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Pioneer Contributions of Harris Hawthorne Wilder, Ph.D., to Forensic Sciences

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ABSTRACT: In his youth Harris Hawthorne Wilder developed interests in both zoology and human anatomy. Following graduate study in Germany (1886-1891), he was appointed professor of zoology at Smith College but retained his dual interests throughout his career. As a result, he was instrumental in introducing to American audiences two new European developments in human identification; dermatoglyphics and face reconstruction on skulls. The details of his contributions in these two areas, summarized here, establish him as an important pioneer in American forensic sciences.

KEYWORDS: physical anthropology, H. H. Wilder, historical background, dermatoglyphics, facial reconstruction, pioneer

In three publications during the last five years I have characterized Harris Hawthorne Wilder as an American pioneer in forensic anthropology but failed to include more than general statements about his credentials [*1-3*]. The further record offered here is much less complete, unfortunately, than I had hoped for. Through correspondence with Professor Elizabeth Horner of the Department of Biological Sciences of Smith College, where Wilder taught and carried on research for many years, I learned that the College Archives had a large collection of Wilder memorabilia. Last October I spent two days at Smith College searching through their records.

I knew from Wilder's correspondence with Aleš Hrdlička, my predecesor at the National Museum, that he usually wrote his letters in longhand so I was unlikely to find his side of any correspondence preserved in the Archives. I did expect to find letters from his correspondents but, unaccountably, none were there. Nor could I locate many of the objects involved in, or resulting from, his research. I must, therefore, occasionally substitute guesses for facts in interpreting Wilder's actions and motives.

Background

Many details of Wilder's life prior to his college years are available in an autobiography covering that period and published posthumously [*4*]. From this source we learn that his middle name, Hawthorne, reveals the date of his birth. Seeking a name for her newborn son

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in 1864, and remembering that Nathaniel Hawthorne, the well-known American writer, had just died, Mrs. Wilder was pleased with the euphonious alliteration of Harris and Hawthorne. The name Harris records a family friendship with a Dr. Harris, then a professor in the Bangor (Maine) Theological Seminary near where the Wilders were living at the time [*4*, p. *2*].

As a very young boy Wilder was attracted to natural history and human anatomy. At age 7, his interest in anatomy was encouraged by an aunt who gave him a picture book on anatomy and physiology [*5*]. This book, along with Wilder's careful copies of some of the pictures, is in the Smith Archives. The intensity of the little boy's interest in the subject is conveyed by the opening words of a prayer recorded by his mother and added to his autobiography by its editor [*4*, p. vii]:

> Our dear Heavenly Father, I want a human skeleton very much and I want the Holy Spirit too whenever I am big enough to have them and when you think it is best....

Much later, while a student at Amherst (the family had moved to Masachusetts) Wilder's interest in human anatomy took a secondary place, because in a zoology course he undertook extensive dissections of the salamander *Necturus* (mud puppy). At this time he discovered a copy of Alexander Ecker's great handbook on salamanders [*6*] and decided that, when he graduated in 1886, he would go to the University of Freiburg-im-Baden (now Breisgau) and take his doctorate in zoology under Ecker. When he arrived in Germany, he was dissapointed to learn that Ecker had died and had been succeeded by Robert Wiedersheim. In the end, however, August Weismann guided him through his doctorate and Wiedersheim rekindled his interest in human anatomy and physical anthropology. His respect for, and gratitude to, Wiedersheim became evident when, following the latter's death in 1923, he wrote the American obituary [*7*].

In 1891, after receiving his Ph.D., Wilder returned home and in the following year accepted an appointment as professor of zoology at Smith, where he remained until his death in 1928. During his 36 years at Smith he divided his time between zoology and anthropology. Only the latter concerns us here. In 1904 he added to the curriculum a lecture series in "Anthropology and Evolution," which became so popular that by 1909 it was elected by hunderds of undergraduates. In 1906 he offered, jointly with Inez Whipple Wilder, his wife and former student, a course in "Anatomy and Physiology of Man."

In his research, especially during his early years at Smith, he played a leading role in bringing to the attention of American anthropologists and forensic specialists two subjects newly developed in Europe: (1) the study of epidermal ridge configurations[2] [*9,10*], and (2) the reconstruction of the face on the skull [*11*]. Judging from the dates of his first papers on these subjects—1897 and 1912, respectively [*12,13*]—his circumstances dictated the order of taking up the subjects. I shall keep to this order.

First, however, four portraits of Wilder (Fig. 1), unfortunately none dated, give an idea of how he changed in appearance during his long sojourn at Smith.

