now give us the location of any star to within a square degree. We can now use the vowels to indicate other properties. The five vowels (*a, e, i, o, u*) with the 25 diphthongs (*aa, ea, ia,*—down to *ou, uu*) give us plenty of scope and can be numbered in order, giving us 30 possible vowels for each place. Thus, the first vowel could indicate the integer of magnitude; the second vowel, the first decimal of magnitude; the third vowel, color; the fourth vowel, spectral type, or whatever some distinguished international committee of astronomers decided was most important.

With a single name of four consonants we can name one star in each square degree. This gives us 64,800 names—adequate to name unequivocally all stars visible to the naked eye and even well beyond. There may be a few cases, in star clusters like the Pleiades, where a square degree has more than one star visible to the naked eye, but these must be rare. Then, by adding another similar name to the "surname" we can identify 360 × 360 or 129,600 stars per square degree, or over 9 billion in all. This names every square 10 seconds of the sky, which is probably enough for most astronomers. If necessary, a third name would cover all conceivable cases. The names are apt to sound a little Japanese or Italian, but this is surely a small sacrifice on the altar of a world science. Sirius perhaps sounds a little uncouth as Zacafawe, Capella as Gadakugo, and Polaris as Bevamoli, but no doubt the ancient names could be retained for those who wanted to use them, and, as most stars have no names anyway, there would be no fine old traditions to stand in the way of their semantic baptism.

While I am on the subject of reform, having been a binarist from the word *bit*, let me suggest a simple method for saying the binary numbers. I say "saying" rather than "naming" because I do not really approve of naming numbers anyway, any more than I approve of gilding lilies. Even in the decimal system it seems to me foolish to *name* the perfectly good number one-nine-six-oh, or even, in a fit of centesimalism, nineteen-sixty, under the laborious title "one thousand nine hundred and sixty." Attempts to *name* the binary numbers end up in hopeless clumsiness and cacophony. On the othe hand it is perfectly easy to *say* the binary numbers if we adopt one conventional symbol for "1" and another for "0." I have toyed with "Bim" for 1 and "Bam" for 0, in which case we would count: Bim, Bimbam, Bimbim, Bimbambam, Bimbambim, Bimbimbam, Bimbimbim, Bimbambambam, and so on. If this sounds too sonorous I am prepared to compromise on "Bit" (for 1) and "te" (for 0), in which case we count Bit, Bitte, Bitbit, Bittete, Bittebit, Bitbitte, Bitbitbit, Bittetete, and so on. I may point out that (to look a few years ahead) Bitbitbitbittebittebitbitbitbit has no more syllables in it than "one thousand nine hundred and sixty-seven." I have little doubt, however, that the fact that even scientists have ten fingers will tie the human race to a wholly arbitrary decimalism for many centuries to come.

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Tax Exemption and Research

In the 1 January issue of *Science* [**131**, 7 (1960)] appears the editorial entitled "Tax exempt." I am sure you would be among the first to concede that the tax treatment of scientific research is a subject far too complex to be covered adequately in the single page of an editorial. Nevertheless, the subject is also too important to be dismissed lightly; and to a society having as its purpose the *advancement* of science, proposals to tax research have far-reaching implications that deserve more extensive attention than is given by your short article.

Some statements in your editorial are contrary to fact. The newly proposed

regulations do *not* say that an organization to be exempt must "be operated primarily for fundamental research," as stated in your editorial. The Internal Revenue Service has apparently had the wisdom to see that the dividing line between "basic," "fundamental," and "applied" research is something that scientists themselves do not agree on, and to see that it does not provide a proper basis for taxation.

The newly proposed regulations do set forth as a test of whether research is "scientific" that the results of such research must be made freely available to the public. This strikes me as a curious definition of the term *scientific*, since it makes the method of dissemination rather than the scientific nature or content of the research the test of whether the research is scientific. Of course, the significance of this definition of *scientific*, as stated in the new proposed regulations, turns on what is meant by the "freely available" test. The proposed regulations seem to intend to limit this test by a concept which sets as the standard that the research is directed not toward promoting private gain but rather toward benefiting the public.

There is a shocking fallacy implicit in a concept which places private gain in opposition to public benefit. The economic and political system of this country is founded on the principle that there are public benefits from the opportunities for private gain. Certainly the public is benefited where the opportunity for private gain leads to the promotion or support of scientific research. As I understand it, all that the tax laws require as a qualification for exemption from tax is that the net earnings of an exempt organization should not inure as a private gain to the members of the exempt organization; but the fact that research leads to someone else's private gain (that is, gain for industry and, in fact, for the public itself) does not mean that research is directed any the less toward benefiting the public.

The concept expressed in the regulations goes to the root of other tax exemptions. The editorial itself points to the danger and inconsistency in the proposed regulations in this regard. In indicating which organizations will be affected or not affected by the regulations, the editorial points out, for example, that universities will not be affected, and in this connection you state that their exemption includes "income derived from applied research that is not available to the public." At the same time the editorial indicates that independent research institutions carrying on the same activities will be affected. If such activities are not in the public interest when conducted in such institutions, will not this conclusion strike at the basis for exemption for all other organizations conducting research? If science itself is found unworthy of the protection of tax-exempt status because private gain may be derived from the application of scientific research, then neither education nor any other purpose will long provide an effective tax screen, for the conduct of research in any institution would then inevitably be considered to be in the domain of taxable business enterprise. I am sure that the American Association for the Advancement of Science cannot remain indifferent to this prospect.

The proposed regulations raise another fundamental question that the association may very well want to ponder. As pointed out in the editorial, under the proposed regulations any research done for a government agency would be considered of an exempt character, but research conducted for industrial sponsors would generally not be. This would make the course of future research organizations dependent upon government programs and would require that they primarily serve government agencies as a price for tax exemption. The freedom heretofore enjoyed of pursuing scientific research in the interest of increasing scientific knowledge, regardless of who sponsors the research, would be lost, and in its place would be the necessity of committing the institution to the mercy of government programs in order to maintain tax-exempt status. This loss of scientific freedom poses a question of great importance for those interested in the advancement of science in a free society.

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The proposed regulation is, indeed, complex; but with reference to the question of fundamental research it has this to say: ". . . for purposes of the exclusion from unrelated business taxable income provided by section 512(b)(9), it is necessary to determine whether the organization is operated primarily for purposes of carrying on 'fundamental,' as contrasted with 'applied' research." —ED.

Population Control by Release of Irradiated Males

The article by E. F. Knipling in *Science* [**130**, 902 (1959)] on possible methods of insect control by treatment of males with radiation or chemicals is interesting and illuminating. It should be pointed out, however, that where males are irradiated and released in the field, the restriction of monogamy in females of a species is not a requirement for