, but that it is a truism well known to all practical farmers from the days of King Hamurabi to date, can not be gainsaid.

I quote from "Soil Fertility and Permament Agriculture" by Dr. Cyril Hopkins, page 579—"In the semi-arid regions, fallow cultivation is practiced during one season, *the soil being stirred after each rain to prevent evaporation*, and thus store up sufficient moisture in the soil to give the crop a good start" (italics mine).

There is scarcely a more well known practice inculcated by practical farmers, in regions where droughts are feared, than the absolute necessity of keeping the surface covered with finely broken soil, for the specific purpose of conserving the soil water.

In semi-arid regions, this practice is absolutely essential to the farmers' financial life, and most "farm periodicals" harp upon this string in season and out.

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QUOTATIONS

PROPOSED LEGISLATION AGAINST THE TEACHING OF EVOLUTION

IN KENTUCKY[1]

THE Kentucky House of Representatives spent five hours to-day [March 9] in discussing and hearing discussions of the "monkey bill" of Representative G. W. Ellis of Barren County, forbidding the teaching of evolution in public schools and universities. The measure was defeated by a vote of 42 to 41, after a recapitulation of the vote during which members were dragged into the chamber from other parts of the capital.

Dr. F. L. McVey, president of the state university, and the Rev. Dr. E. L. Powell, pastor of the First Christian Church, Louisville, discussed the bill by invitation. The former declared that the legislature is not within its rights in passing such a law as that proposed, and urged the members not to base the inspiration of the Bible on matters not essential, but to heed teachings of the Book. He asserted that the Bible is not an authority on science, legislation, chemistry, or any of one thousand other subjects, but on moral, spiritual and religious matters. Dr. McVey went into the subject of evolution, pointing out that many accept the teachings as not in contradiction to the Bible, and insisted that the university makes no attempt to interfere with the religion of its students. He told of the various religious activities of the university, and warned the House that it would set a dangerous precedent in the passage of the Ellis bill. He recalled fights on scientific theories in the past based on the ground that they are opposing the Bible, and reviewed briefly the manner in which various scientific subjects are taught.

Mr. Ellis brought forward Noel W. Gaines of Frankfort, formerly an army officer, who has been in the limelight several times in his career, most recently when he was involved in the "ground glass" controversy in a Southern camp, to speak for the bill. Mr. Gaines put William Jennings Bryan to shame in his denunciation of those who believe evolution, directing many of his remarks directly at Dr. Powell and Mr. McVey. He talked for nearly an hour and was frequently applauded and cheered, while spectators in the gallery and around the walls of the chamber roared with laughter. One of his "stunts" was a division of the sheep and goats, placing Dr. McVey, Dr. Powell and various zoology text books on the one side and the Bible, the Declaration of Independence and himself on the other. He had the books before him as he ran up and down behind the clerk's desk, scattering them about as he waved his arms in emphatic gestures. Finally he threw one of the text books to the floor and trampled it under foot.

"I am ashamed of this day in the Kentucky legislature," said Representative G. C. Waggoner of Scott County, a minister and veteran legislator, toward the close of the debate.

"This bill smacks of intolerance and the

[1] Abridged from the *Louisville Courier-Journal*.