

14 Stop 9 Discussion with Boris
Mtn. Nickens:

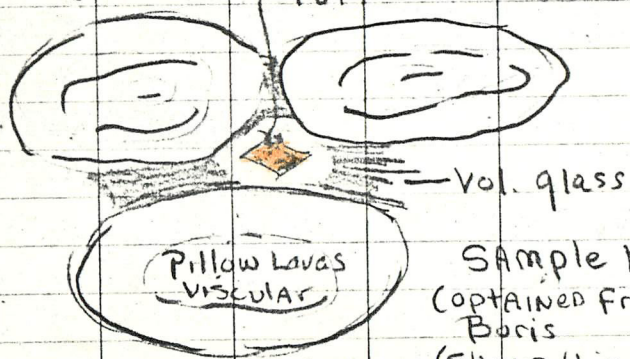
50-70 yds. sequence of Volcanic Rk.

20 yds. yellow stratified tuffs above
Lava flows below. Stratified tuff
including some agglomerates.

pillow LAVAS w/ olivine (viscous)
(max size 1.5 yds.)

very abundant @ Mtn. Nickens

Between pillows a volcanic glass
Crust - Tuffs (yellow) makes up
ground rock - tuff

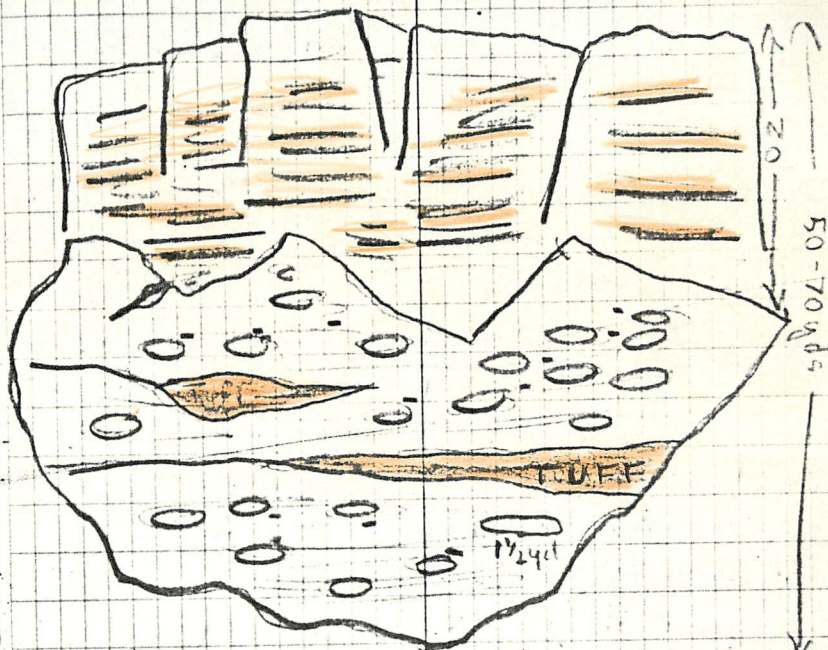


Sample # 9
(obtained from)
Boris
(Shows this relationship)

In the pillow Lava sequence
Lenses of Tuff (3 yds. thick)

- Glass
- Tuff
- ⊙ Pillow Lavas

"Mtn. Nickens"



Sample # 9 - viscous pillow lava

Contact between Tuffs above
& Pillow Lavas below is very irregular

Stop # 5 Prior cliff - Kentfield

Relationship the same - stratified tuff
above - agglomerated basalt flow below
(No pillow Lavas here)

Tuff is the same yellow Tuff found
at Mount Nickens

granite at EDWARDS IS. 2-1-A-B.

6-1-D. Intrusive BASALT

(FINE GRAINED diabase) Same as 6-1-A

(Includes the "C" colored material,
but not as abundant.

6-2-A Biotite granite

6-2-B BASALT near contact

including granite stringers... Age
relationship - Basalt younger. Note
nice feldspar inclusions.

6-3-A - NO.

6-3-B - Basalt Intrusive (viscous)

also has Chalcopyrite[?] on surface & in the
vugs.

