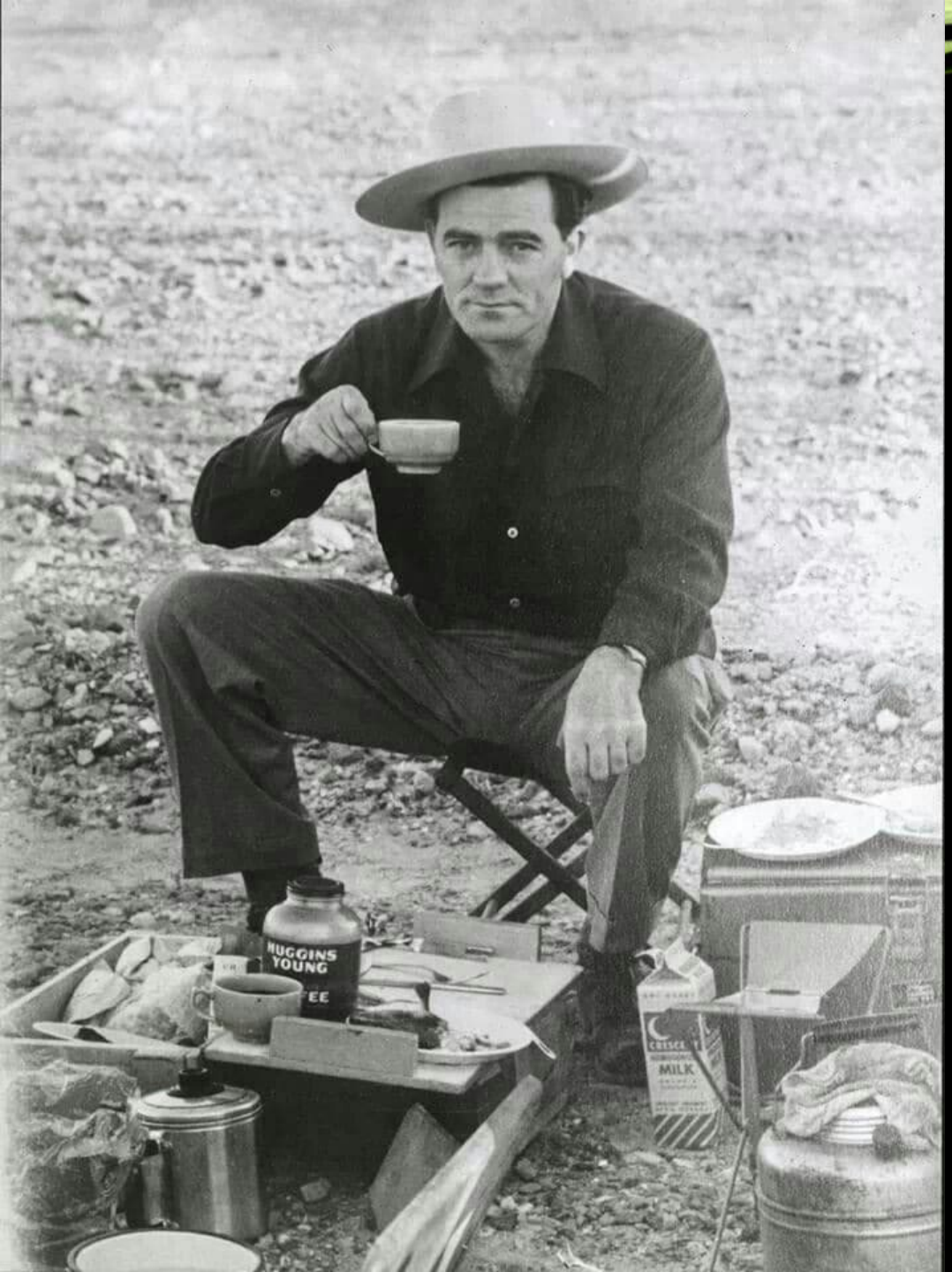


PHILOSOPHY

Education should provide the tools for a widening and deepening of life, for increased appreciation of all one sees or experiences. It should equip a person to live well, to understand what is happening about her or him, for to live well one must live with awareness.

