

FORENSIC ANTHROPOLOGY: CURRENT ISSUES IN HUMAN OSTEOLOGY AND IDENTIFICATION OF UNKNOWN HUMAN REMAINS

Donna C. Boyd, Ph. D., D-ABFA

Professor of Anthropological Sciences

Co-Director, RU Forensic Science
Institute, Radford University, VA

- ▣ What is Forensic Anthropology?
- ▣ What Kind of Training Does a Forensic Anthropologist Have?
- ▣ What are the Myths About Forensic Anthropology?
- ▣ What are the Goals of Forensic Anthropology?

Mass Fatality Incidents



Mass Disasters



Forensic Anthropological Stages of Investigation

- ▣ Field Reconnaissance
- ▣ Laboratory Curation and Analysis



Determination of Forensic Significance



Differentiating Human from Non-Human Bone (Comparative Osteology)

- Size
- Maturity
- Density
- Morphology
- Function
- Histology



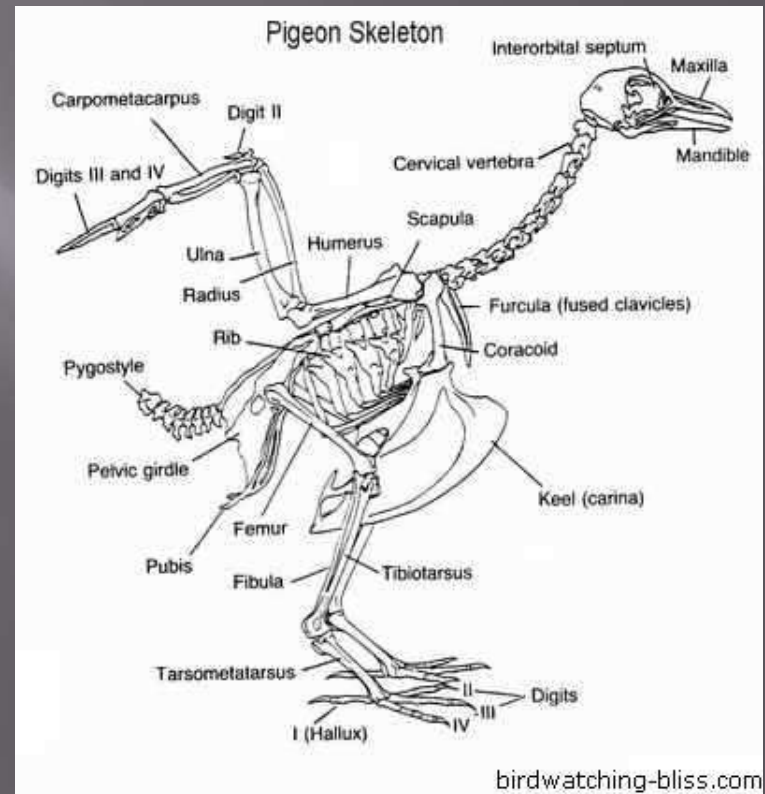
Mammals

Similar basic mammalian skeleton...BUT

- Locomotion differences (bipedal vs. quadrupedal)
- Retention or loss of clavicle
- Fused postcranial bones
- Metapodials (e.g., Artiodactyls)
- Baculum

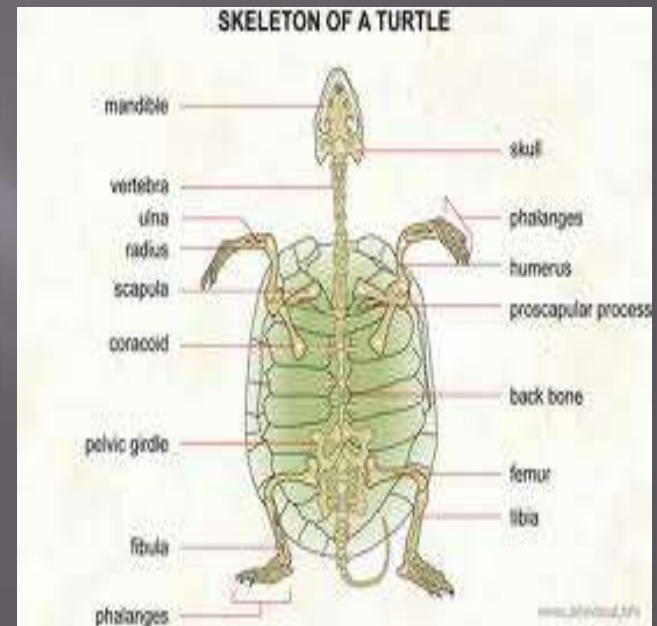
Birds

- ❑ Fewer bones
- ❑ Fusion of bones
- ❑ Less dense bones (hollow)
- ❑ Smooth cortical bone
- ❑ Shape differences



Reptiles

- ❑ Ball and socket joints in vertebrae
- ❑ Multiple bones in lower jaw
- ❑ Homodont dentition
- ❑ Thick postcranial bones
- ❑ No epiphyses
- ❑ No human-like muscle attachments



