

C. P. Warren,<sup>1</sup> M.A.

## Verifying Identification of Military Remains: A Case Study

---

In March, 1974, the skeletal remains of 23 individuals were repatriated from Hanoi, the Democratic Republic of Vietnam, and delivered to the U.S. Army Central Identification Laboratory in Sattahip, Thailand. According to the report of the U.S. House of Representatives Select Committee on Missing Persons in Southeast Asia [7],

In 1974 the North Vietnamese returned the remains of 23 American pilots who had died in captivity. The remains were accompanied by certificates of death purporting to show the proximate cause of death, but no additional information was provided by the Vietnamese. In each of these cases the testimony of returned POW's provided sufficient information about the final days of the deceased pilots to affirm that in all likelihood they died in the manner described in the certificates of death.

According to additional reports,<sup>2</sup> all of the remains had been buried in a cemetery associated with a prisoner-of-war camp in Hanoi, and all individuals had died while prisoners, since,

In Hanoi, the DRV officials made it clear that their intent was to release at that time only the remains of those who died in captivity—none who died at the time of incident or prior to capture. Their play on words is either very vague or very specific, but their motives were clear.

### Problem

The focus of this exploratory paper is on the history of the remains, that is, the evidence of postmortem osteological modification, either natural or deliberately induced, which has been reconstructed from observations and analyses of the remains. But before the osteological processing of the remains is discussed, it might be revealing to describe the condition of the remains when they were received by the laboratory.

The remains of each individual were enclosed in a wooden box, and all of the boxes were of uniform size and recent manufacture, with fitted, sliding tops. The name (in English) and the date of death (in Vietnamese) of the individual represented by the remains were stenciled on two white cardboard sheets, and these name cards were tacked on the top of each box and at one end. In addition, the tombstone, or grave marker, also bearing the inscribed name of the individual and the date of death, accompanied each box. All of the grave markers were similar in form, design, and material, suggesting a single cemetery of origin (or at least the work of the same stonemason).

Two of the boxes were nailed together and were labeled with two names; this deviation suggested that the remains had become commingled and that the chain of identification

Presented at the 30th Annual Meeting of the American Academy of Forensic Sciences, St. Louis, Mo., February 1978. Received for publication 21 March 1978; accepted for publication 2 May 1978.

<sup>1</sup>Associate professor of anthropology, Department of Anthropology, University of Illinois at Chicago Circle.

<sup>2</sup>H. T. Helgesen, personal communication, 1978.

had somehow been broken. However, it was quite obvious that considerable care had been taken to maintain the integrity of both the remains and the identification media from the time of burial to the time of transferral of the remains to the U.S. Army personnel.

In the ensuing weeks the remains were simultaneously processed in the laboratory, the commingling of the two individuals was resolved, and, following standard procedures, the case papers, in which were recorded the anthropological findings and other relevant information, were prepared for each individual [2,3]. The laboratory personnel then proceeded to compare the anthropological findings obtained from the remains with the physical/biographical data of the individuals whose names had been provided by the name cards on each box. These data were already stored in the files of the laboratory, along with the medical/dental records of all personnel having been reported as missing in action.

The results of these comparisons were positive, and all 23 individuals were identified, that is, the identities as established by the North Vietnamese were verified by laboratory procedures, and the identifications of all the remains of this group were accepted by Department of Defense officials between 3 and 22 April 1974 [4]. This information is a matter of public record. What has not been reported is that within two months the task of processing and identifying all of these repatriated remains was completed, and the problems associated with this task were simplified and reduced by the concern for detail and correct identification procedures as manifested by the North Vietnamese technicians and medical supervisors.

### **Data**

At this point it may be of value to list the kinds of data available to the laboratory personnel for any attempts to reconstruct the history of the remains. Biologically, each set of remains provided (a) the anthropological findings, that is, sex, race, dentition, age, stature, anomalies, healed fractures, evidence of trauma, and, possibly, evidence of bone disease, and (b) the condition of the remains (see Tables 1 and 2). Biographically, the accumulated records for each set of remains provided (a) the physical and dental characteristics of the individual which were a matter of record, (b) the date of birth, (c) the date of capture, (d) the exact date of death, (e) the approximations of the dates of burial and subsequent final disinterment, (f) the interment span (see Tables 3 and 4), and (g) the certificates of death as provided by the North Vietnamese medical personnel. The original certificates of death were written in Vietnamese, and translations of these documents in English were part of the allied papers.