- **Louis L'Amour**

GEOLOGY IN THE FIELD

Dr. Chad Heinzel
UNI – Earth and Environmental Sciences

GEOLOGY BEGINS AND ENDS IN THE FIELD

1. The Earth is a dynamic planet, to understand it you must keenly observe it, continuously.
2. Earth structures and materials are most easily identified when seen in the field (with related features). Humans rely on natural resources. Human are impacted by structures through geohazards.
3. Interpretations made in the field may be checked immediately.
4. Poor field work leads to useless lab work, research and planning.
5. Geologic fieldwork leads to new discoveries.

IMPORTANCE OF GEOLOGY

It has been the aim of the Survey to collect and furnish trustworthy information, the fullest possible, relative to the geological structure and resources of Iowa; but while the purely economic side of the subject has necessarily been emphasized in all the work so far done, any facts that could make knowledge clearer, broader, more definite, have not been neglected. . . . The pure science of today becomes the basis of the applied science of tomorrow, and enlightened states, the world over, realize that money expended for the prosecution and encouragement of scientific research, is money well invested. By the substitution of definite knowledge for vague uncertainty relative to water supplies . . . and all other natural products, the Survey has saved to the citizens of Iowa, many times over, all that the Survey has cost.

1909, Samuel Calvin

Trustworthy information

Economic means, but holistic worth

Pure science of today, basis of applied science tomorrow

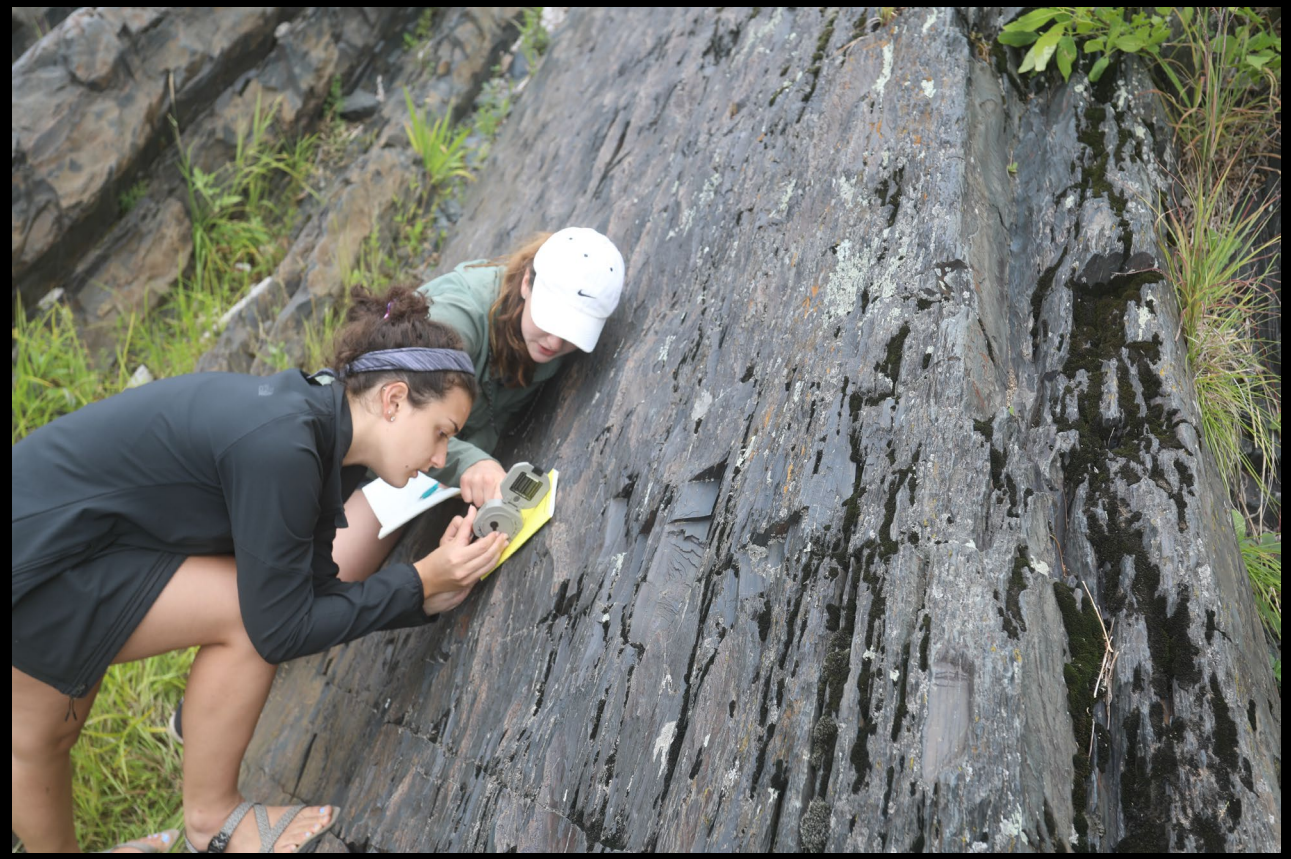
The survey benefits our civilization

FIELD GEOLOGY IS DIVERSE

- Environmental
- Hydrologic
- Pedologic
- Surficial sediments
- Structural
- Bedrock
  - Sedimentary
  - Metamorphic
  - Igneous

FIELD OBSERVATIONS ARE BASED ON…

- Direct observations and measurements
- Interpretations from a combination of past to current work, lab work, content knowledge and experience.
- Age relations (time and space) Relative and absolute)



PRIMARY FIELD PRODUCTS

1. Field notes and measurements
2. Field samples
3. Geologic maps
4. Stratigraphic sections

FIELDWORK COMPLICATIONS

1. Scale variations: Space and time
