motion increases. The values for velocities greater than 250 km/sec are: A = 328°, D = 53° and V = 284 km/sec. It is to be noted that 90 per cent. of these motions can be considered as at random or as random and stream motion combined; only 10 per cent. were asymmetric. The increase of stellar speed with advancing type holds for the main sequence. The low solar speed found for the A group was due to the Ursa Major stars; the small declination of the apex for the F group was due to stars of both streams.

In the last dozen years another result has been obtained from stellar velocities—galactic rotation A term, depending on motion along the galaxy, had been introduced in the equations for precession or solar motion, by some computers in the last century; but it always came out vanishingly small. Theoretical results in this century pointed to such a rotation; certain other results, such as the asymmetry of high velocities, the great solar motion with reference to the globular clusters, the variation of the K term with galactic longitude pointed in the same direction. I believe the first determination from radial velocities was made by Oort;[17] he found the center about which rotation took place was in longitude 326° and the velocity of rotation was 275 km/sec.

Plaskett and Pearce,[18] using proper motions of 881 stars and radial velocities of 849 stars of types O to B7, confirmed the results of Oort; they found $l_0 = 324°$, $V_0 = 275$ km/sec, $P = 224000000$ years, $R = 10000$ parsecs.

In a recent paper, Wilson finds similar results; he used Cepheid variables, non-Cepheid c-stars as well as B and O type stars; he adopted a mean galactic absorption of 0.65 mag/kpc. He concluded that the value of V was between 275 and 300 km/sec.

As a rule radial velocities have been preferred to proper motions. The effect of galactic rotation is best seen in distant stars; these have small proper motions, whose accuracy is impaired both by accidental and systematic errors. Van de Kamp and Vyssotsky[19] have used the proper motions of 18,000 stars to determine the solar motion and the galactic rotation. These motions were referred to Boss stars and were corrected for systematic errors due to Newcomb's equinox and precession. The stars were faint stars and their magnitudes extended from 7.5 down to 12.5. They found a value for the solar apex of A = 285°, D = 36°; both values are larger than those usually found for bright stars. For the several spectral classes, their latitudes were systematically greater than those found by Wilson and Raymond.

Values of the solar motion still show dependence on the group used and seem to show variation with spectral type and with magnitude. The results for galactic rotation, either from proper motions or radial velocities, agree quite well.

OBITUARY

HENRY HURD RUSBY

DR. HENRY HURD RUSBY, long an outstanding specialist in the field of pharmacognosy, died on November 18, 1940, at his home in Sarasota, Florida. He was born at Franklin, New Jersey, on April 26, 1855, and until 1938 was a resident of Newark, N. J.

While his early life was that of the average American boy in the rural sections, he even then showed a marked interest in plant life. Fortunately, this natural inclination was stimulated through contact with a teacher in the country school which he attended. Although his formal study of botany was meagre, this was more than compensated by his ability to learn at first hand and from plants themselves rather than from text-books.

The objectives of his botanical explorations were the establishment of new sources of supply for drugs and the search for new drug plants. On the first of the South American journeys from La Paz to Para in 1885–86, supplies of coca leaves, chequen, pichi and cocillana were sought. In addition an extensive study of cinchona cultivation was made and a complete collection of cinchona species acquired. The second journey in 1896 was a general botanical survey of that portion of Venezuela south of the Orinoco. The third of these surveys was in Mexico and was chiefly concerned with the discovery of possible rubber-yielding trees. The fourth and last exploration, in 1919, covered in part the same territory as the first and gave opportunity for comparisons with the conditions of thirty-five years previous. Dr. Rusby was then 64 years of age and had recently recovered from pneumonia. His family and many friends went to the steamer on the blustery March day of his departure. For most of us it was a rather sad occasion with the thought that he would not survive the journey uppermost in our minds. Despite his indomitable will he was forced to return ahead of the main party and continue his studies of the botanical results of the trip in the laboratory rather than in the field.