Again, focusing upon the history of the remains, the principal unknown data were (a) the kind and extent of pre-burial processing, that is, whether the remains had been subjected to autopsy, embalming, and so forth; (b) the condition of the remains at the time of burial, that is, whether the remains were nude, clothed, wrapped in some material, boxed, or otherwise prepared for burial; (c) the nature of the soil and other environmental conditions at the site of the burials; (d) the possibilities of relocations of the burials, that is, whether the remains had been deliberately moved from one site to another for any reason; and (e) the possibilities of inadvertent disturbances of the burials during the interment span.

### **Observations**

The pre-burial (postmortem) processing, in the form of autopsies of the brains, was revealed by the saw markings on and opening the calvaria of 9 individuals in the group of 23. Comparisons of the styles of calvaria cap removals suggest the handiwork of different technicians. The certificates of death provided by the North Vietnamese did not

TABLE 1—Case numbers, interment spans, and descriptions of condition of remains of the sample, arranged sequentially.

Case	Interment Span, months	Description of Condition of Remains
0002-74	75	all long bones eroded from long period of burial in wet soil; fragmentary pelvis and vertebral column, probably because of multiple interments
0003-74	40	right radius and right ulna eroded on distal end; left and right fibulae eroded on proximal ends
0004-74	39	severe erosion of vertebral column; hand and foot phalanges missing
0005-74	37	distal ends of left and right ulnae eroded; proximal ends of left and right fibulae eroded
0006-74	91	autopsy of skull
0007-74	75	fractured left humerus and left femur; other non-measured long bones eroded
0008-74	79	autopsy of skull; left radius and left ulna eroded; right ulna eroded; both left and right tibiae eroded
0009-74	91	left ulna fractured; right radius and right ulna fractured; proximal end of right fibula eroded
0010-74	91	autopsy of skull
0011-74	78	autopsy of skull; erosion of all long bones except left femur
0012-74	46	distal ends of left and right ulnae eroded; proximal ends of left and right fibulae eroded
0013-74	82	distal end of left humerus eroded and broken; proximal end of right humerus eroded and broken; proximal end of left radius eroded and broken; proximal end of left fibula eroded and broken; evidence of plant activity
0015-74	94	autopsy of skull; no inferior limb bones present; excessive erosion and fracturing of left and right humeri at proximal thirds
0016-74	57	autopsy of skull; erosion of ribs and vertebral column; no evidence of trauma
0017-74	19	autopsy of skull; no erosion
0018-74	81	autopsy of skull; major portions of axial skeleton missing; appendicular long bones eroded
0019-74	96	left fibula eroded
0020-74	14	injury of right radius and right ulna; injury of left tibia and left fibula; remains in good condition; no erosion
0021-74	73	autopsy of skull; extreme erosion of vertebral column and rib cage
0022-74	81	all long bones eroded
0023-74	61	erosion of long bones; rib cage and vertebral column extremely eroded
0024-74	79	incomplete and fragmentary
0025-74	81	incomplete and fragmentary

mention the conducting of autopsies. However, the osteological evidence establishes the fact of autopsy, thus raising the question of permission for autopsy [5]:

Autopsies on military personnel may be ordered at the discretion of the commander of the military post. If the death occurs in any way that would ordinarily place it in the category of a medical examiner's case, it is usually subject to the jurisdiction of the local medical examiner within the United States. Again it is necessary to consult local laws (and treaty agreements with foreign countries) before proceeding with an autopsy.

With or without permission, the North Vietnamese scientists had performed autopsies on nine of the cadavers of this sample. Geneva Convention Article 17 [6-9] decrees that

Burial or cremation of the dead . . . is preceded by a careful examination, if possible by a *medical examination*, of the bodies, with a view to confirming death, establishing identity and enabling a report to be made [*italics added*].

TABLE 2—Case numbers, interment spans, and descriptions of condition of remains of the sample, arranged by interment span.