Commonly Confused Human vs. Non-human

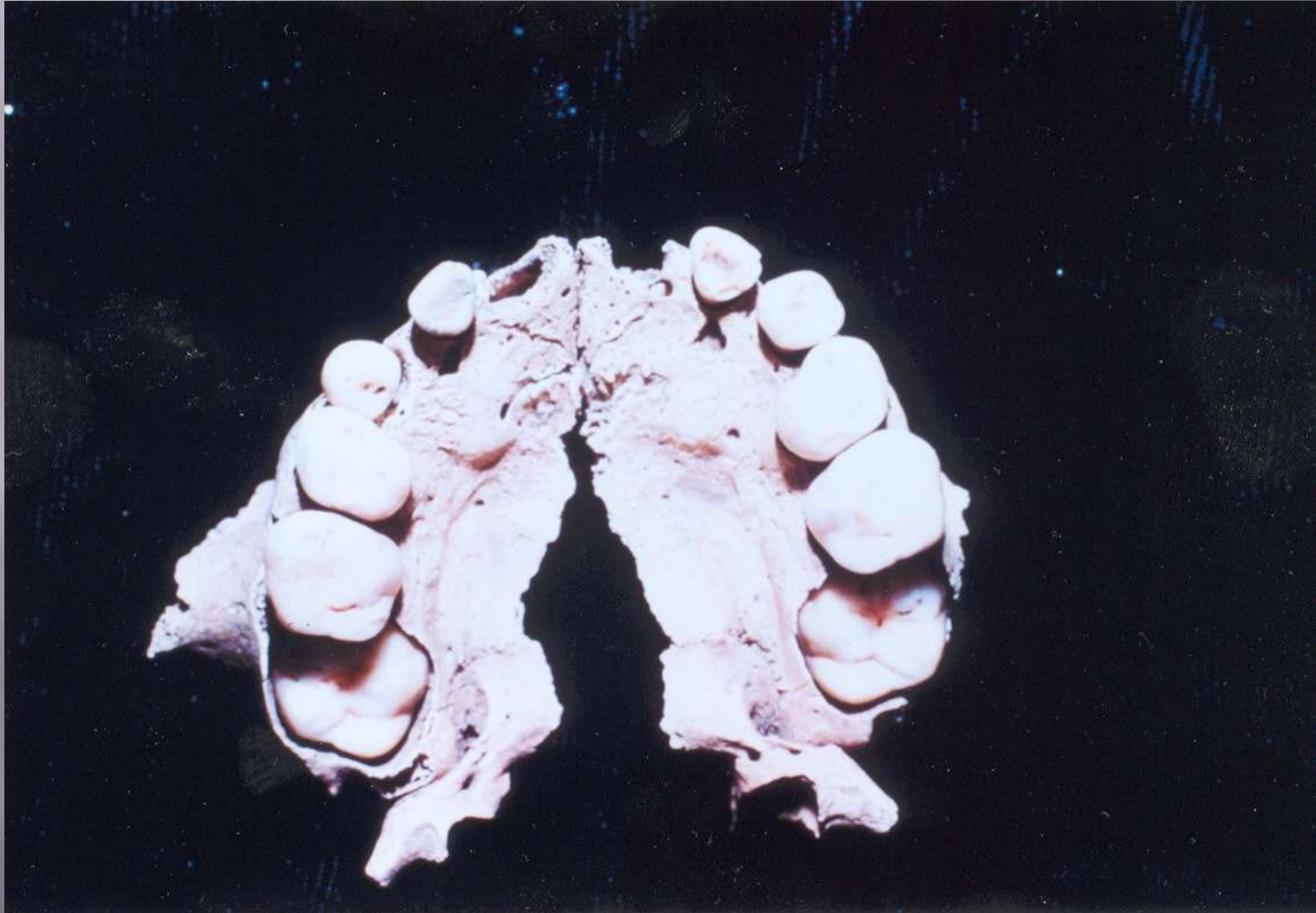
- ▣ Bear Paws
- ▣ Pig Molars
- ▣ Pig “Knees”
- ▣ Turtle Shells



