3-1/2 hours @ .30 = $1.05

First Lecture, March 17, 1910 (Barrell) Outline for board

Texts: Hayes, Field Geology; J. Geikie, Structural Geology.
(For next time, Hayes, pp. 1 - 21, also 44 - 52)

Outline

Methods of Attacking A Geologic Field Problem.

The factors entering into a geologic report

- The mind and the problem
- Observation of fact and drawing of inference
- Conclusions from combinations of the two

The evolution of scientific methods of thought

  - Method of the ruling theory
  - Method of the working hypothesis
  - Method of multiple working hypotheses
- Hypotheses as guides to the collection of facts
- Closeness, completeness and accuracy in observation of facts
- Analysis of facts, graduation of surviving hypotheses into theories and their bearing on hypotheses.
- Particular need of correct theories in geology to control the inferences

The methods of preparation

- General and local literature, Bibliographies
- Reconnaissance surveys
- Type sections
- Study of general relations
- Detailed study and mapping
- Habits of work

Notes

Methods of attack

Methods of geological work represent the accumulated experience of predecessors. If these not learned to begin with each must acquire his own and probably very imperfect ones, with a waste of time, lack of clearness in his work and possibly omission of points vital to the result.

Methods of observation, of record, and of thought.

Geologic work consists in bringing together a mind and a problem; the result is the finished report, depending upon the first two. Every type of mind would bring out a different report.

The method of Multiple Working Hypotheses

Chamberlin, Jour. Geol., Vol. V, p. 837, 1897.

In history of intellectual evolution

(1) method of the ruling theory - its errors - leading to professed abandonment of theory

(2) method of the working hypothesis used merely as a means for collecting facts

(3) method of multiple working hypotheses

The method natural to the human mind is to superficially observe, immediately propose an explanation, then pride and affection come in - the theory is made general and facts chosen and judged to fit it - conviction in it grows.

A premature explanation passes into a tentative theory, then an adopted theory, lastly into a ruling theory.

The history of science shows that many ruling theories have held the stage and barred progress until they were weakened to mere working hypotheses, then other hypotheses added.

Examples:

(1) Sedimentary origin of banding and foliation planes in gneisses 20 - 50 years ago; practically all convinced of it; proof given of transition.

(2) Pressure origin of foliation and parallel min. variations in comp. introduced by injection.

(3) much banding and parallelism of minerals date from initial crystallization.

Chamberlin: Multiple working hypotheses

Need of the scientific imagination and the framing of hypotheses to direct the accumulation of facts

(cu. of Lake Superior. Is it associated with basalt? Was it concentrated at the time? These determine the problem of continuity with depth).

Method of multiple working hypotheses puts one in the attitude of helping all his intellectual children and adopting other peoples. The full explanation is very often complex, and involves more than one cause so that the method of the single working hypothesis alone would not suffice.

Great Lakes example:

(1) Old river valleys (2) dammed by moraines (3) eroded by ice
(4) warped by weight of ice (5) cooling of crust
(6) (7)

Apt to develop taciturnity in the man while working. He is measuring hypotheses by facts - between his hypotheses until the investigation is advanced it is so hard to decide and there are such various possibilities that it is hesitating and difficult to express them. To anyone not of a thoroughly scientific turn a candid discussion would sound like a confession of ignorance. The man of the street is used to giving an opinion right off the bat as to the value of the tariff, the gold standard, the nature of God, or the making of rocks.

Advanced Field Geology

Van Hise's opinion of the man who professes to leave out theorizing and who wants merely to get the facts - he cannot get all the facts and he spends his time on the more obvious and useless and is likely to overlook the more significant.

Van Hise's experience is that he himself needs to go back time and again every time he gets a new idea to see how new facts will fit it.

How to carry forward the method of multiple working hypotheses

(1) Reading of literature and finding out (a) a full knowledge of the problems involved as given in graduate courses (b) a full knowledge of literature on the locality
Use bibliography of U. S. Geol. and Internat. Sci. Bibliog.

(2) Use of the scientific imagination for development of working hypotheses, cautiously from the literature, more boldly from the field.

Courteous precedence of other people's hypotheses upon approaching the problems as they know the region first hand; but not undue acceptance.

Expectation of continuity of a coal will depend upon mode of origin
Was the coal of a certain bed, a delta swamp or rock basin swamp, or a deposit of floating vegetable matter under water?
Covered by later deposits will it pay to bore through these to see if coal is under.

Record the observations carefully and fully indicating the amount of assurance and generality of occurrence of each observation Example: ferns in roof shale of coal overlaid by limestone with brachiopods, stigmaria below - variation in thickness per mile, etc.

Write out bearings separately and distinct from observations

L.s. indicates water condition Brach. marine likely to have produced some marine planation if coal was swamp product but stig. indicates that it grew in situ and ferns suggest quiet lagoon waters. Sea came in without planation and destruction of part of coal at this place.

