

The question is then what is the general meaning of probability, and why, in this limited class, does it happen to be measured by the ratio? The question can be answered in accordance either with Dr. Deming's view or Dr. Jeffrey's. My object is not to answer the question, but to point out that an answer is required.

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Feb. 12.

Use of the Termination *-tron* in Physics

IN the invention of names in physics, there appear to be two schools of philological thought as to the meaning of the termination *-tron*. According to one school, it is derived from a Greek word signifying an instrument, as illustrated by *cyclotron* or *thyatron*, whereas according to the other it signifies an elementary particle, as in *positron* and now *mesotron*. The decision as to which is the better meaning is in no way helped by reference to authority, for the ancients appear to have been wholly ignorant of the use of the word in either sense, or indeed in any sense at all. It is perhaps none the worse for that, but it does seem an unnecessary confusion to introduce, out of all possible combinations of letters, exactly the same four to represent a new machine or a new particle. If the termination is to be accepted for both, it is indeed rather hard to think of anything in modern physics to which it might not be applied.

Discoverers are of course free to name their inventions as they please, but there would be, to say the least, a convenience if the chosen name terminated with something expressing the category to which its possessor belongs, so that *-tron* should be restricted to signify either an instrument or a particle, but not both. The names *thyatron* and *cyclotron* have already got into wide use, so that it would seem almost impossible to change them without confusion. On the other hand, *positron* and *mesotron* are household words in the mouths of comparatively few, and to rename them would not cause such widespread trouble. The situation is unavoidably complicated of course by the *electron* and *neutron*, but the division of these as *elec-tron* and *neu-tron* is one which the most illiterate would scarcely make, and *-on* taken by itself—why not for example *poson* and *negon*?—seems the most natural ending for a particle.

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Growth-controlling Hormonal Substances of the Hypophysis

STUDYING the substances which accelerate or inhibit the growth of plants, and which are present in different extracts of particular organs of animal body, we have found that the acetonic extract of the anterior lobe of the hypophysis accelerates the growth of plants, while the same extract of the posterior lobe of the hypophysis inhibits their growth.

Later, we experimented with various extracts of organs influencing the growth of animals. These experiments were performed upon young animals of the same breed (rabbits, guinea pigs), and especially upon young rats of about 30 gm. in weight. We

have found in the acetonic extract of the anterior lobe of hypophysis a substance which accelerates the growth of normal young animals compared with controls under the same conditions. This substance is not identical with the somatotrophic hormone of Evans because its physical and chemical properties (freedom from albumin, resistance to boiling, reduced sensibility to alkali, etc.) are different. Compared with the controls of the same breed, the normal size of the animals under treatment is attained under the influence of the substance in a shorter time. The action was evident after two or three injections of the extract.

The acetonic extract of the posterior lobe of hypophysis was found to have an opposite result. After two or three subcutaneous injections of the extract, the growth of the animals became so much inhibited that two or three months later the weight of the treated animals was only slightly increased compared with controls. The treated animals presented quite a normal appearance not only in their behaviour but also in their appetite. The anatomical examination of the animals which were killed has shown no pathological changes in the organs, which were of an inferior average weight compared with the organs of the controls.

There exist, therefore, in the hypophysis not only the somatotrophic growth hormone discovered by Evans, but also other growth-controlling substances, namely, in the anterior lobe a growth-stimulating, and in the posterior lobe a growth-inhibiting substance. We suggest that the substance inhibiting the growth of animals and of plants in the posterior lobe of the hypophysis be named 'amicine'.

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Pentose Nucleotides in the Cytoplasm of Growing Tissues

INTEREST in the nucleic acid metabolism of mitosis has in general tended to centre on the nucleus. More recently evidence has been obtained showing an interplay between the nucleic acid metabolism of the nucleus and that of the cytoplasm¹. Studying the ultra-violet absorption spectra of the cytoplasm of growing tissues, we have found them all to exhibit the maximum around 2600 A., characteristic of the cyclic nitrogenous bases present in the nucleic acids. In contrast, the homologous mature tissues exhibit a different absorption similar to that of the proteins.

The cells from rapidly growing yeast cultures have already² been shown to differ from the cells of the senescent cultures in containing a much higher concentration of the substances absorbing maximally at 2600 A. An estimate of the total absorbing substances, calculated as yeast nucleic acid, agrees well in order of magnitude with Baumann's data³ for the yield on the extraction of yeast nucleic acid from yeast.

In the tissues of the plant embryo, prepared as they are for rapid growth and division, it has long been known that yeast nucleic acid was present^{4,5}. The absorption spectrum of cells from the rye embryo shows a maximum at 2600 A., with an additional absorption indicating a high concentration of proteins. Here Behrens⁶ has shown that yeast nucleic acid can be extracted from the cytoplasm of the cell itself.