Bone Inventory and MNI

Biological Profile

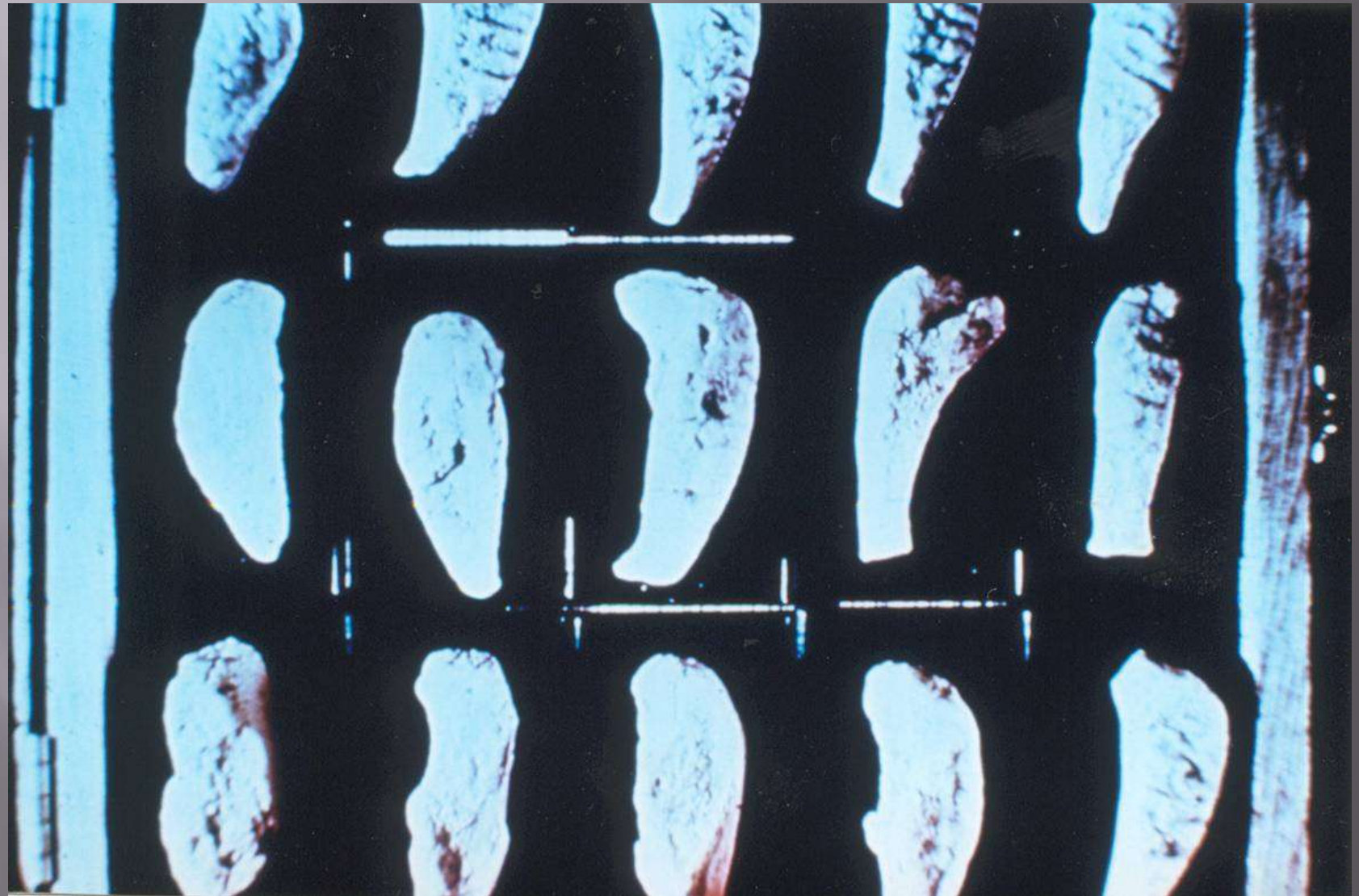
Subadult Age: Dental



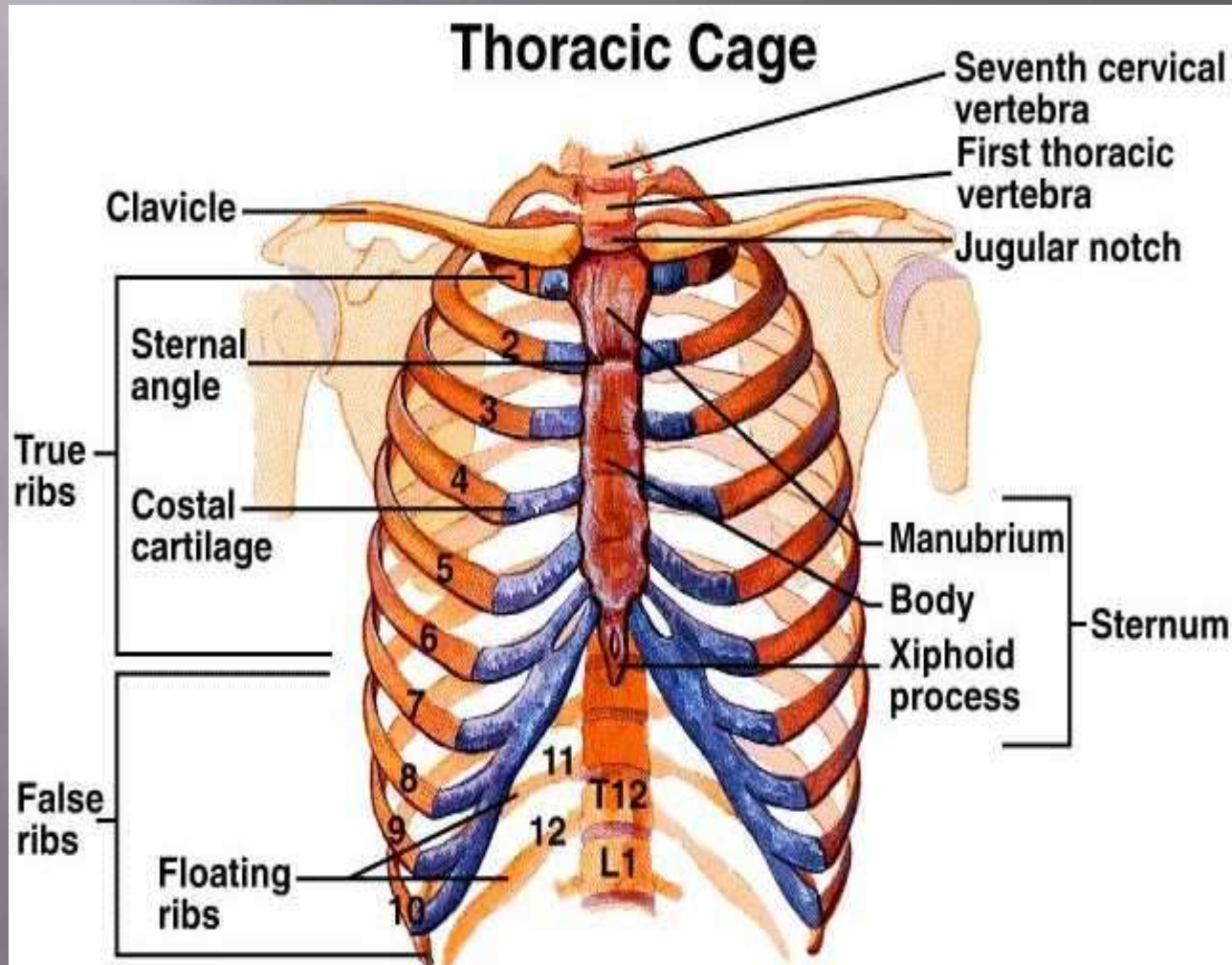
Subadult Age:
Epiphyseal Fusion

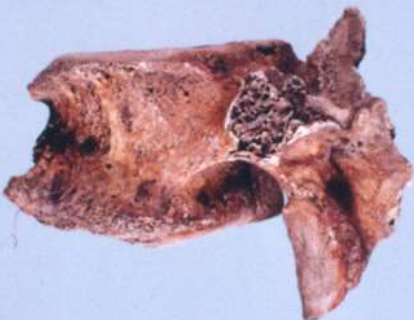


Adult Age: Pubic Symphyses



Adult Age: Sternal Rib Degeneration

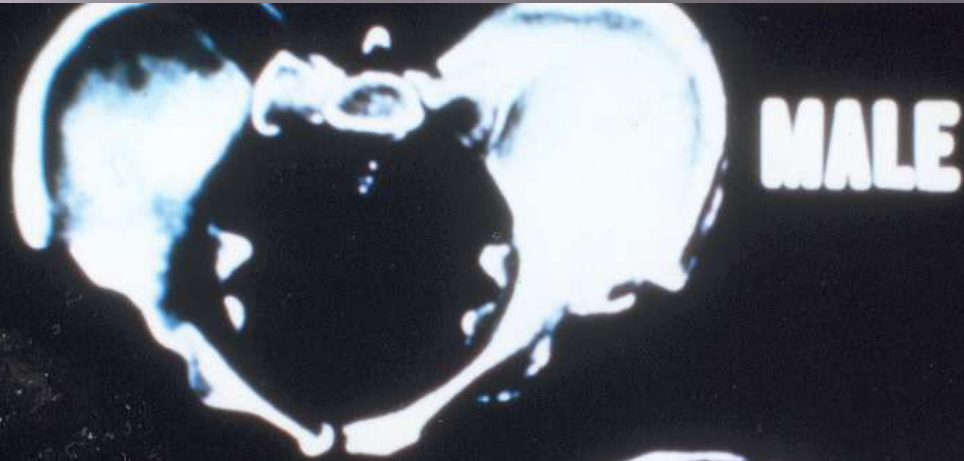




Adult Age: Osteon Counting



Determination of Sex



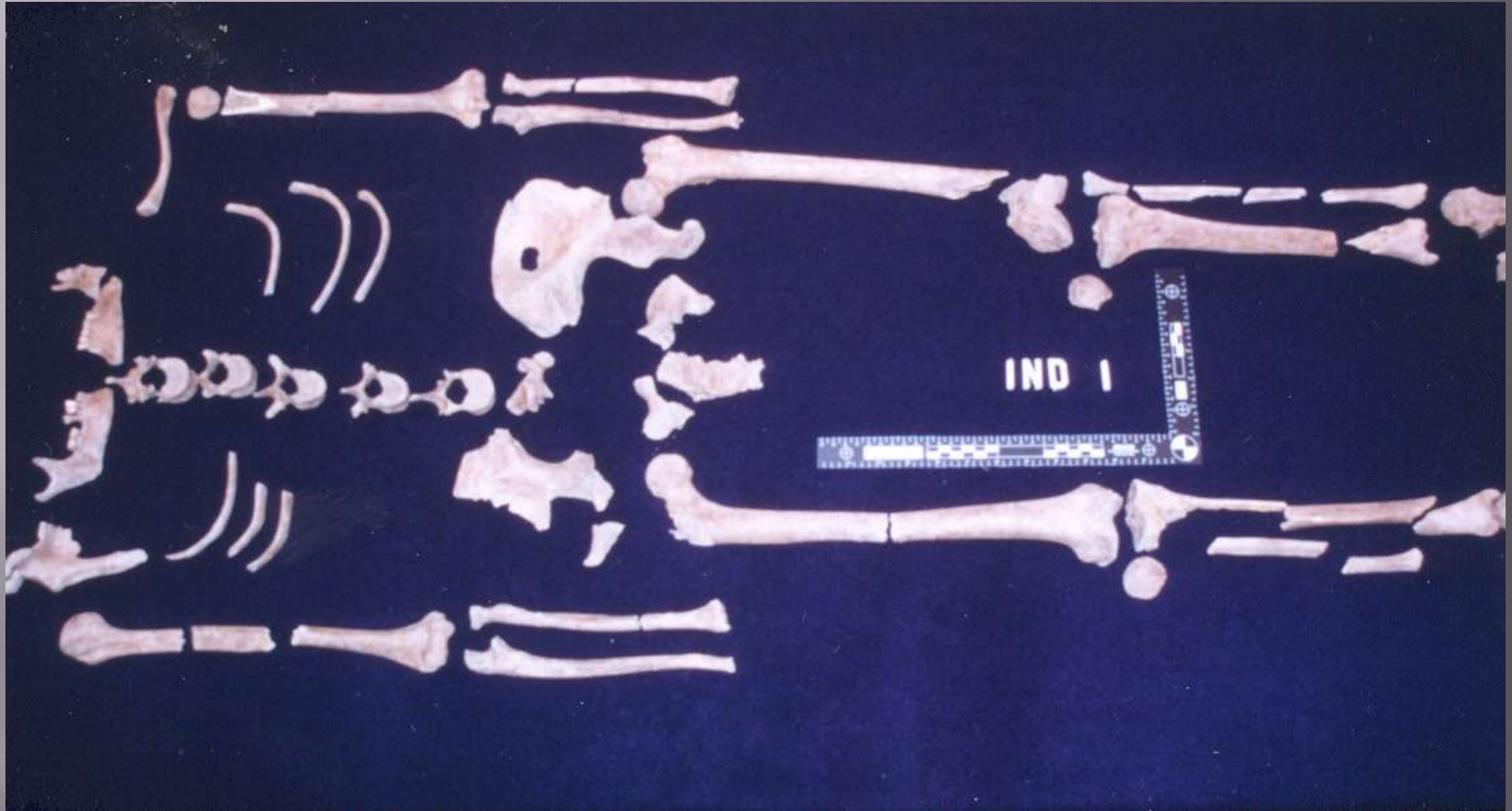
Determination of Sex, Ancestry



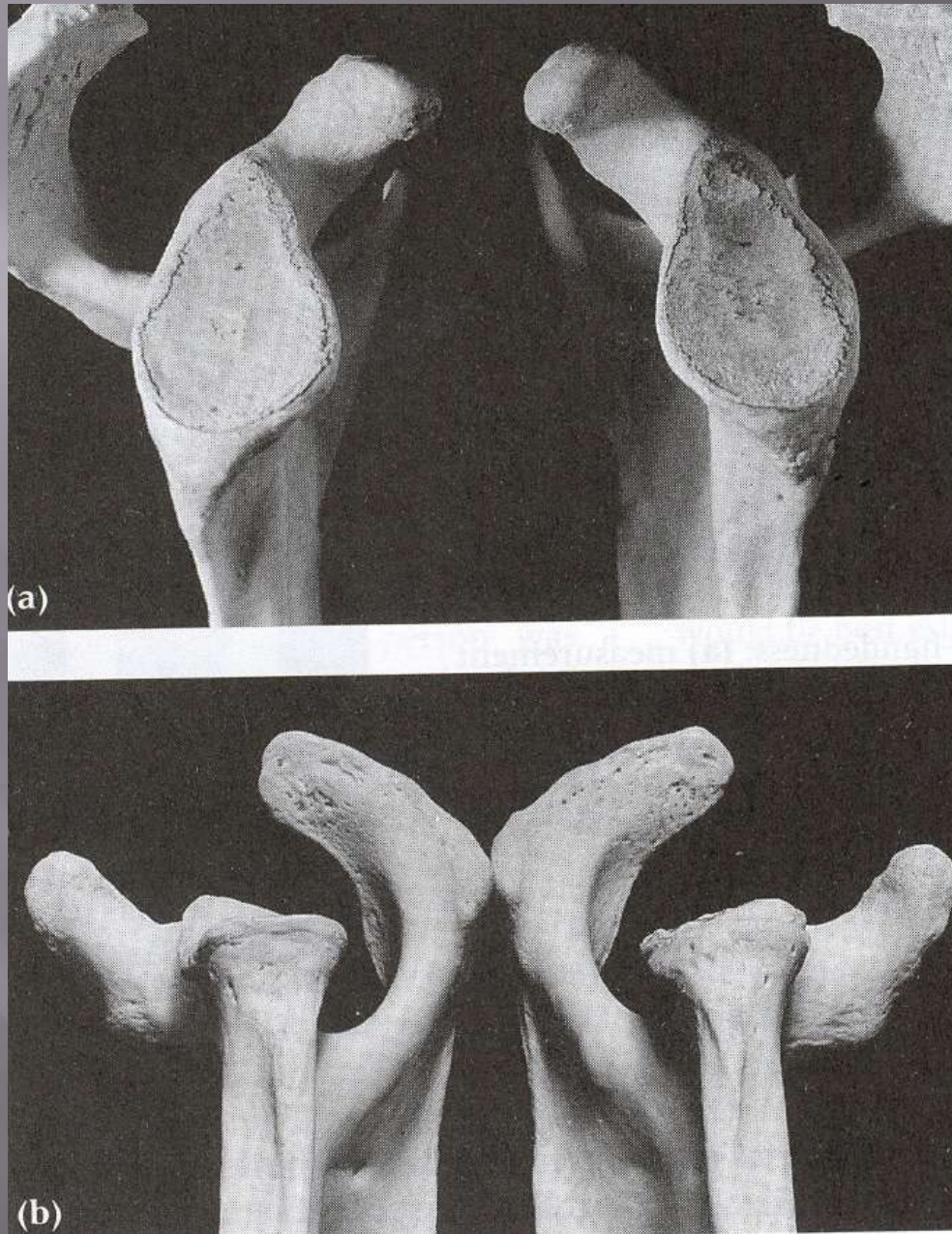
▣ Stature
determination



Body Weight



▣ Handed-
ness



Markers of Occupational Stress



Individuation

