sphere decreases relative to that from the needle with increasing distance, this may arise from the fact that at the two longer distances used the voltage employed was not much removed from that necessary to start the brush discharge from the sphere. The results show that it is not altogether improbable that a few blunt projections or knobs on a building may give rise to as large a discharge current as would flow from a sharp point under the same conditions.

It is interesting to note in this connection that when a potential difference of seven million volts was developed between the two 15-foot spheres of the high voltage generator built by Compton and Van der Graaf, sparks over 20 feet long at an interval of less than a second passed between the spheres and to various parts of the building enclosing the apparatus. Numerous brush discharges appeared on the spheres and on various portions of the building, but the combined current from all these was insufficient to prevent a rapid building up of the potential to the sparking point, although the maximum rate at which the generator could deliver a charge was only about 2.7 milliamperes.

In defense of lightning prevention by lightning rods it is sometimes alleged that experience shows that lightning actually strikes less frequently in cited localities after lightning rods have come into use than was the case previous to their introduction. As far as I know, such statements are based on the conjecture of residents rather than on accurate statistics covering long periods of time, and, owing to the known irregularity in distribution and severity of thunder storms, evidence of this kind can scarcely carry much weight. We have, however, the recent statement by Professor Whitehead in the paper noted above that in a period of some 17 years no lightning bolt has struck any of 61 trees which had been provided with lightning conductors of his specification, although previous to the installation nine of the trees are known to have been struck. I am inclined to think that Professor Whitehead only meant to imply that none of the trees had been visibly injured during the period mentioned, since it is unlikely that they were under constant observation during all the storms that passed over them. Moreover, I gather from the description given that the upper terminal points on these conductors were hidden by the foliage and were thus more or less completely shielded electrically by the latter.

That the leaves and twigs on trees and bushes act as discharge points during the passage of electrified clouds is well known. B. F. J. Schonland[4] has measured in Africa the currents flowing from an insulated bush during the passage of many storms and obtained values as high as 4.5 microamperes, although here again lightning never struck near the station during any of the observations. Owing to the great number of such natural points in a wooded region, the total upward current flowing from them during a storm is correspondingly large, and yet trees in a forest are frequently struck. During a storm in Switzerland the top of a whole forest was seen to take on a vivid glow, repeatedly, which increased in brilliance until a lightning bolt struck. Here myriads of leaves actually served as discharge points, and still the combined current from them all was unable to prevent the building up of charges in the clouds sufficient for lightning-bolts. The conductors on the top of the Washington Monument are provided with 200 points, and the monument is struck not infrequently. Does the presence of three or four pointed terminals on the lightning conductors attached to a house or barn decrease appreciably the liability of its being struck? It may; but we do not know for certain. There is even a possibility that the chances of being struck are increased by such an equipment, owing to the long conducting path provided by the upward moving ions coming from the points. Such an action would be advantageous rather than otherwise in assuring better protection to the parts of the building most distant from a lightning conductor. An interesting and valuable account of protection against lightning by O. S. Peters is given in Technological Paper No. 56 of the U. S. Bureau of Standards, 1915.

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[4] *Proc. Roy. Soc.*, 118: p. 233, 1928.

THE CASE OF DEUTERIUM

BOSWELL: "But he is not restless." JOHNSON: "Sir, he is only locally at rest. A chymist is locally at rest; but his mind is hard at work." These words describe the state we chemists have been in since the discovery of heavy hydrogen laid upon us the duty of giving it a proper name and symbol. A comparable case, only a few years ago, was the discovery of the new planet, which was finally permitted to accept the name "Pluto." To zoologists and botanists there is presented the undignified spectacle of squabbling, or to put it more mildly, of vacillation, on the part of the chemical profession, in trying to make up their minds about what to call the most interesting element of recent years, and how to write its name in shorthand. Zoology and botany observe the rule of priority, that the name first given to a new animal or plant shall be accepted. There are some provisos that affect the working of this rule, but not its spirit. It would seem as if this simple principle, which is based upon courtesy as well as upon the desire for stability of nomenclature, is either unknown to chemists or is ignored by them.