6-3-C - Contact between
the Granite & Basalt - Note mineralization

6-4-A Contact

6-5-A Contact

Stop 8

8-1-A-C Fine Grained "Light"

granite. Small magnetite grains characteristic
this very acidic Granite. (Biotite present?)

8-2-B Rock FOUND in contact

Zone Magnetite is concentrated here to give the
rock a dark appearance
8-2-C Same as 8-1-(A-C)

8-3-A Contact in Light Granite 21

8-3-B Contact in zone between
Light Granite & Biotite Granite.

8-4 - ?

8-5-A Biotite Granite

kerby's 8-7-A Contact betw. Biotite & Light Granite

8-6-(A-B) Biotite Granite from

3rd outcrop on Island (See Pg 12)

The biotite granite here (#8) is the same,
as that at stop 6 - but different from 2nd 4

NOV 17, 18

(BAD weather)

Stop 12

NOV 19 (3000' ASL)

UNIDENTIFIED Nunatak south of
MTN. NICKENS.

Basalt (lava) flow. Glacial
stratification on surface point
315° on compass (no correction 0°)

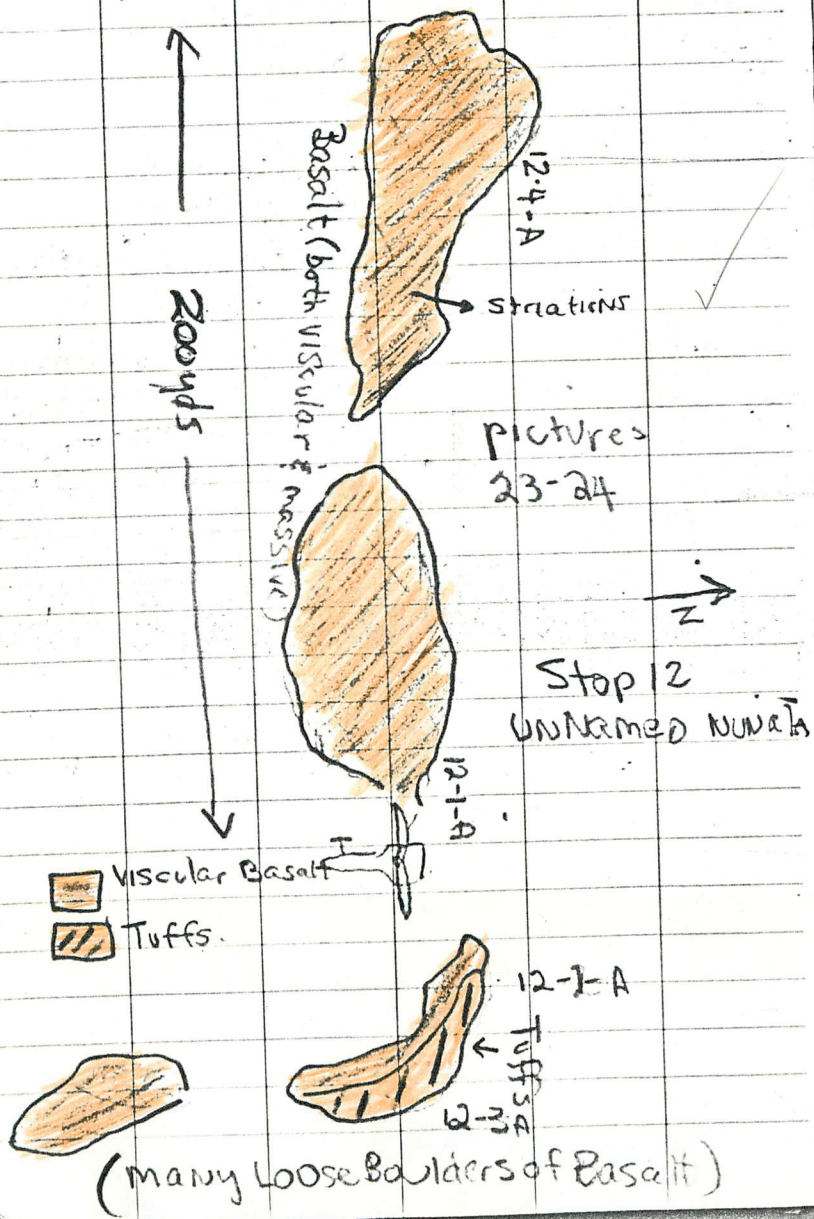
There are (2) two textures observed
here. a viscous Basalt (scoria)
AND (12-4A) a more dense basalt.