Requirements for Individuation

- ▣ A Suspected Identity
- ▣ Antemortem Records for the Suspected Identity, such as:
 - written documents
 - photographs
 - radiographs
 - memories of survivors

Levels of Identification

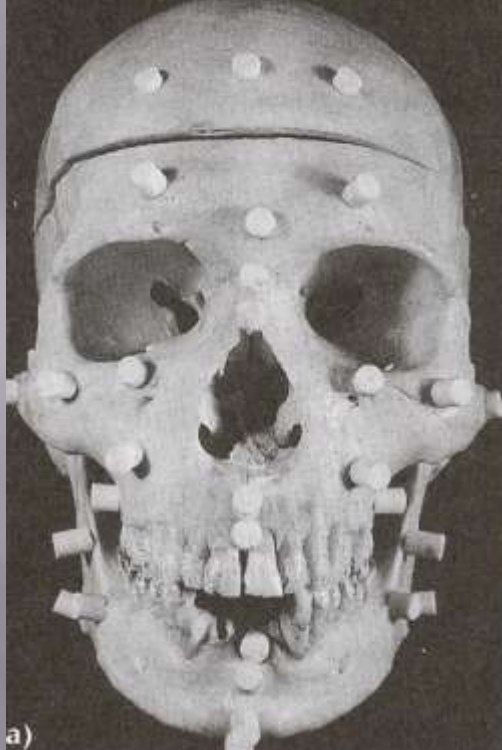
- ▣ Tentative ID
- ▣ ID by Preponderance of Evidence
- ▣ ID by Exclusion
- ▣ Positive ID

Tentative ID



ID by Preponderance of Evidence





a)



(b)



a)



(b)



Fig. 7-3. A (above)—CARES reconstruction from skull of female next to actual photo, after identification was made; B (below)—CARES reconstruction from skull of unidentified female.