Epidermal Ridge Configurations (Dermatoglyphics)

Undoubtedly, Wilder came by his interest in dermatoglyphics primarily through reading Galton's books on the subject [*9,10*]. Much later, in a conversation with Cummins, Wilder called attention to the hypothenar eminence on his right hand (Fig. 2) and said, in effect [*14,*

[2]Now called dermatoglyphics (*derma*, skin, + *glyphĕ*, carve). This term appeared in print for the first time in 1926 [*8*]. In explaining the need for the new term, Cummins and Midlo, the authors who introduced it, said [*8*, p. 471]: "Professor Wilder has been interested in filling the long-recognized hiatus in terminology; we wish to acknowledge indebtedness to him for actuating our own search and the friendly criticism of its product."

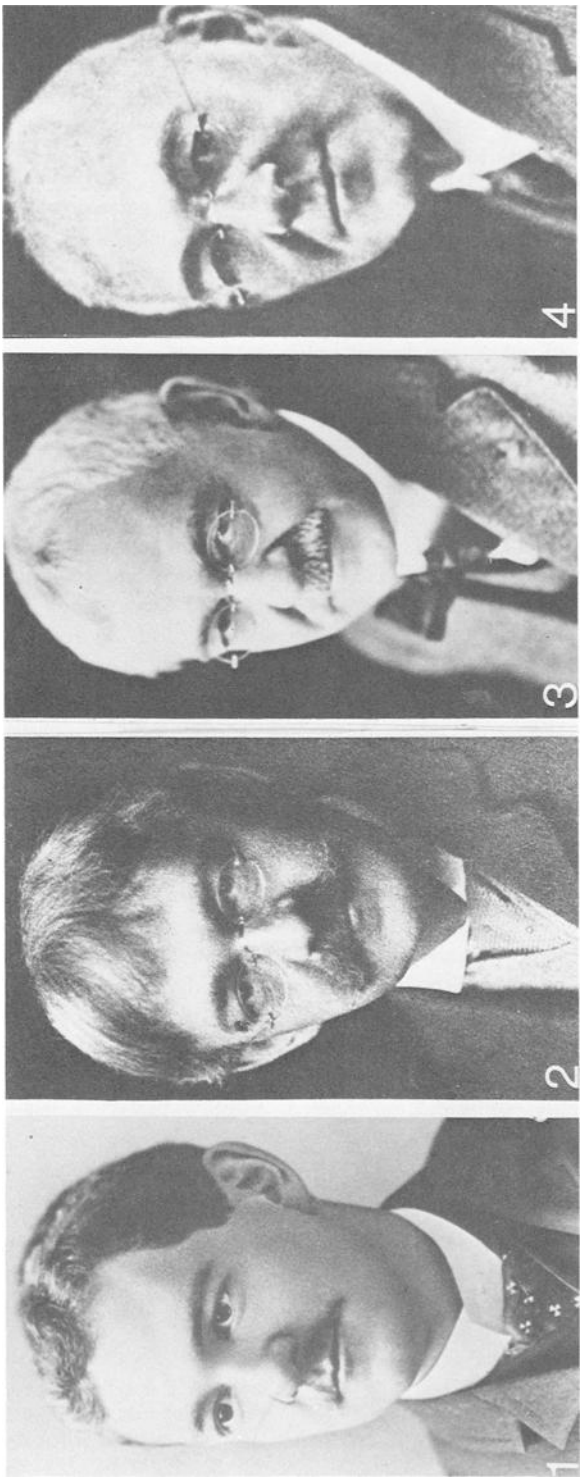

FIG. 1—*Undated photographs of Harris Hawthorne Wilder. Only one (far right) is known to have been reproduced heretofore (Courtesy Smith College Archives).*

FIG. 2—*Print of Wilder's right hand showing on the hypothenar eminence a dermatoglyphic pattern (whorl) resembling that of some monkeys* [14, frontispiece].

p. 20, footnote 9]: "Notice how the ... pattern resembles that of the monkeys; long ago my attention was directed to this similarity, and the speculation aroused by it was the stimulus for my later work."[3]

Although Galton stressed the use of dermatoglyphics in forensic identification, he concentrated on the patterns on the fingertips alone and thus barely mentioned the extensions of the patterns from the fingers onto the palms (as well as those on the toes and soles). Also, Galton barely mentioned the evolution of dermatoglyphics in the Primate order. Wilder made both of these slighted subjects his areas of research. However, very soon he turned over his general interest in the nonhuman primates to his student (and future wife), Inez Whipple [*15*].

This generous action left Wilder free to pursue the methods of analysis and the forensic possibilities of dermatoglyphics. As a result, he quickly developed his own identification system based on the patterns of the palms and soles [*16,17*] and showed its advantages over the current rival system of Bertillon based on anthropometric traits [*18*]. Subsequently, Wilder published an updated version of these efforts in *Personal Identification* [*19*] (coauthored with Bert Wentworth, a forensic specialist).