Reconnaissance view

To give knowledge of general rock types
General structures, relations
Favorable regions for detailed study
Reconnaissance beyond the final area to get surrounding relations

Type of sediments

Go to place where dip regular, where continuity of outcrop gives assurance of no faults, where top and bottom exposed. Measure section and determine members useful for tracing horizons.

Lecture (Irving) Mar. 31, 1910.

Preparation of equipment

Find out as far as possible just what will be needed and what is not

Actual field work

Thought on problems will control and make valuable the collection of records and material

A rapid reconnaissance will show what are the problems. Go to highest point. Travel across the strike and see what are the difficulties. A general view may clear up many of these difficulties.

Field season nearly always too short to permit checking up field interpretations by lab. study

Hence not possible to combine field work and writing of report

Therefore system is necessary

Must have in mind facility of using field notes when in office

(a) easily used

(b) clear - no matter how obvious in the field put down clearly all details and don't neglect any even the obvious points

Always consider that you will never be again in that place

Collection of specimens valuable in so far as there is a cross reference between notes and specimens and maps

Mark specimens with drawing ink at first opportunity

(Irving used paper bags and number can be written on outside of bag, and number rocks that night before resting)

Registering in notes

Put number of specimen in square on left hand margin - that makes it more easily found

Record if possible also on the map - can then turn from map to specimen without using notebook - saves time

Where map is too small a scale can put on a dot even if not a number

Records of observations (impressions
(structure
1. What to record (observations (lithology
(boundaries
2. Where to record
3. How to record

1. Record field impressions as they grow in the field - record quite fully even if they turn out wrong they are of value as they guide investigation and show what wrong

(Did not get over system of reference)

Record also observations

Boundaries, the features if most value - but although this takes most study necessary to make traversing into intervening areas.

2. Where to Record. Both on map and notebook so far as possible

3. How to Record. Use symbols on map small but clear and discuss in notebook.
    1. Use as large scale as possible - usually enlarge by photography
    2. Have also a cloth mounted map folded to carry in field
    3. Have also an office copy on which can be put the geology as it progresses

       Be careful not to scatter data on too many maps

Outline for blackboard:

1. Preparation for field (study of literature
   (preparation of equipment

II. Actual field work (thought on problems
   (collection of records
   (collection of material

III. Preparation of report (study of notes and collections
   (writing of report

2nd Lecture, April 7, 1910 (Barrell)

Outline for Blackboard:

Field Measurements

- Adaptation of method to purpose
    - Limits of error
- Linear measurements
    - Pacing, triangulating
    - Recording and plotting methods
- Angular measurements
    - Compass, variety in methods of observing, by azemuth, by angle differences
    - Recording and plotting methods
- Elevation
    - Aneroid and Locke level
    - Methods of eliminating errors
- Measurements of inclined strata
    - Strike, dip, thickness

Assignments: Hayes, bottom of p. 61 to bottom of p. 63
J. Geikie, pp 269-286.

Notes:

Field measurements

- At a minimum where map is good and work is general
- At a maximum where map is poor or wanting and work is detailed
- The geologist should know how to be independent of a map and able to make his own, or correct the old
- Roads commonly the best located feature of a map save for triangulation points
- Always determine allowable limits of error and do not waste time in going to unnecessary refinement

At 1:62500, 1/100 in. = 50 feet   At 1:125000, 1/100 in. = 100 feet
1/50 " = 100 "   1/50 " = 200 "
these will be ordinary limits

- Pacing with 2% error is 100 feet error in a mile - should be able to pace an inch on the map (printed) before error needs adjusting
- Angular measure by compass, probable error 1°
    - 1° is 100 feet in 5700 feet or 92 feet per mile
    - should be able to go an inch on the map without too much error
- Care in taking compass sights increases with length of course

Learn to estimate limited distances where the eror will not show on the map.

Do not keep accurate traverses except where such are needed as the time is increased needed for location.

Pacing. Double Roman pace

Uniformity of pace - slow - tired - up or down hil - grass - brush

Record if side explor. scratch no. in road dirt or on tree, whatever is quickest

Get in habit of nearly always pacing unless road corners and such serve to locate

Plotting - Have a scale so that plotting can be done directly on map. If 12' = 1 unit, then 440 = 1 mile - usually plot without loss of time on an enlarged scale in notebook.

Compass - Set off magnetic variation

Use sights where accurate work needed

Usually do not look through sights as this takes more time and the general use can become about as accurate to about 1°

In accurate work all long sights to be taken to definite objects like trees, rocks, etc.

Where local disturbances exist, like R.R. tracks take backsights as well as foresights and thus work by angle differences

Where general direction is all that is needed use direction of sun or tree shadows as a datum line - often necessary in brush

Find out how far away hammer must be kept from compass to prevent error. Look out for electric currents or magnetite

In traversing triangulate and tie up frequently to control the accuracy.