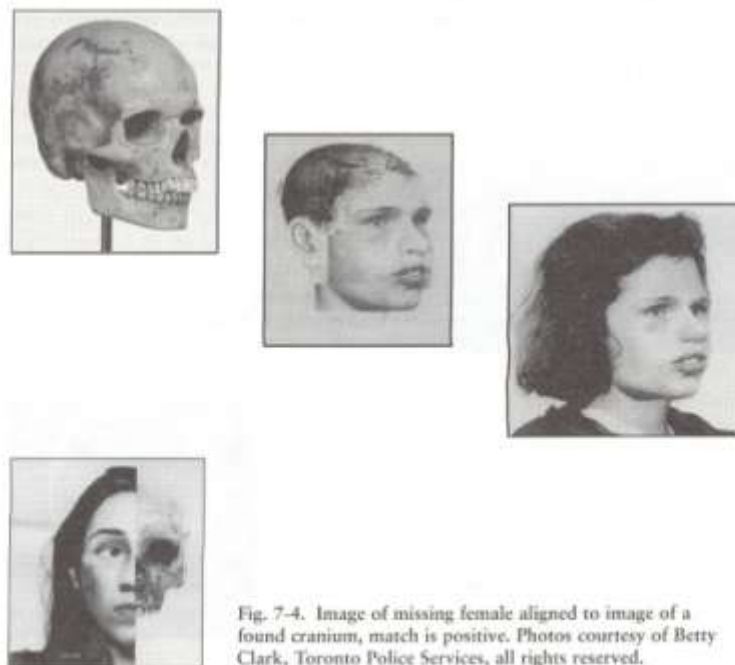


Fig. 7-4. Image of missing female aligned to image of a found cranium, match is positive. Photos courtesy of Betty Clark, Toronto Police Services, all rights reserved.