The writer does not especially admire "deuterium"

as a name, and would not select it for a scientific child, but he has not bothered to think up another, possibly better and maybe worse. Why should not deuterium be accepted, now that it has been chosen by the discoverers and has been used in print many times? There was no such wild nomenclatural furor a few years ago when Hevesy discovered a new element and patriotically called it "hafnium," after the ancient name of his city. He might have decided upon "copenhagenium," which would have been quite a strain. Urey, Brickwedde and Murphy would have been within their rights as discoverers if they had picked "newyorkium," because "columbium" is occupied, at least in this country, or if in imitation of Hevesy they had gone back several centuries and selected "eboracum."

The case of Mendelejeff and his three "eka-" elements is not quite the same as that of deuterium and its discoverers. The elements of Mendelejeff had not been found and were perhaps merely fancy touches added to attract attention to his revolutionary idea, the Periodic Law. It is not on record that he claimed priority for his names when the predicted elements were finally discovered and patriotically called gallium, scandium and germanium. By the same token, although it may be convenient to call a still heavier isotope of hydrogen "tritium," let us wait to hear from its discoverer before making a final decision.

Is protium needed? Or will it be if we finally agree upon deuterium and perhaps tritium? They are all but names, and there seems to be no necessity, logical or otherwise, to discard an old name for a new, just because it is supposed to suggest a relationship to deuterium. Is it not enough that deuterium, after we have learned what it is supposed to suggest, calls to mind double-weight hydrogen?

A further proof of the demoralization caused by heavy hydrogen is the endless debate about the proper symbols for protium, deuterium and eventually tritium. The writer can see no valid reason for abandoning the time-honored custom of using one or two letters of its name as the symbol for an element. Common consent, and not priority, seems to govern here. There can be nothing simpler than "D" for deuterium, and it is already in use. H^2 is troublesome to the typist and to the typesetter, to say nothing of the confusion of the French chemist, who writes H^2O for water. One difficulty when setting type, as pointed out by an editor of long experience,[1] is that superscripts and subscripts are cast on full-sized bodies, so that it is not possible to set one above the other in proper horizontal alignment. This is shown on the last line of page 203 of SCIENCE for March 2, where the subscript 2 is far too low. On the fourth line of the next page it is in its correct position, because there is no superscript to force it down. An alternative often seen is to waste space thus: $H^2{}_2O$.

A recent suggestion to use a bold-faced H for deuterium would be anathema to the typist, who already has trouble enough with formulas in which Greek letters or special symbols are used. One can imagine, also, the impatience of a lecturer at the blackboard, writing ordinary H's, and trying to make convincing bold-faced ones, too. For his sake and the typist's, one can almost wish that tritium will not be discovered, because Old English letters are bad enough when they are printed.

Already there is evidence of a tendency to see what happens if deuterium is put in place of hydrogen in organic compounds. If this goes far enough, the chemist is confronted with the ghastly prospect of a new edition of "Beilstein" of colossal dimensions. The burden of typing the manuscript, of setting the type and of correcting the proof will not be easy if there are to be innumerable superscripts in addition to the indispensable subscripts, or if two fonts of type must be drawn upon in setting each of hundreds or thousands of formulas. Surely this is an argument for simplicity. Let us continue to use H as the symbol for the common old hydrogen we thought was the only kind all these years. This will also be for the benefit of the numerous public who can say "H_2O" as their one bit of chemical knowledge. When the third isotope is found will be time enough to discuss its symbol.

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[1] E. J. Crane, editor of *Chemical Abstracts*.

THE "FAT-METABOLISM" HORMONE AND HYPERGLYCEMIA

IN 1931 Anselmino and Hoffman[1,2] obtained a fraction from the anterior pituitary which, when injected into rabbits, markedly increased the acetone bodies in the blood. Funk[3,4] showed that this peculiar "fat-metabolism" hormone is present in the urine of pregnancy and in normal urine. Funk obtains an active fraction by precipitating the material in urine with benzoic acid, removing the latter (plus theelin or male hormone, if present) with alcohol and extracting the residue with ammonium hydroxide. Katzman and Doisy,[5] in preparing active extracts from the urine of pregnancy, use essentially the same method, except that acetone instead of alcohol is used to extract the benzoic acid. The active material in the residue is extracted with water. In a subsequent

[1] *Klin. Woch.*, 10: 2380, 1931.
[2] *Klin. Woch.*, 10: 2383, 1931.
[3] *Biochem. Jour.*, 26: 619, 1932.
[4] *Proc. Am. Soc. Biol. Chem.*, 8: 43, 1933.
[5] *Jour. Biol. Chem.*, 98: 739, 1932.