Although Wilder had essentially ended his work on the forensic aspects of dermatoglyphics when the book appeared in 1918, he continued to work on other aspects of the subject up to the time of his death. In a paper dealing with the technical problems in the analysis of palmar dermatoglyphics Cummins includes the following statement [*20*, p. 503, italics added]: "The sole published guides for interpreting and formulating main lines ... are embodied in publications by Wilder, *the deviser of the methods*."[4]

In summary, Wilder extended the original work of Galton on fingertip dermatoglyphics to the dermatoglyphics of the palm and sole. He presented convincing evidence that a system of identification based on any part of the dermatoglyphic patterns has the potential of providing surer identification with less effort than the so-called Bertillonage—an important contribution at a time when such things were not widely known in America.

[3]He first published a print of his hypothenar dermatoglyphic pattern in 1897 [*12*].

[4]It is especially notable that Wilder substituted the term "triradius" for Galton's "delta," which first appeared in the latter's *Fingerprint Directories* [*10*, pp. 61-62].

Reconstruction of the Face on the Skull

It seems a fair supposition that, if research in dermatoglyphics came easily to Wilder in a New England women's college at the turn of the century, research in face reconstruction on skulls caused him considerably more effort and required some daring. One thinks of the latter type of research as coming from the anatomy department of a medical school, rather than from a women's college. However, from reading His' account of the identification of Bach's skeletal remains through face reconstruction [*11*], Wilder gained a clear idea of what he wanted to do in the way of research along this line, and how to do it. He needed only some skulls to proceed.

Tissue Restoration

Around 1901, five or six years after His' publication [*11*], Wilder was led by serendipity to one solution to the skull supply problem. He had long had in his possession a desiccated frog and decided to see what would happen if it were immersed overnight in a 3% solution of caustic potash (KOH) used in the preparation of embryonic skeletons. The next morning he found to his surprise "what seemed at first a perfectly normal frog floating in a natural attitude upon the surface of the liquid" [*21*, p. 1].[5] Sensing immediately that by this method mummified human tissue could also be rendered more amenable to study, Wilder solicited collectors and museum curators for desiccated human specimens to test. Although most of the donated specimens were used in the tissue-restoration project [21], eventually (in 1917) one cliff-dweller mummy provided a skull for face reconstruction [24]. By that time Wilder was well prepared to tackle the mummy's skull. Five years earlier he had reconstructed the faces on four skulls of New England Indians, two skulls of blacks, and two skulls of whites [*13*].

Tests of Face Reconstructions

In reporting these early efforts at face reconstruction, Wilder took great pains to include all that was known of the procedures developed in Europe. He showed special concern with the accuracy of the resulting likenesses. For example, the skull of a male black included in the series was the only one for which the actual appearance of the face could be verified. Wilder himself had dissected this specimen some 25 years before and felt he still remembered the appearance of the face before dissection. He purposely selected this skull for use in teaching his method to Leigh Hoadley, a young man who sometimes aided him on a voluntary basis. Continuing the account in Wilder's own words [*13*, p. 426]:

> I taught him the general methods of building up the proper thickness [of the clay] at the various points, and located the points for him; then, without saying anything whatever about the skull, save that I had prepared it, dismissed him to finish the work by himself. Naturally, one cannot rely too much upon the memory of such a thing as the face of a dissecting-room subject after so long a time, but when, on the next day, Mr. Hoadley brought me his finished result, ... it recalled the face of the subject and the circumstances very distinctly and appears to me a good copy of the original.

In Vienna the following year (1913), von Eggeling [*25*] reported a great improvement over Wilder's test case. He had made a death mask before dissecting the head and then had the face reconstructed on the skull by two persons independently. Wilder appears not to have

[5]I have included the story of the frog here not only to introduce the subject of face reconstruction, but to make the point that Wilder discovered a means of restoring dried tissue some ten years ahead of Sir Armand Ruffer [*22*], and yet is never given the credit he deserves. A case in point is the following statement by Gillman [*23*, p. 363]: "Apart from the work of Ruffer ..., I know of no attempt to revive mummified tissue in such a way as to make it suitable for gross anatomical purposes."

known about von Eggeling's experiment, or had forgotten about it, when he and Wentworth wrote *Personal Identification* [*19*], because in a footnote (p. 98) he states that "no definite and satisfactory test of the method [has yet] been made." Yet, the continuation of this quotation shows that he was thinking along the same line as von Eggeling:

> Such a test ... could ... be made upon a dissecting-room subject, by first taking a death-mask, then preparing the skull, and handing it over to someone at a distance, who could not possibly have seen either the man or the mask. At this writing one of the authors[6] has made such a mask and is waiting for a convenient time at which to have the work completed.