Plotting traverses

Faster to record while walking and to plot only at intervals, unless detail hasto be worked in at same time

Elastics to hold book, pencils, etc., minimize mechanical work taking out and putting up things 6" x 100 = 600" = 10'

Scale

Describe use of cardboard scale and protractor or celluloid

Plot up notes at noon hour or in evening

An accurate traverse about twice as long as a general one

Compass for obtaining strikes

Walk fast - observe slowly - as most of time is absorbed in getting from place to place

- 9 -

Estimate accurate [illegible] distances where the [illegible] will [illegible] or [illegible]
  the turn.

Do not [illegible] all the distractions except those which are needed as the
  [illegible] is measured [illegible] on location.

[illegible]

[illegible] of [illegible] along [illegible] or down all - grass - [illegible]
Record of each [illegible] station [illegible] first [illegible] whatever
  is omitted.
Set in habit of nearly always [illegible] miles, [illegible] and [illegible]
  to locate.
Nothing - must remember that electricity can be done [illegible]
  [illegible] - generally [illegible] without
  Lost of line on an unmarked [illegible]
Compass - Set for magnetic variation.
  Use sights where accurate work needed.
  Usually do not look through sights [illegible]
  the glasses [illegible] is [illegible] about [illegible]
  If compass [illegible] to be taken to [illegible]
  [illegible] etc.
  [illegible] take [illegible]
  [illegible] for [illegible] and this [illegible] differences
  [illegible] direction [illegible]
  [illegible] line - often necessary [illegible]
  [illegible] across [illegible]
  [illegible] for electric currents or magnetic
  In [illegible] and [illegible] control the
  accuracy.

[illegible]

[illegible] only at intervals, unless
  [illegible]
  [illegible] etc., [illegible]
  [illegible] - 600 - [illegible]

[illegible]

[illegible]
  [illegible] or [illegible]
  [illegible] general one
[illegible]
[illegible]
  [illegible]

Aneroid Barometer

For reconnaissance work or high mountains may be graduated to 50' only

  For detailed work to 10 feet

  Sensitive to a tenth of a graduation

  Read flat in shadow and avoid parallax

  Diurnal change averages about .1 in mercury, about 50 - 100 feet elevation

  Maximum Hg. usually 8 - 10 A.M. falling barometer in P.M.

Changes from cyclone to anticyclone

  about .6 - .8 in. within working weathers, about 600 - 800 ft.

About 200 feet shift from one day to another is common

Checking up on known points at intervals increases accuracy.

By using nearest weather bureau barograph greater accuracy attained

By having a $30.00 barograph in camp it becomes an instrument of precision, correct to a single 20 foot contour

Use of the aneroid

In well-mapped mountainous regions, one of the most valuable means of location

  Determining initial location by means of hill heights and determining place on hill sides

In poorly mapped regions corrects topography

In flat topography drive over roads, read at intervals on R.R. tracks, and intersect previous traverses

In rough topography take horizontal compass sights to points at same elevation

Direct measurement of thicknesses

  Walcott's 1878 method.

General Specimen

For recommendation [illegible] which contains [illegible]
[illegible] interval [illegible] 10 ft [illegible]
[illegible]
[illegible]
Mineral [illegible] about 10 - 100
feet [illegible]
Maximum [illegible] 3 - 10 [illegible]
[illegible]
[illegible] 3 in. [illegible] about 100 - 150 ft
[illegible] feet [illegible]
Checking [illegible] intervals increases accuracy.
[illegible]
By [illegible]
[illegible]

Method of measurement

In [illegible] means of
[illegible]
[illegible]
[illegible]
In [illegible]
In flat [illegible] at intervals of [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

3rd Lecture, April 14, 1910 (Irving)

Outline:

Reference from notebook to map
- Purely descriptive method
- Coordinate
- Route

Methods of plotting geology
- Boundary crayon method
- Traverse method (symbols and crayon; written)
- Multiple outcrop method

Special traverse method in regions of sedimentary rocks of low dip

----

Notes:

Purely descriptive method of locating
- So cumbersome that must be abandoned usually even for reconnaissance

Coordinate method
- For many cases best to paste pieces of maps in the note book
- Can use many maps and have each extend beyond border

Route method
- Use a certain letter for a certain day
- (April 10 = A, Apr. 11 = B, Apr. 12 = C, etc)
- Well to draw line in in pencil

Methods of plotting geology
- Varies with kind of region
- (A) When large areas of similar rock

Boundary crayon method
- Rapid reconnaissance of whole and detail mapping of boundary only. Make your map as you go
- This detail mapping of the boundary is not necessary where simple and regular boundary - but is necessary in complicated region

Traverse method of plotting geology
- Use some symbol for showing whatever is below and leave no blank space
- If a crayon is used there is no way of telling what is observed and what is inferred
- Therefore put in observations with ink symbols
  - Use crayon for broadly coloring in what is inferred

Multiple outcrop method
- Used where great accuracy is needed as in economic regions - Locate accurately limits of outcrops. Reduces the inferences
- This method may be used in vicinity of a difficult boundary and often solves itself by this detailed study
- Valuable in mining regions in a negative way - shows where veins, etc., are not.

