

HARRIS HANCOCK—IN MEMORIAM

The death of Harris Hancock on March 16, 1944, at Charlottesville, Virginia, constituted a notable loss, both to the University of Cincinnati and to American mathematics. During his active career in Cincinnati, Hancock had always been a stout champion of scholarship at the highest possible level. After his retirement in 1937 he continued, in his letters to his friends and colleagues, his service in the good cause. In the last letter from him received by the writer of the present notice, written two days prior to his death, he expressed his great interest in our coming mathematical symposium and in addition made certain cogent suggestions as to the development and improvement of mathematical scholarship at our institution.

In choosing mathematics for a career Harris Hancock was motivated by an interest in the subject that was genuinely enthusiastic. This interest he succeeded in communicating to all his more able students and to many of his friends who were not professional mathematicians. He was at all times thoroughly convinced of the major importance of mathematics, both as a fundamental and virtually indispensable discipline in education at the secondary and collegiate level, and as a most powerful aid in mankind's unceasing quest to understand himself and the universe in which he lives. Hancock's constant stress on the human interest of mathematics bore substantial fruit in the inclusion of mathematics as one of eight departments of the University of Cincinnati to be aided by the Charles Phelps Taft Memorial Fund, a fund explicitly designated as being created in support of the humanities.

In his recent obituary notice on William Fogg Osgood, published in this Bulletin, Professor Koopman ventured the opinion that Osgood's excellent sense of balance in scientific fields was due in no small measure to his early training in the classics. As a former student under Hancock and Osgood and as one who has likewise profited by his own study of the classics, I wish to record here my concurrence in Professor Koopman's opinion and my further belief that a similar educational background had much to do with the broad and balanced viewpoint manifested by Harris Hancock in his approach to scientific and educational questions. Like Osgood, Hancock had received a thorough classical training in his early years. Later both men received the inspiration to be found at the great mathematical centers of Europe in the late eighties and the early nineties. Finally they both returned to this country imbued with a desire to gradually

raise mathematical scholarship here to a level comparable with that of the leading European nations. Harris Hancock, in his own environment and in such larger circles to which the influence of his environment could extend, made notable contributions in this direction.

To properly evaluate the importance of his contribution one must take account of the fact that some strong educational trends of his time were of a type distinctly hostile to his scientific and educational ideals. To have breasted adverse tides that would have swept a weaker individual off his feet and to have made excellent progress in spite of such handicaps was a notable achievement.

Early in the century Hancock recognized the fact that there were developing certain pathological conditions in our educational system, for which the center of infection could be found in some of our colleges for teachers. Realizing that such conditions were a grave menace to the advancement of mathematical scholarship, he took time from the more congenial task of mathematical research and mathematical exposition to write a number of articles for the educational journals which dealt with the field of secondary education. The title of two of these: *The defective scholarship of our public schools—The pernicious influence of the colleges for teachers*, I and II (School and Society vol. 9 (1919) pp. 552–556; vol. 10 (1919) pp. 336–343) indicates clearly his readiness to take a courageous stand in matters of genuine importance. It should be recalled, in this connection, that at the time these articles were written a College for Teachers at the University of Cincinnati had been in existence for some thirteen years. In the face of strong administrative disapproval, Hancock had opposed this form of expansion, urging instead that there be created a Department of Pedagogy in the College of Liberal Arts.

In spite of the strong protests made by Hancock and some other mathematicians who shared his views, the general level of mathematical education in our secondary schools continued to fall throughout the period between World War I and World War II. The grave disadvantage which this state of affairs recently imposed on those charged with the responsibility for training officers for the Navy was clearly indicated in a letter from Admiral C. W. Nimitz (Mathematics Teacher vol. 35 (1942) pp. 88–89). Naturally, our deficiencies show up more clearly in time of war. However, they exist just as well in time of peace, since national efficiency depends to an important extent on mathematical education.