Unfortunately, Wilder never made the final result of this experiment known, and my trip to Smith College failed to turn up anything connected with it.

In reporting the result of an identical experiment 27 years later, Krogman thought he was the first to perform such an experiment [*26*], indicating the extent to which the history of forensic anthropology was lost sight of during the first half of this century.

Case of the Noted Scientist

The following quotation from *Personal Identification* [*19*, footnote on p. 98] reveals that Wilder undertook an ingenious variation of the face-reconstruction experiments:

> [One of the writers][7] has also restored directly upon the skull, the face of a noted scientist, who died some seventeen years before, and the result compares very well with a bust of the same man, made from life by a celebrated sculptor. In performing the work the author purposely avoided seeing either the bust or any picture of the subject, and used a photograph only after the face was complete, and then solely for the purpose of dressing the hair and beard, of the arrangement of which the skull naturally gave no indications. The final result was a decided success, yet the test was not absolute, as the author had known the subject personally, and remembered the face in general, although he would have been quite unable to have reproduced any feature of it directly in clay, without the skull.

The identities of the "noted scientist" and the "celebrated sculptor" are not generally known. In various ways, I have learned that the scientist was Edward Drinker Cope of the famous Cope-Marsh paleontological controversy. At his death in 1897, Cope willed his body to the Anthropometric Society, an organization of famous men who had agreed to leave their bodies to science [*27*]. Edward Anthony Spitzka described the brain and skull (Fig. 3) in 1907 [*28*]. Engéne Castello, a Philadelphia artist, created the bust (Fig. 4) in 1896–1897 [*29,30*]. Richard Post, who taught at Smith from 1930 to 1936, remembers the Cope head, with its face reconstructed by Wilder, as occupying a place on the bookcase in his office.[8] So far I have not succeeded in discovering whether or not it still exists. The original skull, a cast of which Wilder must have obtained from Spitzka, now bears No. 4989 in the University Museum in Philadelphia [*31*].

The La Rosa Case

Wilder's concern with the accuracy of face reconstructions on skulls also is manifested through his interest in forensic cases reported in the daily press [*19*, p. 110]. On 25 Sept. 1916 the *New York Times* carried on its front page, amid the war news, a column headed

[6]Undoubtedly Wilder.

[7]Undoubtedly Wilder.

[8]Professor Horner has since found a 1962 departmental photograph in which the head appears in the background on top of a cabinet. Unfortunately, the details of the head are blurred. (Personal communications, 23 Oct. 1981 and 10 March 1982.)

FIG. 3—*Lithographic drawings of Cope's skull in side and front views* [28, Plates XLI and XLII combined]. *The artist has eliminated evidence of the removal of the brain.*

FIG. 4—*Bust of Cope created by Eugéne Castello in 1896–1897* [29, frontispiece]. *In 1920 it was donated by admirers of the scientist to the Department of Zoology, University of Pennsylvania* [30].

"Reconstructed body to solve murders." The pertinent part of the reporter's account reads as follows:

> Propped up in a chair [in the Seventh Branch Detective Bureau in Brooklyn] was the figure that was thought to resemble La Rosa. The backbone was that of a skeleton dug up on Sept. 12...

> On the skeleton had been built a wax face. A bit of hair from the floor of a barber shop made eyebrows, a wig topped the face to which paint had given a complexion. Two gold teeth found in the skeleton were in place, and an old felt hat found on the skeleton was on the head. About the neck made of a coffee can wrapped about with newspaper was the remnant of a coat found on the crumbling bones and pieced out with other cloth.
>
> The figure was just the guess of the Detective Lieutenant Grant Williams and Dr. Pecchini of the City Standard Testing Laboratory of what the man had looked like when he was alive.
>
> In the room were several suspects.... Past the figure marched persons from the Italian colony of East New York. Suddenly a women cried out: "Heavens! It is La Rosa's ghost!"
>
> Then she turned and rushed at one of the suspects and tried to strike him, crying "Why did you kill him?"

Wilder reported this case in *Personal Identification*, not on the basis of the newspaper reports, but from information obtained through correspondence with officials in the New York City Police Department [*19*, pp. 6 and 110]. I had hoped to find this correspondence in the Smith Archives. Failing in this, I can be reasonably sure only that he valued the case mainly for the evidence it gives of the potential of the face-reconstruction method to yield identifications when applied in forensic situations. He was careful not to say that it was the first such case in America, but it may have been.

This summary of the few and incomplete records of Wilder's efforts to reconstruct faces on skulls of known individuals, along with the evidence of his interest in the La Rosa case, shows that he understood the need to demonstrate the practicality of this identification method for forensic purposes. He thus anticipated by several decades the American efforts in this direction initiated in 1946 by Krogman [*26*] and still continuing [*32*, for example].

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