Case	Interment Span, months	Description of Condition of Remains
0020-74	14	injury of right radius and right ulna; injury of left tibia and left fibula; remains in good condition; no erosion
0017-74	19	autopsy of skull; no erosion
0005-74	37	distal ends of left and right ulnae eroded; proximal ends of left and right fibulae eroded
0004-74	39	severe erosion of vertebral column; hand and foot phalanges missing
0003-74	40	right radius and ulna eroded on distal end; left and right fibulae eroded on proximal ends
0012-74	46	distal ends of left and right ulnae eroded; proximal ends of left and right fibulae eroded
0016-74	57	autopsy of skull; erosion of ribs and vertebral column; no evidence of trauma
0023-74	61	erosion of long bones; rib cage and vertebral column extremely eroded
0021-74	73	autopsy of skull; extreme erosion of vertebral column and rib cage
0007-74	75	fractured left humerus and left femur; other non-measured long bones eroded
0002-74	75	all long bones eroded from long period of burial in wet soil; fragmentary pelvis and vertebral column, probably because of multiple interments
0011-74	78	autopsy of skull; erosion of all long bones except left femur
0024-74	79	incomplete and fragmentary
0008-74	79	autopsy of skull; left radius and left ulna eroded; right ulna eroded; left and right tibiae eroded
0025-74	81	incomplete and fragmentary
0018-74	81	autopsy of skull; major portions of axial skeleton missing; appendicular long bones eroded
0022-74	81	all long bones eroded
0013-74	82	distal end of left humerus eroded and broken; proximal end of right humerus eroded and broken; proximal end of left radius eroded and broken; proximal end of left fibula eroded and broken; evidence of plant activity
0006-74	91	autopsy of skull
0010-74	91	autopsy of skull
0009-74	91	left ulna fractured; right radius and right ulna fractured; proximal end of right fibula eroded
0015-74	94	autopsy of skull; no inferior limb bones present; excessive erosion and fracturing of left and right humeri at proximal thirds
0019-74	96	left fibula eroded

Autopsy is not mentioned in Geneva Convention documents, but the osteological evidence indicates that this kind of examination was performed (see Table 2).

Further preparation of the remains prior to burial is best extrapolated from the ethnographic data. Vietnamese war dead are not embalmed—military remains are washed and wrapped in cloth shrouds prior to being placed in wooden burial boxes. No disinfectants or preservatives are used. These data also describe the condition of the remains at the time of burial. Degree of trauma experienced by the individual prior to death should also receive some consideration at this point, for the rate of decomposition of both soft and hard tissues is influenced by the kind and extent of trauma the body has undergone.

The soil conditions of the site of the burials may be treated as a constant, since it appears that all individuals of the sample were buried in the same cemetery. If such was the case, then the effect of the burial environment was influentially similar on all sets of remains buried at the site.

TABLE 3—Case numbers, dates of birth, dates of death, ages at time of death, approximate dates of interment, and approximate dates of disinterment of sample, arranged sequentially.