In places the usual Black Basalt
had be altered to a "hematitic red"

Charles found some Tuff on the
EAST END of the outcrop. There were
None on the West END.

Also we found Sparactio boulders

23 and cobbles of: (A) granite and
 (B) Rhyolite Porp. - welded Tuff?)



24
 Although both viscular and massive
 BASALT are present it appears to
 be 60% viscular & 40% massive from
 outcrop observation.

- 12-1-A Scoria Basalt
- 12-2-A SAME only finer
- 12-3-A Agglomerate Tuff just
 Below Scoria. Tuffs
 contain many different
 kinds of rk. (cobbles & pebbles)

Stop 14 (2500ft above sea level)

Teeters Nunatak

Superficially appears to be same type of viscular Basalt. This scoria also has different textures: viscular & more massive!

14-1-A Typical large vugged scoria same as at outcrop #12
Irratic boulders & cobbles of gneiss and granite are found here at stop #14.

14-2-A finer grained scoria (basalt). This type of rock is abundant; on the surface the typical rock is the large grained scoria. In fresh outcrops the typical spiceman appears to be the finer grained scoria or basalt.

Mosses grow abundantly on this dark rock although most of the moss is black, long 1/2"-1" stems of green moss can be observed where moisture is plentiful (cracks). Found the same type moss at stop 12.

The moss is more abundant here at 14. (elevation is lower) (sunlight? area is more irregular (hummocky) than other)

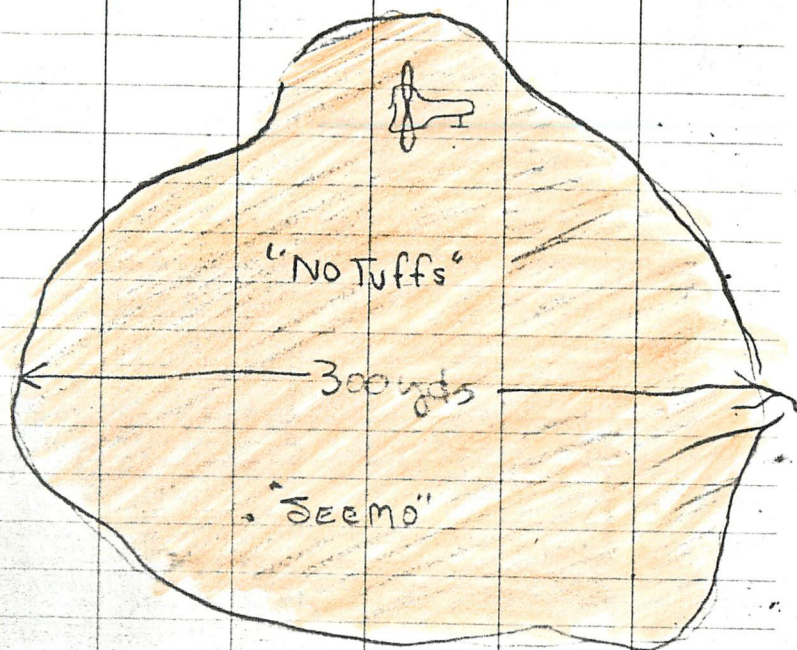
14-3-A A piece of the red colored (rusty) scoria. Same as found at stop #12.

14-4-A Scoria with inclusion in it. Inclusion has qtz. in it.

There is no Tuff here we are lower in the sequence here at 14 than at #12. I have not seen any glacial striations here, but its evident they would be present if it weren't for the cover of Basalt pebbles & cobbles.