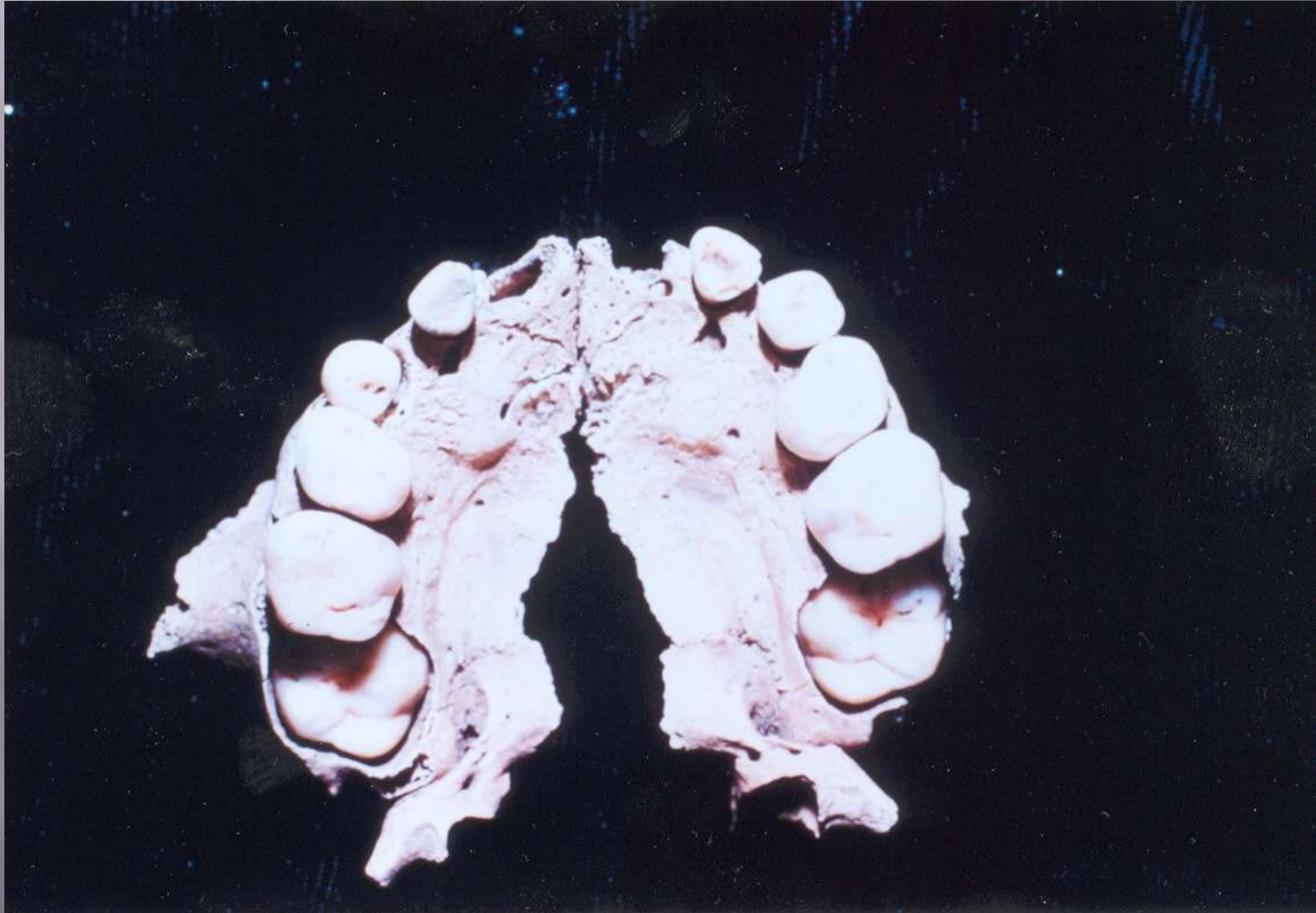
ID BY EXCLUSION

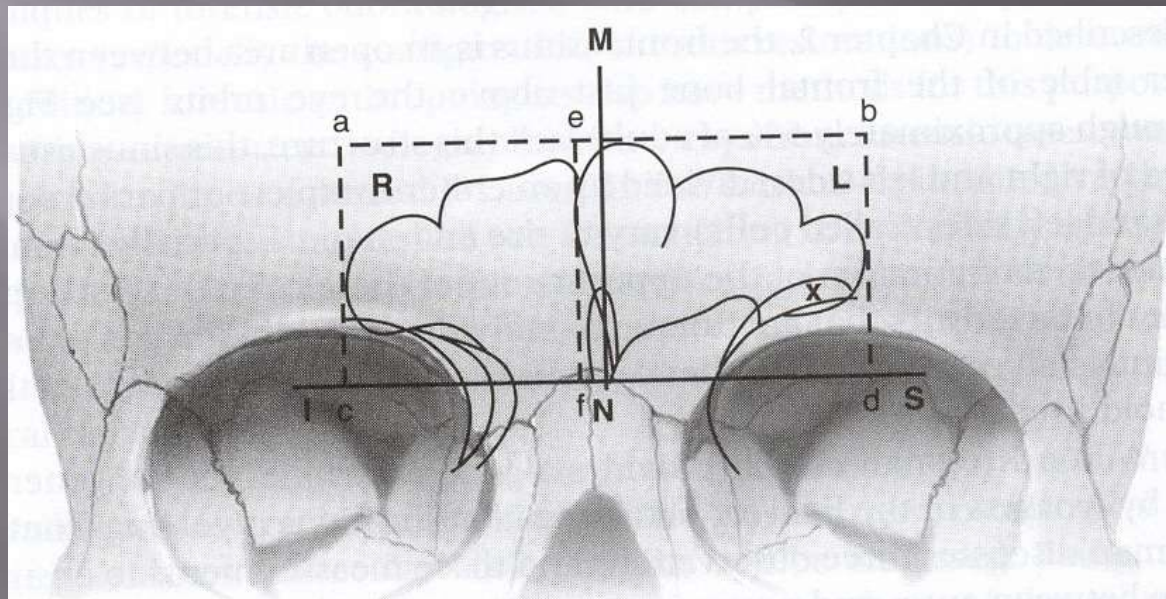
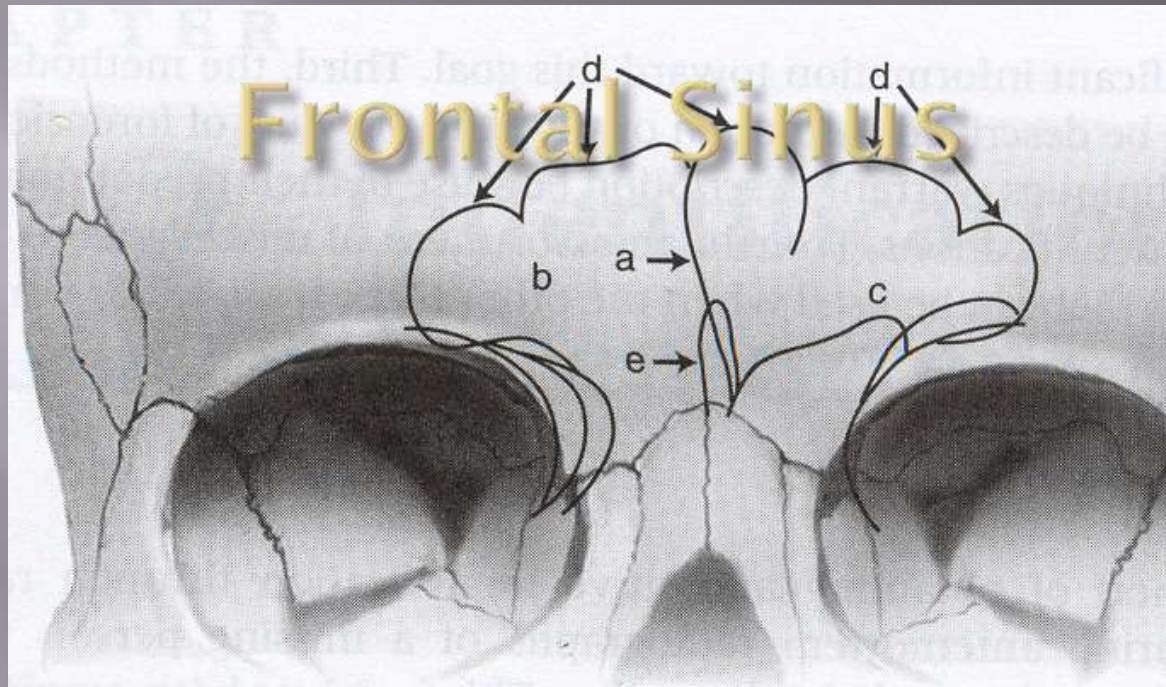
“Everybody else is accounted for”



