We sought to verify this observation by asking a young Englishman, a graduate of Cambridge and the author of several books of verse, to read the same poem twice, at an interval of about one hour. In order to see whether the characteristic might be individual to the poem, we asked a young woman from Oregon and a young man from Louisiana to read very different poems into our recording apparatus. When we were through we had phonelescopic pitch-records of samples of verse from three centuries, which had been read by competent people as far removed as England and Oregon. In all these cases the greatest difference observed in the pitches of any pair of rimed words was 17 d.v.s. (which, in that register, represented about one half tone), and the average difference was 5 d.v.s., or about 2.5 per cent. It was also noticed that pitch-patterns of riming words tend to be similar and that the riming vowel tends to be pronounced on or near a sub-multiple of the characteristic frequency of that vowel.

This characteristic of the melody of verse is now being investigated more fully in the Iowa laboratories. If the results reported in this note are corroborated they may contain a key to the little understood problem of poetic melody.

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EFFECT OF CORTIN ON INTRA-OCULAR TENSION IN GLAUCOMA

I HAVE found that the heightened intra-ocular tension of simple glaucoma responds with startling promptness to the administration of the adrenal cortex hormone, cortin. In cases which are uncomplicated by degenerative changes of the ocular tissues, even though of long standing, drops of pressure from levels as high as 50 mm of mercury (Schiotz) to normal level have been noted in the period of half an hour, after injection of cortin. Parallel to this drop in tension, there occurs a rise in visual acuity, often to normal level, and relief from the sense of tension and pain.

These findings throw a new light on the mechanism of the rapid changes of intra-ocular tension in glaucoma, and enables a better comprehension of the puzzling features of the symptomatology of the disease. For the work of Swingle, Pfiffner and others has shown that deficiency of cortin results in increased permeability of the capillaries and vessels to the water and mineral content of the plasm. Rapid increase in secretion of fluid into a densely encapsulated organ such as the eye would result in a rapid rise of the tension. In the same manner can be explained the response to cortin therapy of deafness associated with increased intra-ocular tension and Meniere's syndrome.

Response of progressive myopia to cortin therapy leads to the hypothesis that the mechanism of this disorder is similar to that of glaucoma, a disturbance of the water-salt metabolism. The difference in the end-result is explainable in terms of elasticity of the tissues of the eye; the more elastic sclera of the younger eye yielding and stretching into the myopic state, and the less elastic sclera of the older eye forcing a giving-way and compression of the less dense tissues of the parenchyma of the eye, optic nerve disk and ciliary body.

This hypothesis on the nature of myopia is borne out by the finding of a group of cases of progressive myopia in school children which present the symptomatology of glaucoma—headaches, halo formation, cupping of the optic disk and slightly heightened tension. These cases show other signs of endocrine imbalance; in the females among whom the incidence is higher, there are disorders of menstruation. A large mass of data points to correlation of disorders of puberty and sex development and the development of myopia. Evidence at hand indicates the whole series of disorders are fundamentally in the nature of a profound alteration of the water-salt metabolism, and it leads to the belief that sex development may be basically an alteration in the water-salt metabolism or conditioned by it. The administration of cortin to these cases has effected a reduction or arrest of the myopic process and an amelioration of associated symptomatology.

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THE NEW ACTIVE PRINCIPLE OF ERGOT

A RECENT exchange of communications between Dr. Ralph G. Smith, of the University of Michigan, and myself necessitates the correction of an error which appeared in my discussion of this subject in the issue of SCIENCE for June 28. The error has to do with the optical activity of my ergostetrine and the ergotocin of Kharasch and Legault. Instead of claiming that ergotocin (free base) is dextro-rotatory, Kharasch and Legault's claim is that ergotocin *salts* are dextro-rotatory. They did not, as I stated, give the optical activity of the free base. This removes the difference in our observations on this point, since the common salts of my ergostetrine are also dextro-rotatory and, as I stated in my discussion, ergostetrine base and ergotocin base were found to be indistinguishable in exhibiting laevo-rotatory properties. Professor G. L. Jenkins, of this university, confirmed this observation. I regret the error thus made in my discussion. Concerning optical activity and decomposition point of the

free ergostetrine base, further work shows that repeated recrystallization finally results in a snow-white product which melts and decomposes at 161 to 163 degrees C., and which is dextro-rotatory in water, alcohol and chloroform. Whether this change in properties is due to simple purification or to an actual change in the molecule is being studied, with emphasis on the relationship of these changes to pharmacological activity.