Case	Date of Birth	Date of Death	Age at Death	Approximate Date of Interment	Approximate Date of Disinterment
0002-74	10 Mar 1921	18 Nov 1967	46y 8m 8d	Nov 1967	Feb 1974
0003-74	09 Aug 1928	04 Oct 1970	42y 1m 25d	Oct 1970	Feb 1974
0004-74	29 Aug 1934	05 Nov 1970	36y 2m 6d	Nov 1970	Feb 1974
0005-74	06 May 1939	14 Jan 1971	31y 8m 8d	Jan 1971	Feb 1974
0006-74	20 Jan 1934	21 Jul 1966	32y 6m 1d	Jul 1966	Feb 1974
0007-74	09 Jun 1933	08 Nov 1967	34y 4m 29d	Nov 1967	Feb 1974
0008-74	01 May 1935	22 Jul 1967	32y 2m 21d	Jul 1967	Feb 1974
0009-74	31 Jul 1925	26 Jul 1966	40y 11m 25d	Jul 1966	Feb 1974
0010-74	04 Jun 1926	24 Jul 1966	40y 1m 20d	Jul 1966	Feb 1974
0011-74	07 Jul 1926	31 Aug 1967	41y 1m 24d	Aug 1967	Feb 1974
0012-74	21 Oct 1933	23 Apr 1970	36y 6m 2d	Apr 1970	Feb 1974
0013-74	04 Apr 1942	25 Apr 1967	25y 0m 21d	Apr 1967	Feb 1974
0015-74	20 Aug 1927	27 Apr 1966	38y 8m 7d	Apr 1966	Feb 1974
0016-74	03 Mar 1934	18 May 1969	35y 2m 15d	May 1969	Feb 1974
0017-74	13 Dec 1923	19 Jul 1972	48y 7m 6d	Jul 1972	Feb 1974
0018-74	27 Dec 1932	21 May 1967	34y 4m 24d	May 1967	Feb 1974
0019-74	14 Aug 1932	04 Feb 1966	33y 5m 20d	Feb 1966	Feb 1974
0020-74	01 Sep 1930	26 Dec 1972	42y 3m 25d	Dec 1972	Feb 1974
0021-74	13 Apr 1942	22 Jan 1968	25y 9m 9d	Jan 1968	Feb 1974
0022-74	06 Feb 1926	21 May 1967	41y 3m 15d	May 1967	Feb 1974
0023-74	18 Jul 1931	16 Jan 1969	37y 5m 28d	Jan 1969	Feb 1974
0024-74	14 Mar 1929	12 Jul 1967	38y 3m 28d	Jul 1967	Feb 1974
0025-74	10 Jun 1939	20 May 1967	27y 11m 10d	May 1967	Feb 1974

TABLE 4—Case numbers, dates of capture, dates of death, approximate dates of interment, approximate dates of disinterment, and interment spans of sample, arranged sequentially.

Case	Date of Capture	Date of Death	Date of Interment	Date of Disinterment	Interment Span
0002-74	18 Nov 1967	18 Nov 1967	Nov 1967	Feb 1974	6y 3m = 75m
0003-74	18 May 1967	04 Oct 1970	Oct 1970	Feb 1974	3y 4m = 40m
0004-74	05 Nov 1967	05 Nov 1970	Nov 1970	Feb 1974	3y 3m = 39m
0005-74	15 Jul 1966	14 Jan 1971	Jan 1971	Feb 1974	3y 1m = 37m
0006-74	19 Jul 1966	21 Jul 1966	Jul 1966	Feb 1974	7y 7m = 91m
0007-74	07 Nov 1967	08 Nov 1967	Nov 1967	Feb 1974	6y 3m = 75m
0008-74	18 Jul 1967	22 Jul 1967	Jul 1967	Feb 1974	6y 7m = 79m
0009-74	23 Jul 1966	26 Jul 1966	Jul 1966	Feb 1974	7y 7m = 91m
0010-74	23 Jul 1966	24 Jul 1966	Jul 1966	Feb 1974	7y 7m = 91m
0011-74	01 Sep 1966	31 Aug 1967	Aug 1967	Feb 1974	6y 6m = 78m
0012-74	28 Apr 1965	23 Apr 1970	Apr 1970	Feb 1974	3y 10m = 46m
0013-74	25 Apr 1967	25 Apr 1967	Apr 1967	Feb 1974	6y 10m = 82m
0015-74	20 Apr 1966	27 Apr 1966	Apr 1966	Feb 1974	7y 10m = 94m
0016-74	12 Aug 1967	18 May 1969	May 1969	Feb 1974	4y 9m = 57m
0017-74	07 Dec 1965	19 Jul 1972	Jul 1972	Feb 1974	1y 7m = 19m
0018-74	19 May 1967	21 May 1967	May 1967	Feb 1974	6y 9m = 81m
0019-74	26 Jan 1966	04 Feb 1966	Feb 1966	Feb 1974	8y 0m = 96m
0020-74	20 Dec 1972	26 Dec 1972	Dec 1972	Feb 1974	1y 2m = 14m
0021-74	09 Nov 1967	22 Jan 1968	Jan 1968	Feb 1974	6y 1m = 73m
0022-74	20 May 1967	21 May 1967	May 1967	Feb 1974	6y 9m = 81m
0023-74	25 Nov 1968	16 Jan 1969	Jan 1969	Feb 1974	5y 1m = 61m
0024-74	05 Jul 1967	12 Jul 1967	Jul 1967	Feb 1974	6y 7m = 79m
0025-74	19 May 1967	20 May 1967	May 1967	Feb 1974	6y 9m = 81m

Relocations of the burials generally become significant only after the wooden burial boxes have decayed, thus producing a situation in which the remains must be removed directly from the soil. Loss of anatomical parts occurs most frequently under these circumstances, especially when the work of disinterment is done by untrained laborers.