27

14-5(A-B) Basalt containing nice
olivine X-tals (fine grained scoria)

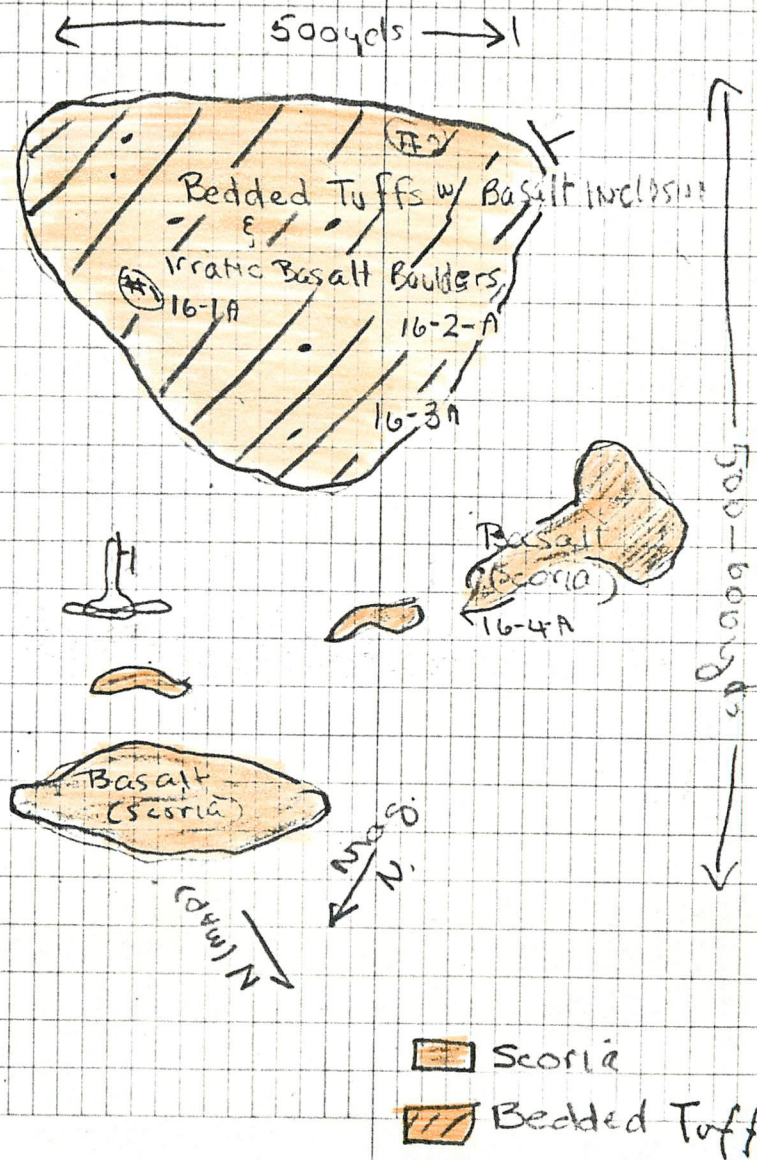


Stop 16 (1760⁺ elevation)

Hodgson Nunatak

Bedded Tuffs with inclusions
of Basalt & Scoria. Boulders &
cobble of Basalt & Scoria are
present on the surface <1" - >3' in

28



29

diameter

16-1-A Sample of the Tuff

#1 (Not Reliable)

Strike of Tuff Beds: $S 60^{\circ} W$ Dip: $16.5^{\circ} NE$

Picture #25

#2 (Reliable)

Strike $N 55^{\circ} W$ Dip: $23.5^{\circ} E$

16-2-A Olivine BASALT.

16-3-A Tuff.