4th Lecture, April 28, 1910 (Barrell)

Assignment:
- Hayes, middle of Page 57 to bottom of 61, plane table
- Class hand in problem in locating outcrop and drawing section

Outline:
- The Geometry of field work
  - Reflections in outcrop
    - Evidence as to obscure structures
    - Need of expression on maps
    - Relations between dip and deflections
  - Contour lines on strata (structure contours)
    - Useful for a variety of purposes (table)
  - Geologic cross sections
    - Methods of construction
    - Corrections for sections diagonal to strike
  - Sketching
    - Cross sections, maps, panoramic views
  - Block diagrams
    - Constructed from topographic map and sections
    - (Show example)

Diagrams to illustrate relations between dip and deflections of outcrop in crossing topographic depressions

Problem - draw outcrops and section on line C-D.

5th Lecture (Irving) May 5, 1910

Outline:

Plane table work in geology

- I. Regions where applicable
  - I. Detailed limits of error
  - 2. Boundaries clear
  - 3. Timber absent
  - 4. Topography not too steep
  - 5. Where features it is desired to map are known (Prospect hole work)
  - 6. Regions of no maps
- II. Types of instruments
  - Hairline sight (Telescope, table, rod, paper)
  - Stadia - telescope
- III. Value of method
- IV. Outline of work
  - Base line
  - Stations - intersected, bisected, 3 pt. stadia
- V. Personal
- VI. Method of notes
- VII. Methods of application

Notes:

Rodman's notes

Traverse method

Instrument notes

Scale 30' to 1", to 1000' to 1" - stadia good method

Transit for more accurate work

Pacing for less accurate work

Generally used where sharp natural boundaries and seen from distant points

If obscure boundaries but artificial openings then important often to locate these.

Hairline sight

Get points by sighting without knowing what the scale is - measure vertical angles - depends on recognizing same point from two locations

Where much detail is involved use stadia

Saves two locations for every point

Table 14" square, 1/2 in wood, brass screws

Set up within 6" usually suffices.

Paper - clothbacked paper - cut up, expose to sun and air for some time.
A waterproof paper, white celluloid paper used by Canadian Survey in 1909 - this good in a rainy climate

Rods. A rod graduated to 1 foot is about most serviceable - rolls up - Fastens on to a stick when used
Countersunk thumb tack holes a good thing
Small needles mounted into sticks - these put thru and instrument works against them - needles can be put into rubber eraser for carrying -
A little sandpaper glued to bottom of board

Baseline should be measured by steel tape

Intersection method good for stations locations, sight to a point - go to it - take backsight and also sight on some other station

Triangle of error - Three point location
Take a piece of tracing cloth, pin it down on paper - put in an arbitrary station and sight on three known points
Then shift this until these lines pass thru the proper points not advisable to do any more work by this method than possible

Personel - geologist and non- geologist (a surveyer's assistant)
Generally a young fellow can be picked up to do this

Notes - Best to record surveying notes and not merely plot as then there is a record to check up on
Must carefully record the number of the points
Claim corners make good stations - Set up some flags.

Lecture, May 19, 1910 (Barrell) (Van Hise, 16th Ann. Rept. pt.1, pp. 739-742)

Outline for Board:

Field work in metamorphic regions

- Complications due to metamorphism and intrusion
  - Methods of examination and location required
- Contact zones. Fault, intrusion, unconformity, conformity, metasomatic
  - Tests for their discrimination
- Passage of transitions into clear types
- Significance of ends of formations
- Topography as an aid in tracing structure
- Chemical distinctions: igneous and sedimentary foliation
- Distinctions between bedding, fracture and flow cleavage
- Different kinds of banded structures
- Different kinds of conglomerate structures

Notes:

Field work in metamorphic regions

Complications of igneous intrusions and regional metamorphism

(1) Broad reconnaissance along strike, across strike

(2) Patient and detailed examination of contact zones

(1) May be a fault contact
(2) " " an intrusive contact
(3) " " " unconformity contact
(4) " " a stratigraphic "
(5) " " " metasomatic "

Detailed character of zone is important
Keep accurate traverses of the contact

(3) Occasional traverses across the boundaries

(4) Keep a record on map of all traverses. One should be able to do this with compass and pacing, though an assistant saves some time ang dives higher accuracy -
Do not leave the field without an understanding of the structure, trusting to study of thin sections to solve the problems.
Though impossible to do finished work without studying many thin sections - they may raise questions which will require a revisit to the field