Dr. Rusby was professor of materia medica at the Columbia University College of Pharmacy from 1888 to 1930. Coincident with that appointment he taught materia medica in the New York University Medical School and the New York Veterinary College for

[17] B.A.N., 120.
[18] M.N., 679–713.
[19] Publ. Leander McCormick Obs., Vol. 7.

several years. With Professor Charles F. Chandler he was instrumental in bringing about the affiliation of the New York College of Pharmacy with Columbia University in 1904, at which time he became dean of the former institution and served as such until 1930.

Dr. Rusby's interest in the field of botany early influenced him to become an active member of the Torrey Botanical Club. He was president of the club from 1905 to 1912, and this association was particularly appropriate because in 1829, Dr. John Torrey was one of the first professors in the then newly organized College of Pharmacy. As a close friend of Dr. Nathaniel L. Britton, Dr. Rusby shared in the founding of the New York Botanical Garden. As one of the incorporators, chairman of the scientific directors and curator of the economic collections, he witnessed the continuous development of that institution.

Aside from his contributions to the literature of taxonomy, education in pharmacy and writings upon other subjects, he was author or co-author of "The National Standard Dispensatory," "Morphology and Histology of Plants," "A Manual of Botany," "Properties and Uses of Drugs," "Essentials of Vegetable Pharmacognosy" and "Jungle Memories."

The honors which were bestowed upon him were richly deserved and came to him without directed effort on his part toward their attainment. He was president of the American Pharmaceutical Association in 1910; one of the organizers of the Conference of Pharmaceutical Faculties, forerunner of the American Association of Colleges of Pharmacy; long a member of the Pharmacy Council, Education Department, New York State; member of the Revision Committees of the Pharmacopoeia of the United States and the National Formulary; Remington Medallist (1923) of the American Pharmaceutical Association; Hanbury Medallist (1929) of the Pharmaceutical Society of Great Britain and recipient of the Fluckiger Medal (1937) of the Society of German Apothecaries.

Possibly the real character of a man is most fully revealed in the personal letters he writes during his lifetime. They are seldom written with any thought of future publication and therefore give one a better appreciation of the man as he actually was than could be had from a biographical sketch. From a close association of over thirty years, it would be possible for me to give my impression of Dr. Rusby as a scientific worker, a preceptor and a friend, but I prefer that he should speak for himself through the following quotations from my file of his letters.

> I can not say too strongly that in my opinion the first and most important consideration is absolute loyalty in adhering to principle. This does not mean stubbornness in having your own way when the decision is against you. It may be necessary to yield in practice but you are not compelled to admit a wrong principle.
>
> Unfortunately honesty frequently does not yield results which are sufficiently immediate to warrant the old adage. Perhaps the dishonest people do win at the expense of the others, yet I would adhere to the honest course to the very end as the ultimate good of humanity depends on that sacrifice and the one object of life is the improvement of human character.

C. W. BALLARD

COLLEGE OF PHARMACY,
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SCIENTIFIC EVENTS

A NEW COURSE IN AIRCRAFT PRODUCTION AT NEW YORK UNIVERSITY

A GRADUATE program in aircraft production, the first to be offered in an American university, will open on February 4 at the College of Engineering of New York University. The course will be given in the evenings at the Washington Square Center.

Commenting on the problem of aircraft production at this time, Dr. Alexander Klemin, director of the college's Guggenheim School of Aeronautics, stated that it was vital that the aircraft industry should apply the general production principles of the automobile industry in obtaining an ever-increasing supply of aircraft. He said:

> The principles of mass production as evolved through the years by the automobile industry have given us the greatest productive capacity in the world in this field.
>
> The airplane industry must add to its magnificent tradition of research and experimentation by becoming production minded, and utilize fully all the production knowledge of the automobile industry.
>
> But in the long run the main responsibility for airplane production must be with the aviation people themselves, no matter how active the automobile industry may be in supplying parts, for while airplane production is indeed changing from what might be called odd-lot custom building to mass production it is a fallacy to believe that airplane production is exactly like auto production. The automobile industry, for example, does not, in between new models, face the possible hazard of an enemy superiority in equipment making its entire output obsolete overnight.
>
> It is with this belief, therefore, that aircraft men must face the problem themselves and receive special training. To this end we have worked out with the cooperation of men versed in general and automobile production, and others from the leading aircraft manufacturers, this course in the principles and practice of aircraft production.

The course will cover organization for control of