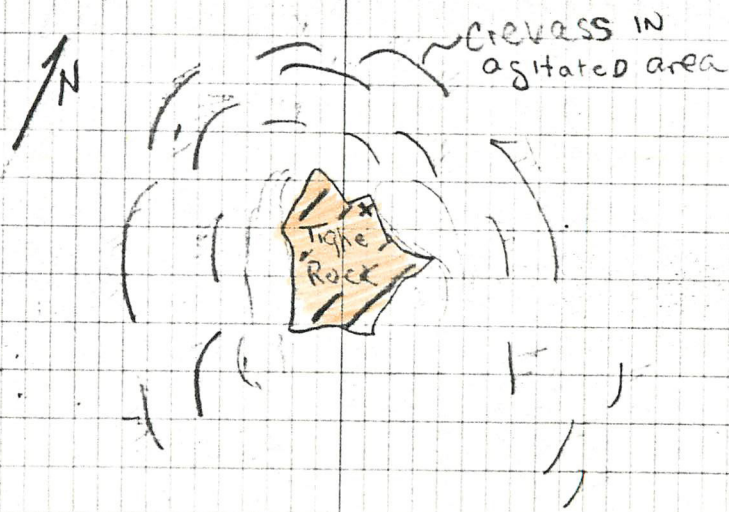
16-4-A dark gray Scoria

Stop 18

Tighe Rock 1100' asl
(approx)

30 ✓

Interesting observation: Heavily crevassed area surround the Rock. Looks much as water might look passing around a boulder in a swift moving stream. Ice flowing South? WHY NOT!



Tighe Rock is Tuff. We did not land - too hazardous - but looked to be the same Tuff as at Location #16. I could see a "Basalt-like" dike at position (X) above and big (no samples) inclusions of Basalt? were observed.

31

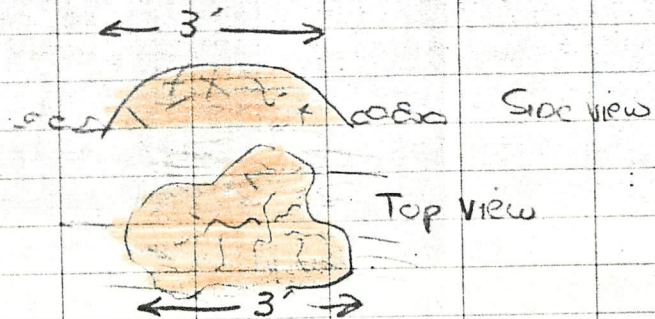
Stop 20

MAISH Nunatak
Elevation: 1,000

Black Basalt. Veryropy in appearance (pahoehoe). Resembles a pillow lava from surface.

Again erratic boulders of granite are found here (Picture 26)

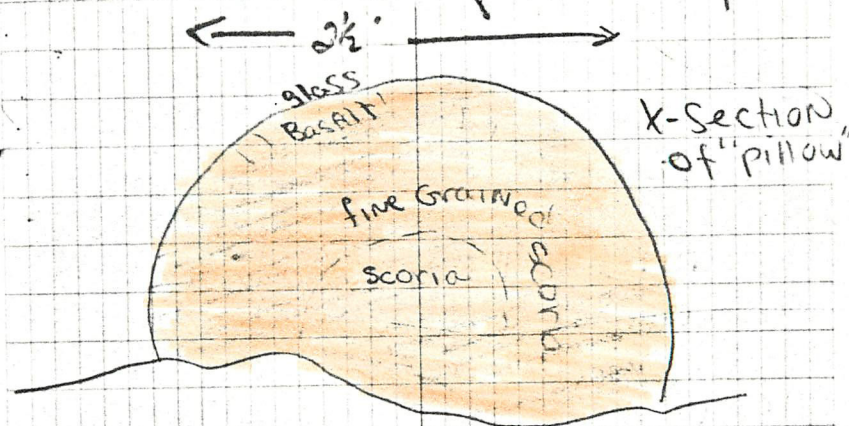
Very steep sides are found on this nunatak. Surface is covered with boulders, cobbles, & pebbles of basalt and the only outcroppings through this debris are these many "hummocky" rounded knobs <math><1' - >5'</math> in diameter (or length)



There are a few flattened surfaces present with the appearance of "cooled" metal that had once been flowing

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In x-section these hummocks ("pillows") appear layered from the inside out scoria appearing in the middle to finer grained (voids size decreases) and a very thin layer of basalt to a even thinner layer of vol. glass.