(5) Study especially the ends of formations
This best for telling if folds and what kinds anticlinal or synclinal
Less cleavage on axes of folds
Shows if intrusive bodies fingering into rock

(6) Surface forms of great assistance - hard beds thus followed
Direction of dip may be inferred - fault zones located
Every detail of topography has its significance due to the erosional changes working through rock structure

(7) Carry the observations along the strike into less metamorphic regions if possible in order to trace origin of formations

(8) Take many specimens and therefore small samples in order to minimize labor.
Bulk analyses of a doubtful formation may be of great value

(9) Bastin, (Jour. Geol., Vol. 17, pp. 445-472)
In aluminous rocks (pelites or mud stones)
Dominance of MgO over CaO mol. ration strongly indicative of sedimentary origin
Dominance of K_2O over Na_2O suggestive
Double relationship is strong evidence
High silica content giving 50 or more of quartz may be indicative.

(10) Masses of doubtful igneous origin should have contacts studied - also transition toward center

Determination of origin

Sedimentary - by composition - proportion of SiO_2
Especially ratio of CaO, MgO H O which is characteristic of that igneous province - if changed, markedly the rock presumably sedimentary

Igneous - Uniformity of structure
If the invasion massive, as in a batholith then its squeezing will result in a uniform metamorphic rock
Remains of igneous structure - as porphyritic crystals of feldspar which may remain
Doubtful cases where structure destroyed and comparison gives no clue. Especially in injection may be partly igneous and partly sedimentary

Search for less metamorphic band
At axes of folds - Hoosac Mountain
Across a massive igneous squeezing usually somewhat localized, as in Pyrenees.

Lecture, May 26, 1910 (Irving)

Outline:

1. Nature of work in mining districts - new elements

    1. Facts to be observed
        General geology - geologic age of mineralization
        Effects of surface alterations - channels of access
        Character of ore
        Geographic distribution - commercial data
        History

II. Surface work General geology - ore bodies

III. Underground work

    Equipment - base map
    Note taking
        a. before going underground
        b. while underground
            contacts and their significance
            measurement of distance
    Specimens (a) small rock (b) ore (c) transitional types
        (d) methods of collecting (e) purposes for which collected

IV. Office work (in the field)
    (a) Reference map (b) individual level maps
    (c) Profressive sections (d) shaft and bore holes
    (e) General sections

Notes:

Subject too large for one lecture

Special features of work
    (a) problems in solid geometry - 3 dimensions
    (b) mineralization
        About 30 common rock minerals but ore deposits show hundreds of minerals
    General geology - a fundamental need for the economic geologist
        Well for same man to work out both general and economic geol.
    Geologic age of mineralization of great importance in relation to other features of the region
        (a) igneous bodies (b) faults (c) folds, etc. (d) pre or post metamorphic - heavy faulting generally later than mineralization and these more often on small faults.

Ouray fissures cut dikes and sheets of monzonite porphyry Tertiary conglomerate; a report started that the tertiary gravels were old placers whereas the mineralization was later

Get data as to ground water level before and after mining - Early observations valuable - climatic variations in past would affect ground water level and change level of oxidized ores and secondary enrichment

Plot the level of oxidized ores on a cross- section and see if it is related to the depth from surface.

Character of ore - work out form of ore body

Where they transect the rock structure generally are replacement effects

Is impervious layer above or below?

Stagnation of the solution favors size and percent of ore body replacement

Get differences in mineralogy of different parts of ore body

Look especially for marcasite formed at comparatively low temperatures
indicates surficial conditions - Tonopah a diagonal mineral
Covallite indicates zone of second enrichment - definite
Aragonite equals second ore

Base maps

100' = 1' about best scale.

Knud Rasmussens Kap York-Post returneret

En Fejltagelse?

Igaar modtog Styrelsen af Kolonierne i Grønland en ufrankeret Pakke Breve fra England, og da man paa Udskrifterne af nogle af Konvoluterne genkendte Grønlandsforskeren *Knud Rasmussens* Haandskrift, blev Pakken indløst.

Det viste sig nu, at det var en Del af den Post, der forleden blev afsendt med Kryolith-Mine- og Handelsselskabets Skib „Ivigtut" til Grønland, og kun den Del af Posten, der var bleven indleveret i sidste Øjeblik, og som har beroet i Kaptajnens private Gemmer. Hele den øvrige Post, der deponeres i Postkasse ombord i Skibet, er ikke kommen tilbage og maa antages at være uantastet.