From the year 1919 on Harris Hancock could only rely on the College of Liberal Arts and the relatively small Graduate School of Arts and Sciences for the promotion of mathematical scholarship in ac-

cordance with his ideals, inasmuch as the teaching staff in the College of Engineering and Commerce was made a separate unit at that time. Since, when he first came to the University of Cincinnati in September, 1900, the entire mathematics staff consisted of himself, an assistant professor, and an instructor, one can readily see that he made notable progress in the face of many discouraging handicaps.

In spite of the time and effort spent on the development of his department and on the promotion of mathematical education at all levels, Hancock's unflagging industry and systematic methods of work enabled him to complete an impressive amount of published work during his mathematical career. This work included eight books, four of which were very extensive and authoritative treatises on the theories involved, thirty-three research papers, and seven papers on various educational questions. The books and research papers deal with a rather wide range of subjects in the fields of Analysis, Algebra, and the Theory of Numbers. Hancock's initial interest in these various topics had been enlisted during his period of European study, but he continued to work at them during his entire scientific career. His published works thus constitute the ripe harvest of many years of devoted labor.

Hancock's first books subsequent to his Berlin thesis (*Maxima and minima of functions of several variables*, 1903; *Lectures on the calculus of variations*, 1904) were published by the University of Cincinnati, which at that period had a press of its own. They were the outgrowth of a careful study of the profound work of Weierstrass and first hand contact with Weierstrass' disciple, H. A. Schwarz.

Beginning with the *Theory of elliptic functions* (John Wiley and Sons, 1910), we find the development of the theory showing the influence of much independent work by Hancock and his students. The same is characteristic of his *Elliptic integrals* (John Wiley and Sons, 1917), and in increasing measure of his *Foundations of the theory of algebraic numbers*, vols. I and II (Macmillan, 1931, 1932) and his *Development of the Minkowski geometry of numbers* (Macmillan, 1939). The date of publication of the last named work shows how the author continued his scientific labors, even after his retirement.

Most of Hancock's research papers were concerned with the same general fields treated in his books. As indicated above, some of this research, as well as other investigations, was later incorporated in his books. Other portions of it, however, are only available in the original papers. Space is lacking for a complete bibliography, but since the papers were published in well known journals, the interested student will have no difficulty in finding them.

In the case of one important activity of the American Mathematical Society, Hancock was in advance of his colleagues in other institutions. Shortly after the end of the first World War he urged strongly that an abstract journal, edited, managed, and financed in this country should be inaugurated. At that time there was little support for his idea. Many prominent mathematicians took the stand that the work of reviewing would take up so much time on the part of our younger American mathematicians that their own research would suffer. I think that experience in connection with *Mathematical Reviews* has shown that Hancock was right and that those who advocated the contrary view were wrong.

Hancock's efforts in behalf of better secondary school education brought about one important improvement in that field as far as the city of Cincinnati was concerned. A local committee, formed by his efforts, recommended strongly that one high school, devoted to college preparation, should be organized as part of our city school system. This recommendation was favorably acted upon by the local School Board, and from about 1920 on the Walnut Hills Classical High School, beginning college preparation in the 7th grade and continuing it through the 12th grade, was operated as an integral part of the Cincinnati Public Schools. The existence and success of such a school has undoubtedly raised the tone of education at the secondary level in the city of Cincinnati.

A certain number of Hancock's colleagues at the University of Cincinnati were in complete sympathy with his high scholarly ideals and his devoted efforts to raise the level of scholarship throughout our entire educational system. Others, however, seemed to think that his ambitions were too lofty for the institution in which he worked and that his efforts to improve scholarship in the secondary schools were foredoomed to frustration. It seems a pity that he could not have enlisted wider support for his eminently sane viewpoint. For under such circumstances there seems little doubt that his already impressive achievements would have been notably increased. However, his former students and that wider group of his friends and admirers, of which the first mentioned class constitutes a subgroup, may well find consolation in those immortal lines from Lowell's poem, *The present crisis*:

"Count me o'er earth's chosen heroes,—
they were souls that stood alone,
While the men they agonized for hurled
the contumelious stone."

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