The issue of SCIENCE for June 21 contains a discussion of the new ergot principle by Kharasch and Legault, in which they state that "The question as to whether ergotocin is an alkaloid seems to us to be essentially meaningless, since there are no definite criteria by which a substance may be characterized as alkaloidal or non-alkaloidal."

From the standpoint of pharmaceutical chemists, to classify a plant or animal substance as an alkaloid is of fundamental importance, immediately identifying the substance as a relatively complex organic chemical entity containing nitrogen, whose free base is alkaline in reaction and capable of neutralizing acids to form salts, whose free base is much less soluble in water than its salts, whose free base is much more soluble in ether, chloroform, benzol, etc., than its salts, and as a substance whose salts in solution release the free base upon the addition of alkalies. Ergotinine, ergotoxine, ergotamine, ergotaminine, pseudo-ergotinine, sensibamine, ergoclavine and ergostetrine have been classified since their discovery as alkaloids and as alkaloids *only*. To state that this classification is essentially meaningless, in the face of its usage in the abundant ergot literature as well as that pertaining to other important drugs is as much as to state that all chemical classifications are meaningless and unessential.

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SCIENTIFIC BOOKS

A SOURCE BOOK OF PHYSICS

A Source-Book in Physics. By WILLIAM FRANCIS MAGIE, Professor of Physics, Emeritus, Princeton University. McGraw-Hill Book Company, 1935. pp. xiv + 620. Price, $5.00.

THIS is an impressive volume. It leaves the past at the door of the reader. To collect and to put into English dress one hundred and sixteen of the most important contributions to physics that have appeared during the three centuries which intervene between the appearance of Gilbert's "De Magnete" and Planck's "Quantum Theory" is a service of no mean order. It would, in fact, be difficult to overestimate the value of this book for any young man who wishes to put himself *en rapport* with the best that has been said and done in the domain of experimental physics. The omission of mathematical physics—fundamental and important as that branch is—will not be serious for the undergraduate; since the absence of algebraic formulae does not mean the omission of quantitative ideas. The only person likely to forget that modern physics is an experimental science is the young student who observes an indolent lecturer covering the blackboard with equations because this is easier than to cover the lecture table with appropriate experiments.

The space available to the author was presumably determined by the fact that this volume is one of the series of "Source-Books in the History of the Sciences" of which Professor Gregory D. Walcott is the general editor. The manner in which Professor Magie has distributed his six hundred pages is instructive. The first 65 are given to "Mechanics"; the next 50 to "Properties of Matter"; then follow 30 pages covering "Sound"; and 140 devoted to "Heat"; to "Light," 122 pages; while the last 229 pages go to "Magnetism and Electricity."

Each extract is preceded by a brief but well-balanced biographical sketch of the investigator, and the essential feature of his particular contribution to knowledge is pointed out. The value of these editorial notes arises partly from the fact that many of these names are strange to young ears and partly because most of the seventeenth and eighteenth century papers are written in a scientific lingo quite different from our own. On the other hand, one can not fail to be impressed by the remarkable clarity with which the original discoverer of any phenomenon always describes his result. He goes at once directly to the heart of the matter.

Of the translations, some are borrowed and some are by Professor Magie. The man who renders a foreign language into his own is, of course, always attempting the impossible. In physics, especially, he is confronted by two snags: one is the use of a terminology which gives the impression that our ancestors were in possession of ideas which belong only to later times; the other is the use of a nomenclature which is so literal and antiquated that it ceases to be clear or to give the correct impression to the modern mind. Thus, on page 199, the question arises as to whether J. R. Mayer's *Kraft* should be rendered by *force* or *energy*. Carey Foster, in the *Philosophical Magazine*, twenty years after Mayer's publication, translates it into