Saa vidt man kan se, er der ingen anden Forklaring paa Sagen end følgende:

„Ivigtut" er i Søen bleven stoppet af et af den engelske Søkontrols Skibe, hvilket der ikke er noget som helst mærkeligt i, Skibet har straks faaet Lov at gaa videre — hvilket man maa slutte alene deraf, at Rederiet ikke har faaet nogen Meddelelse fra det — og paa en eller anden Maade har Folkene fra den engelske Krydser faaet de nævnte løse Breve med i Land, efter al Sandsynlighed ved en Fejltagelse. De kan f. Eks. have ligget mellem andre Papirer, som Kaptajn *Hansen* paa „Ivigtut" har leveret Englænderne. At de har været aabnede af den engelske Censur, da de først var komne i Land i England, kan ikke forundre. Men da Knud Rasmussens Instruktioner til *Peter Freuchen* i Thule og til Føreren af Galease „Kap York" eller til Medlemmerne af den amerikanske Crockerland-Ekspedition eller et Privatbrev til Maskinmester Petersens Hustru i Ivigtut jo ikke kan antages at være af større Betydning for den storpolitiske europæiske Situation, har man sendt Brevene til Styrelsen for Grønland.

For Knud Rasmussen og Peter Freuchen er det imidlertid en meget kedelig Historie, da de senere Grønlandsskibe ikke faar Forbindelse med saa højnordiske Pladser som Kap York og Thule, og der saaledes gaar over et Aar, inden Knud Rasmussen kan faa givet Freuchen Besked.

ler rettere dennes Fører, fordi han sammen med *Bernstein* og *Kautsky* i „Leipziger Volkszeitung“ har offentliggjort et Opraab, der forlanger, at det socialdemokratiske Parti skal ændre Holdning af Hensyn til de Erobringstendenser, der i den senere Tid er komne til Orde fra indflydelsesrige Sider. Protesten bebrejder Haas, at han har handlet, uden at underrette Partiledelsen. Desuden henvises til, at det socialdemokra- Parti hele Tiden er traadt op mod

Lstr., der vil kunne faas gennem Postkontorerne, Fagforeningerne og lignende Institutioner; der blev nu gjort alle mulige Anstrengelser ikke blot for at føre Krigen igennem, men ogsaa for at hævde Englands finansielle Overlegenhed efter Krigen. Den, der nu tegnede sig for en Andel af Laanet, vilde være istand til at bære denne Byrde, og efter Krigen vilde han være glad over de Anstrengelser, han havde gjort til sin egen Fordel; men endnu mere glad vilde han være ved Bevidstheden om, at han havde hjulpet sit Land, og Landet vilde velsigne ham for hans Forudseenhed og Højsindethed. (Bifald.)

Laaneforslaget blev derefter enstemmigt vedtaget.

Undervands-Angreb mod en Amerikadamper.

Damperen undslap Faren.

Indberetning til den amerikanske Ambassadør.

London, 22de Juni. RB.

Morgenbladene meddeler, at Anchor-Liniens Damper „Cameronia“ Søndag ankom til Liverpool fra New York. Paa Rejsen blev den angrebet af en Undervandsbaad, og da det var Damperen umuligt, endskønt den satte fuld Fart op, at undslippe Undervandsbaaden, forsøgte den at vædre Undervandsbaaden, der dukkede under og ikke blev set mere.

Ombord paa „Cameronia‘ var der mange kendte Amerikanere, og Beretningen om Undervandsbaadens Anbreb er tilstillet den amerikanske Ambassade.

(Flere Krigstelegrammer Side 7.)

Jan. 20, 1910

RED TAPE AND CIRCUMLOCUTION IN ALASKA

Nine National departments, through twenty-three separate offices or bureaus, deal with the public business of Alaska. Their several duties and responsibilities are graphically shown below: –

DEPARTMENT OF AGRICULTURE

Forest Service. Controls use and sale of lumber, homesteads, mineral rights, power sites, etc., in Chugach and Tongass National forests, with combined area of more than 25,000,000 acres.

Biological Survey. Has charge of bird reserves; controls scientific investigations and experiments in propagation and development of animal life.

Experiment Stations. Maintained for encouragement of agriculture, experiment and demonstration of farming methods, crops, cattle breeding, etc.; sells crops grown on experimental farms.

NAVY DEPARTMENT

Maintains buildings, conducts coaling station, and makes tests of native coal; sends vessels to coast in course of cruises; maintains and operates wireless telegraph stations along coast.

WAR DEPARTMENT

Road Commission. Controls building of roads and trails with funds appropriated by Congress and set aside from license receipts.

Engineer Corps. Controls surveys, estimates, and work on river and harbor improvements.

Signal Corps. Controls construction, maintenance and operation of cable between Alaska and the United States and inland telegraph lines and wireless telegraph stations.

The War Department also maintains barracks and troops in Alaska.

TREASURY DEPARTMENT

Controls collection of customs duties, internal revenue, income tax; supervises and plans construction of public buildings; maintains revenue cutter service; makes public health regulations; maintains life-saving service.

POST-OFFICE DEPARTMENT

Controls mail service.