Inadvertent disturbance of the burials during their interment span is verified by the previously mentioned commingling of two sets of remains. Helgesen, the former chief of the U.S. Army Central Identification Laboratory, writes,<sup>3</sup>

The reason given by Hanoi for the commingling is, "On the night of 27 December 1972, a U.S. B-52 dropped bombs hitting the graves of W— and D— [deletions mine]. The majority of their remains was lost. A number of bones was collected, divided into two parts according to different colors, and brought to a cemetery in Ha Bac Province on 2 January 1973."

This statement provides a description of at least one inadvertent disturbance of the remains in the sample, and the statement further documents the efforts of the Vietnamese technicians to segregate and reassemble the remains of the two original individuals, in spite of the paucity of the remains (see Table 2, 0024-74 and 0025-74).

The condition of the remains as related to the interment span offers some additional clues (see Table 2). Logically, the bony structures of the remains which have been buried the longest period of time should exhibit the most erosion. Rate of erosion may be roughly estimated from two distinct but interrelated sources of data: (a) the overall condition of the remains as described by the investigator during laboratory processing and (b) the number of intact appendicular long bones which are measurable in the laboratory for the subsequent estimation of stature. Only the former is under consideration in this paper (see Tables 1 and 2), and the data do not support the assumption that the erosion rate is uniform in this sample. Further examination and comparisons of the data recorded in Tables 1 through 4 suggest additional correlations which are not within the scope of this paper.

### Summary

The processing and reprocessing of repatriated remains of military personnel in the U.S. Army Central Identification Laboratory, Thailand, were a complex set of laboratory and administrative procedures. These procedures had been standardized and systematized to comply with the requirements of the case papers generated for each set of remains examined. Supplementary osteological data, obtained during laboratory examination but not requested by the standard forms, revealed additional information that suggested that the history of the remains was somewhat different from the accounts reported in the accompanying records or in the accounts related by the former inmates of the prison camps in North Vietnam.

### References

- [1] *Americans Missing in Southeast Asia*, final report together with additional and separate views of the Select Committee on Missing Persons in Southeast Asia, United States House of Representatives, Union Calendar No. 884, Washington, D.C., 1976, p. 212.
- [2] *Handling of Deceased Personnel in Theaters of Operations*, FM 10-63, Departments of the Army, the Navy, and the Air Force, Washington, D.C., 1959.
- [3] *Identification of Deceased Personnel*, TM 10-286, Department of the Army, Washington, D.C., 1964.
- [4] "Status Summary," Department of the Army, United States Army Central Identification Laboratory, Thailand, 1 May 1974 (unpublished and unclassified).
- [5] Weber, D. L., Fazzini, E. P., and Reagan, T. J., *Autopsy Pathology Procedure and Protocol*, Charles C Thomas, Springfield, Ill., 1973, p. 3.

<sup>3</sup> Personal communication, 1978.

- [6] Melman, S., Baron, M., Connely, E., and Ely, D., *In the Name of America*, Turnpike Press, Annadale, Va., 1968, p. 40.
- [7] Pictet, J. S., *Geneva Convention*, Vol. 1, Geneva International Committee of the Red Cross, 1949.
- [8] Pictet, J. S., *Geneva Convention*, Vol. 2, Geneva International Committee of the Red Cross, 1960.
- [9] Randle, R. F., *The Resettlement of the Indochinese War*, Princeton University Press, Princeton, N.J., 1969.

Address requests for reprints or additional information to  
Charles P. Warren  
Department of Anthropology  
University of Illinois at Chicago Circle  
Box 4348  
Chicago, Ill. 60680