Positive ID

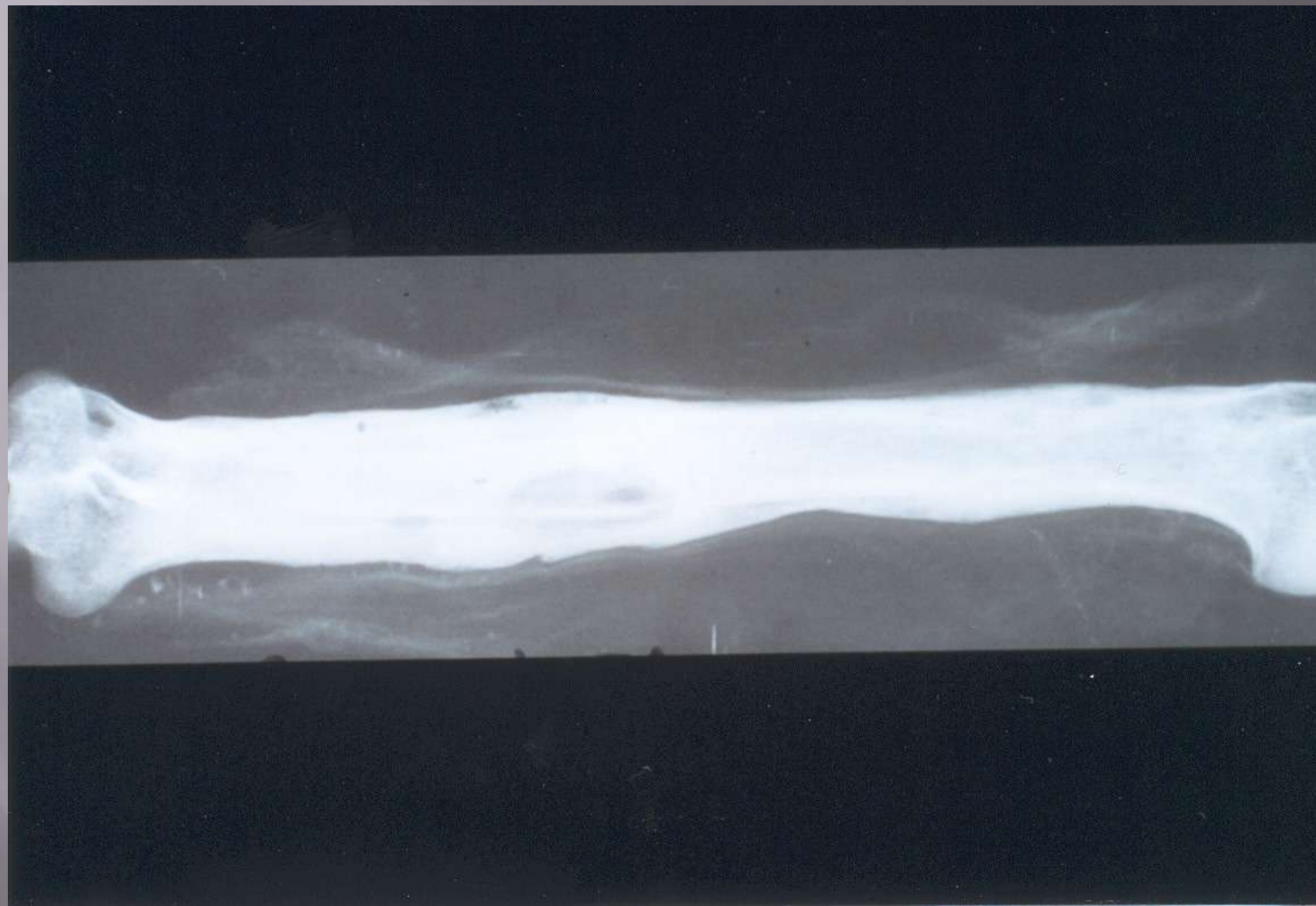
Dental IDs

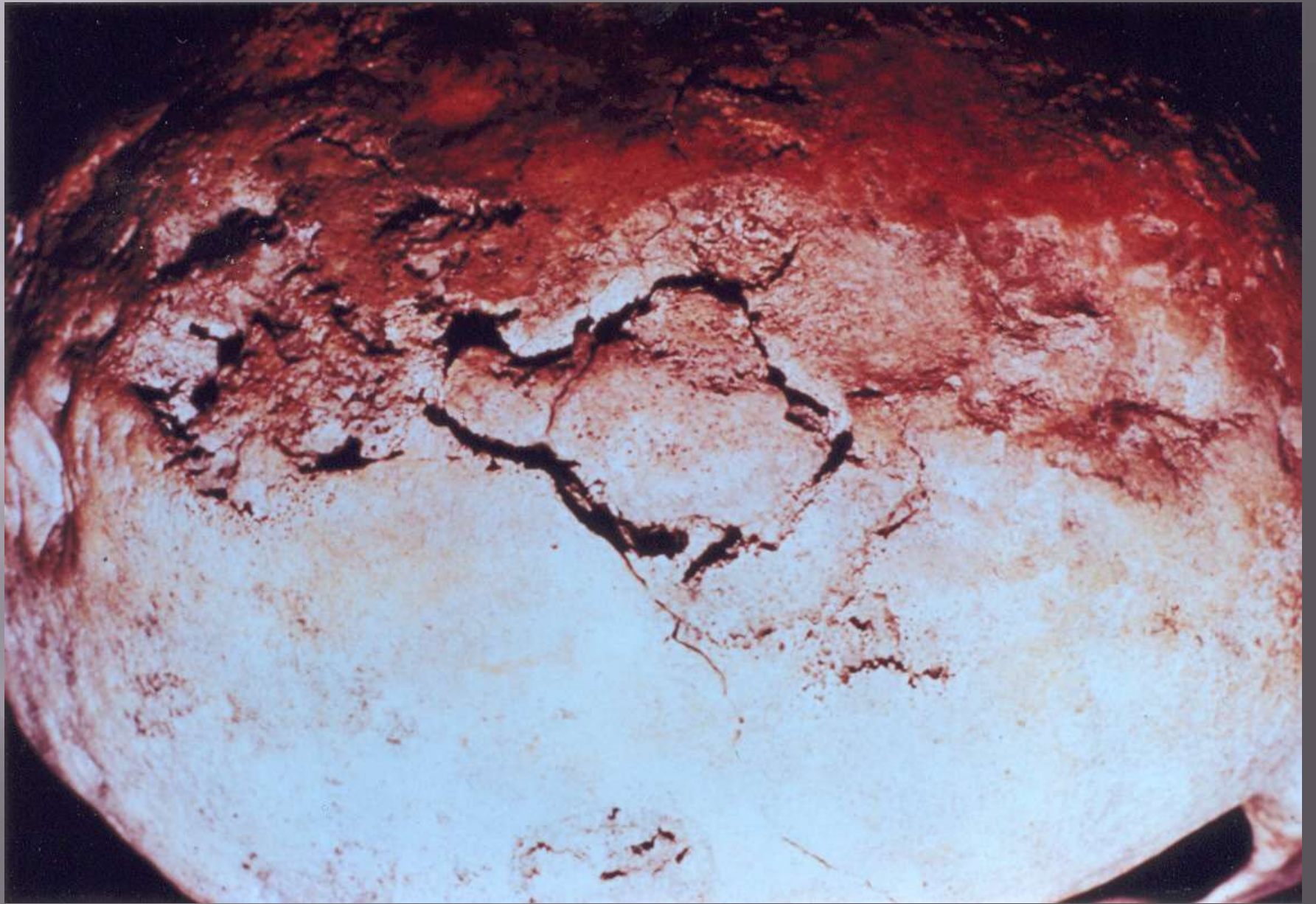




Antemortem Pathologies

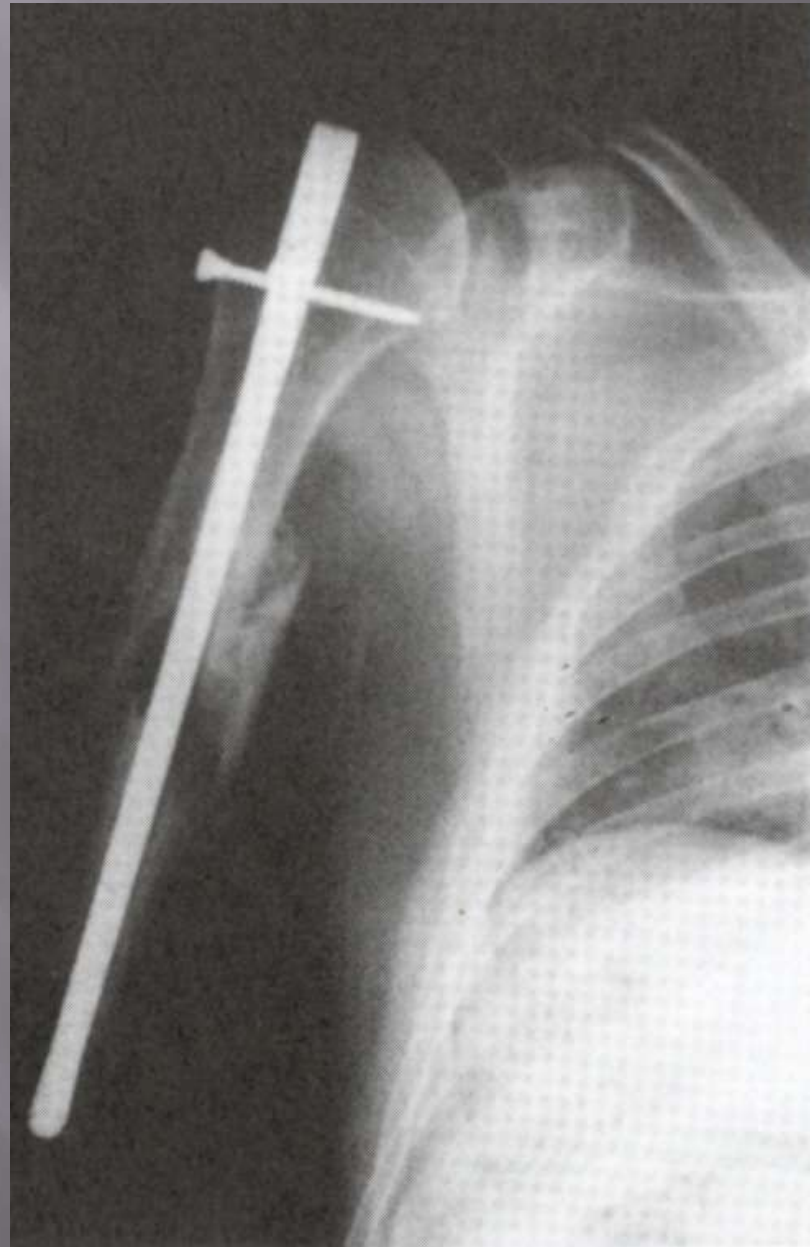




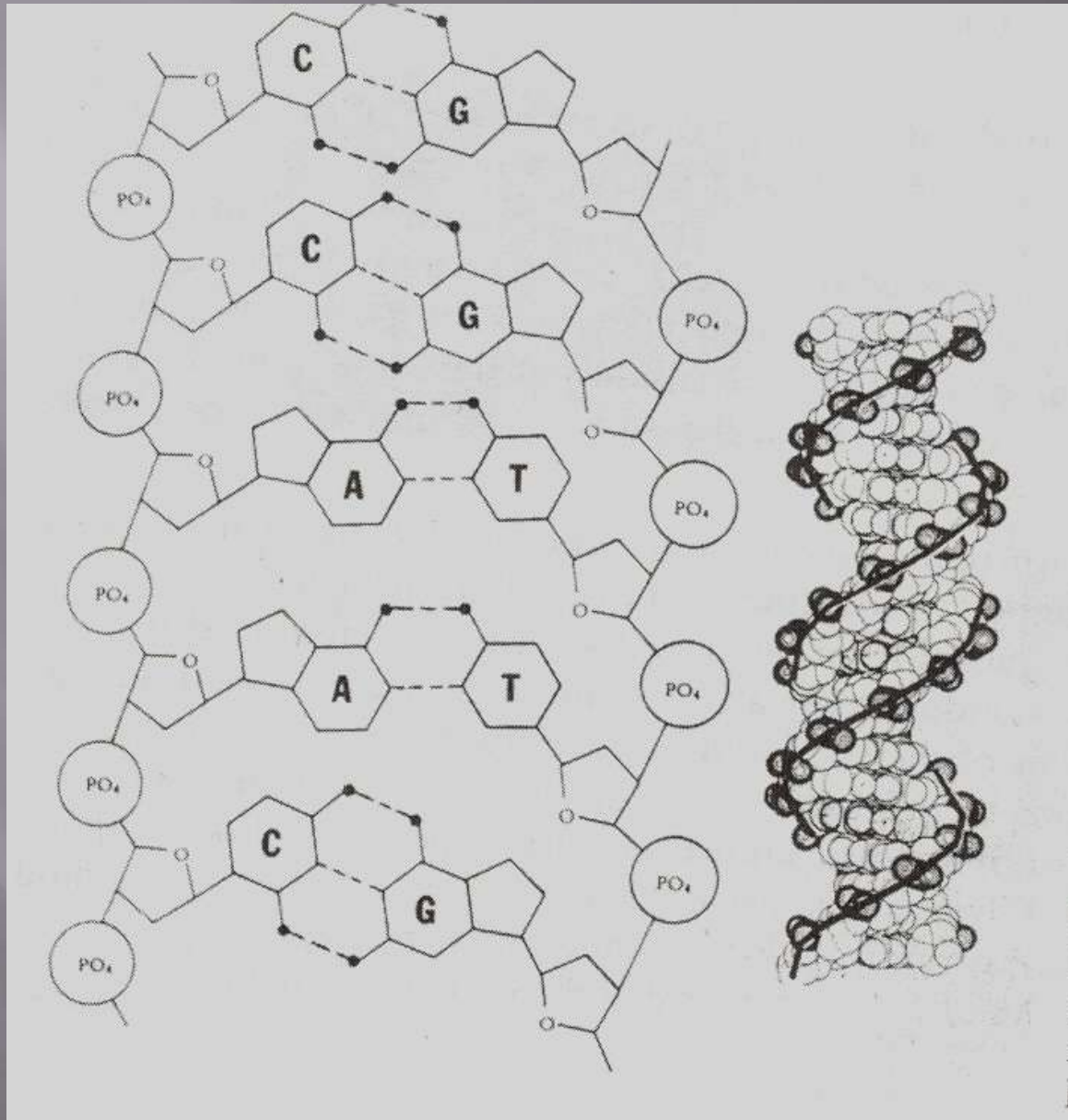








▣ DNA



New Perspectives in Forensic Anthropology (Dirkmaat et al. 2008)

- ▣ Quantitative methods
- ▣ Forensic Taphonomy