DEPARTMENT OF COMMERCE

Bureau of Fisheries. Protects seals and foxes and sells sealskins and fox skins on Pribilof Islands; controls leasing of certain islands in Aleutian group for fox ranching; employs wardens and makes regulations for protecting fur-bearing animals; supervises and regulates fisheries, canneries, etc.

Census Bureau. Takes the decennial census.

Bureau of Lighthouses. Constructs and maintains lighthouses, fog and light signals along coast.

Coast and Geodetic Survey. Charts and channels rocks and obstructions to navigation along coast.

Steamboat Inspection Service. Inspects and licenses steamboats, engineers and officers of steamboats.

Navigation Bureau. Makes and enforces navigation rules and regulations.

DEPARTMENT OF JUSTICE

Controls court machinery, marshals, United States attorneys and commissioners, and generally administers law and justice in the Territory.

DEPARTMENT OF LABOR

Has charge of enforcement of immigration laws.

DEPARTMENT OF THE INTERIOR

General Land Office. Controls entry, patent, and disposal of public domain; controls and disposes of timber on public lands outside the National forests; disposes of applications for homesteads, mill sites, mineral claims, trade and manufacturing sites, town sites, coal and oil sites, and rights of way in public lands; controls water power and power sites outside of National forests; handles accounts and returns of Surveyor-General's office.

Geological Survey. Investigates mineral formations, coal and oil fields, water supply and stream flow, hot springs, etc.; makes topographical and geological maps of the Territory.

Bureau of Mines. Supervises inspection of mines and mining; enforces mining laws.

Bureau of Education. Supervises education of Eskimos and other natives and reindeer industry among natives.

Secretary's Office. Supervises care and custody of insane; handles general correspondence as to Alaskan affairs; disburses appropriation for protection of game by wardens appointed by the Governor under rules and regulations of Departments of Commerce and Agriculture; acts as clearing-house for general Alaskan matters, and performs other functions not specifically charged to other departments.

for its actions to a single Cabinet officer—the Secretary of the Interior.

The board would do the work now done in Alaska by the General Land Office, the Forest Service, the Road Commission, the Bureau of Mines, the Bureau of Education, and the Secretary of the Interior. It should take over a part of the work of the Bureau of Fisheries, because there are good reasons why the control of the seal industry, the salmon hatcheries, and the sea fisheries should be left in the hands of the Department of Commerce. Beginning at the shore line, however, the development board should have complete control of all Government activities and interests connected with the development of industries and transportation and the settling of the country, including the control of water powers, building and maintenance of roads and trails, and operation of the railways and telegraph lines.

The board should likewise supervise the protection and control of game, fur-bearing animals, public lands, mineral deposits, coal, oil, gas, hot springs, timber lands, and timber, together with the work of education among the natives and the supervision of the reindeer industry.

All of these activities are closely related; all form a part of the one big Alaskan problem. Their direction should all be in the same hands.

It is probable that such a board as proposed would discover most of the present separate and overlapping inspection and police forces in the Territory to be unnecessary and would secure greater efficiency by having some of these special policemen do general patrol duty. The duties of forest rangers, game wardens, protectors of fur-bearing animals, reindeer guards, bird wardens, etc., would not seem to be of a nature requiring such a high degree of expert and specialized knowledge and ability that they might not all be performed by the same men, and in that case much of the present duplication and multiplication of cost and effort would be eliminated, with the addition of increased effectiveness.

Under the proposed consolidated administration of land and resources a single set of experts and agents would be more efficient than the present duplication of field forces. Instead of lengthy and involved correspondence between agents in the field and several Bureaus in Washington to determine questions of law and of fact, the questions of fact would be determined on the ground, and all the papers in any land claim would be thoroughly prepared before the case came to Washington.

From time to time new laws and new policies must be adopted by Congress to enable the fullest fruition of the promises of Alaska. Under present conditions we have recommendations from numerous sources for changes in the laws and policies. These recommendations have to do, usually, with only a single phase of the big problem of how the country may best and quickest be developed. Each bureau or department, charged with only certain duties and responsibilities, recommends changes in the laws affecting the particular function it performs. There is no place where these various changing needs of the country are brought together, correlated, and framed into a consistent, workable, general programme or policy which considered in all its aspects the needs of the whole country. Such a duty the proposed board would perform.

Although a statement of the receipts and expenditures in Alaska at present, and for past years, shows a large discrepancy on the debit side of the ledger, this is by no means discouraging. There are many items of governmental expenditure in the Territory that are not fairly chargeable to Alaska. Probably one-half or more of present and past expenditures come under this head. The deficiency remaining in the revenues is one that may be easily overcome.

Alaska can be made self-supporting within a very few years, as soon as conditions are created which will enable settlement and development and produce revenues. So far the Government has done little, aside from care of the seal herd, to bring returns. It is unreasonable to expect revenue from an undeveloped and unsettled country.