2. Incomplete or altered geology
   a. Unconformities
   b. Weathering/erosion
   c. Anthropogenic changes
3. Lack of OR poor exposures
4. Field work can be expensive an may be dangerous

FIELD WORK IS FOR EVERYONE - LEVELS

FIELDWORK CAN BE REWARDING & FUN!

FIELD SAFETY

Critically important

7-P-RULE

Prior, Proper, Planning, Prevents, Piss, Poor, Performance

US NAVY SEALS, JOCKO WILLINK

Slow is Smooth and
Smooth is Fast.

PROPER CLOTHES AND GEAR

- Learn to dress for specific field conditions
  - 4 seasons
  - Ecology
  - Water access
  - Hazards
- Quarries require
  - Close toed shoes to Steel toed boots
  - Hard hats
  - Safety glasses
  - High visibility protective clothing (vests, long pants and shirts)
- Gear
  - Water storage/treatment
  - Boots
  - Backpack
  - Shelter/Tent
  - Shell/Rain coat
  - Sleeping bag
  - ‘Smart’ Clothing
    - Gore-Tex
    - Cotton vs Wool

CHOOSING EQUIPMENT

- Clothing: waterproof, bright, durable
- Fire: waterproof matches – lighter
- Knife to Multi-tool: reliable, fixed blade?
- Water: reliable, container and treatment.
- Survival kit: medical, signal (mirror/whistle), Food

FYI - PLACES TO LOOK FOR GEAR

- Local
  - Crawdaddy Outdoors
  - Fin and Feather
  - Active Endeavors
  - Piragis
  - Duluth Pack
- National
  - REI
  - Cabela's , Bass Pro., Scheels Etc.
  - Filson
  - Campmor
  - Backcountry
- Specialty
  - Forestry Suppliers
  - Granger


ONE OF THE MOST DANGEROUS ASPECTS OF FIELDWORK IS...?
University of Northern Iowa

PRE-TRIP PLANNING

- Become familiar with field area.
- Set up effect communication
  - Reliable check in system that knows
    - When you are leaving
    - Where you are going
    - What you are planning to do
    - When you plan to return
    - How you can be reached
  - Phone, will you have cell service? Walkie talkie? Do you need satellite comms? Phone to Emergency becon?

- If at all possible, DO NOT work Alone!
- Know your strengths and weaknesses.
- Have reliable ways to interpret, plan for and improvise changing weather.

SURVIVAL ELEMENTS

1. Water
2. Shelter
3. Food
4. Fire
5. Navigation
6. Medicine

- P.L.A.N. (SAS book)
  - P = Protection
    - Existing danger? No stay put.
  - L = Location
  - A = Acquisition
  - N = Navigation