- ▣ Forensic Archaeology
- ▣ Human Skeletal Trauma Analysis
- ▣ DNA
- ▣ Impact of Daubert

CASE STUDIES











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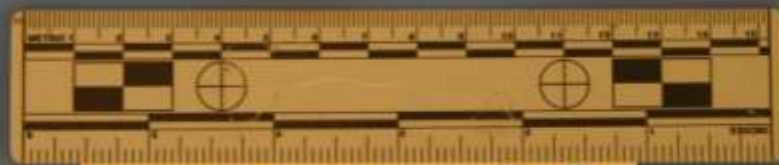
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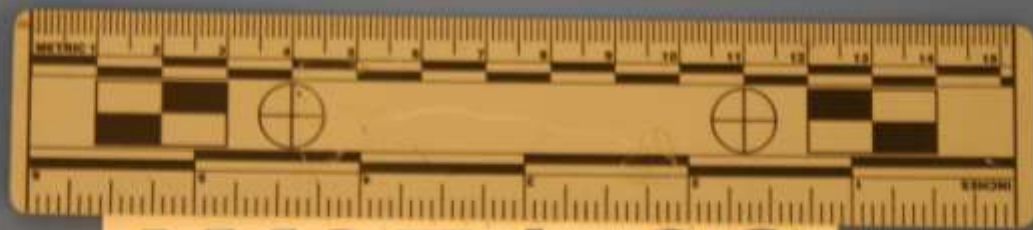
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