With disbursements and receipts passing through one and the same channel, with a broad concept of needs and conditions on the part of a single responsible body, and with revenues and expenditures reported to and by this board, there could be presented to Congress each year a comprehensive Alaskan budget which would make legislation simpler and more intelligent.

But Alaskan resources must be dealt with as a whole—as a single problem of large management. The proposed development board for Alaska follows this modern and well-tested plan for securing efficient administration.

BOTANY

With the notable exception of the good work done by H. G. Simmons, Botanist of the Sverdrup expedition, in the study of plant environment and of the physiographic and climatic factors affecting plant life in the polar lands of North America, most of the research in Botany has been of a systematic or taxonomic character. Consequently, though the flora of the region is relatively well known, there is much yet to be added to the knowledge of the plant life of the North.

In the hope that this expedition shall materially advance the state of this knowledge, it is planned to devote a relatively large portion of the time given to Botany in an ecological study of the plant associations and their succession, with a quantitative study of the habitats and the floras, and to make, if possible, a correlation of the character of the associations with the climatic and edaphic factors which constitute the habitats.

Abundant collections will be made, not merely for the phanerogamic herbaria, but of as much cryptogamic material as is possible as well. Plans have been formulated and equipment gathered for the collection of material suitable for later study in anatomy and physiology, particularly cytology. The best authorities in America on Mosses and on Lichens have been consulted with the view of anticipating, in a large measure, the problems in study and collection that will be met.

GEOLOGY

An attempt to continue the observations and surveys so faithfully prosecuted by the lamented Per Schei of the Sverdrup expedition, should result in an increased and more accurate knowledge of the geology of Ellesmereland and neighboring islands. Careful search will be made for any evidence that may throw light upon the geologic history of the region, and that of the North American continent. As extended study as time and circumstances will permit, will be made of selected areas with the object in view of differentiating the various members of the Archaean complex, and of ascertaining the extent, thickness, character, and age, of the sedimentary series. The eruptive rocks will receive as much attention as is consistent with the wisest use of the limited time available, their age, comparative frequency, extent, and effect upon the intruded rocks being noted.

It is proposed that paleontological work of a very careful nature be done, in order to divide the sedimentaries into as detailed section as possible, as well as to determine their age, and verify the results already obtained. To this end, comprehensive collections of the faunas of the various series will be made, the faunules from each member being kept separate. By careful and accurate collecting, it is hoped that stratigraphic studies of great importance may be begun upon a solid basis.

An effort will be made to establish the age of the Cape Rawson series, which DeRance classified as Cambrian and which Per Schei intimates is probably the eastward extension of the Mesozoic rocks which he found upon the shores of Eureka sound. The Paleozoic rocks of this region should, in general, be better known when the data of this expedition become available. The extent of the later

Mesozoic and Tertiary deposits will probably be considerably increased.

There is no doubt that opportunity will be abundant for adding to the knowledge of the structural geology of the region. The oscillations of the land surface, the extent, character, and effect of igneous activity, and the extent of dislocations and folds afford a large field for investigation.

Physiographic researches will be continually prosecuted for the purpose of determining the most potent influences operating in the sculpture of land forms and the method by which they accomplish their work; of the modifications, in this region, of the normal cycle of erosion; of the peculiar work of the ice, and of the water which comes from it during the summer months; in general, of the cause and character of the physiographic features of this region; in particular of the physiographic forces at work here which might throw light upon the origin and development of land forms in other latitudes.

Throughout the period of the expedition careful collections will be made, accurate and comprehensive notes will be taken, and typical and illustrative photographs will be obtained wherever possible.

ORNITHOLOGY.

In the study of bird life, most attention will be given to migration and to habitat, and to the life histories of such birds as can best be observed in these regions. In all cases where Science may be aided, clutches of eggs will be collected, and skins obtained. Some interesting data should be secured, especially regarding some of the native birds like the knot.

ZOOLOGY

Studies will be made of the occurrence and distribution of the various animals of the acrtic fauna in their natural environment with especial reference to the influence of climate, altitude, and the topography of the land. Quantitative studies of the influence of the various climatic factors as temperature, moisture, winds, seasonal changes, etc., will be ~~made~~ pursued as well as a study of the interrelations of the various animals, particularly along the line of parasitology. ~~Collections will be made of the~~ Skins of arctic animals which have not been abundantly supplied to museums already will be collected. Studies and collections will also be made of the aquatic forms both of shallow and deep water with especial reference to the collection and preservation of arctic fishes.

ENTOMOLOGY

A collection, as complete as possible, of all stages of the insects of the arctic regions, will be made. Notes will be taken on the life histories of various insects with the idea of studying the adaptations to the short seasons, the limited amount of food material, etc. The relations of the insects to plants and to the other animals will be studied and the interrelations of the insects themselves.