20-1-A "pillow" Lava
20-2(A-B) Basalt

33

Stop 22

Elevation 1,120'

UNNAMED Nunatak #205

22-1-A Scoria (not as coarse grained (Cugs) as at #20

22-1-B a little finer grained

There were not any "pillows" as we observed at #20. There were, however, the same granite, gneiss, boulders, etc.

Between #20 and #22 were "stringers" of outcrops (small) which appeared to be Basaltic also.

I did notice that there seemed to be a lineation (cleavage?) in the basalt at #205. I have not seen this before on today's outcrops. Actually, this only appears on the N.E. side. The rest was loose rk.



34 ✓

Stop 24 (2,700' EL)

Mt. MOSSES:

Same "scoritic" rock seen at 20-22. There are a few "pillow" like structures but nothing like the masses found at Marsh Nunatak.

Entire Nunatak of course is covered with gravel - pebble basaltic debris with only about 3 areas exposing outcropping scoria.

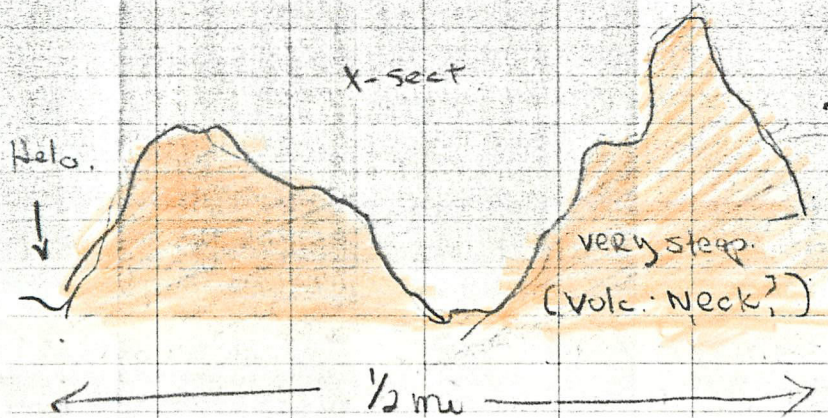
Charles mentioned that this particular Nunatak seemed to be more "weathered" in that there are less exposures and a great amount of gravel, etc. I agree, it does seem to be covered by more debris.

Interesting Note: I do not see even one foreign rock, i.e. granite, gneiss boulders! Indicates to me that either a glacier did not pass over this Nunatak (which might help explain the excessive debris) or the granite source is between this Nunatak and #205! (which is not likely) or maybe this is a different rock.

35 Another interesting note
Biologist Tom EARLY notes that
this is the only Nunatak he's been
on today which has no life!

Found one small (15" long axis)
granite boulder on this entire Nunatak
other than that it is nothing but
viscous Olivine Basalt
(1500m x 400m is size of Nunatak)

Charles took samples:



Stop #26 (EL. 700')

36

Slusher Nunatak:

A quick look found this "island"
entirely Tuff. Weather changed for
the worse so we only got a couple of
samples. However, a flight around
the Nunatak showed it to be entirely
Tuff. Some Rusty yellow as the
Tuffs before - but I did not have
time to look any closer.

{ Strike N55W

{ Dip 17.5° NE

* Bow got 17° Dip - But Dipping N.

Notes from Craig

other Helo. (Kerby's group)

Stop 11 Nov. 19

McKINZIE ISLANDS

A dark (acidic) massive
homo. rock (Diorite) intruded
by a pink biotite granite () The
pink granite has xenoliths of the
diorite, many dikes and banding,
a big mess. Apparently the Diorite
also contains fragments of the pink
granite - maybe! Very complicated

39

NOV 26th

Charles & myself plan to work the rest of the HUDSONS. Ted KING will be the biologist. SHYMO wants us to leave him at Mt. Mosses while we'll begin our morning at Mt. Slucher.

Kerby, Boris, Craig & Fernando plan to work the off shore ISLANDS again - Tom EARLY is their Biologist.

Stop #26 1880' EL

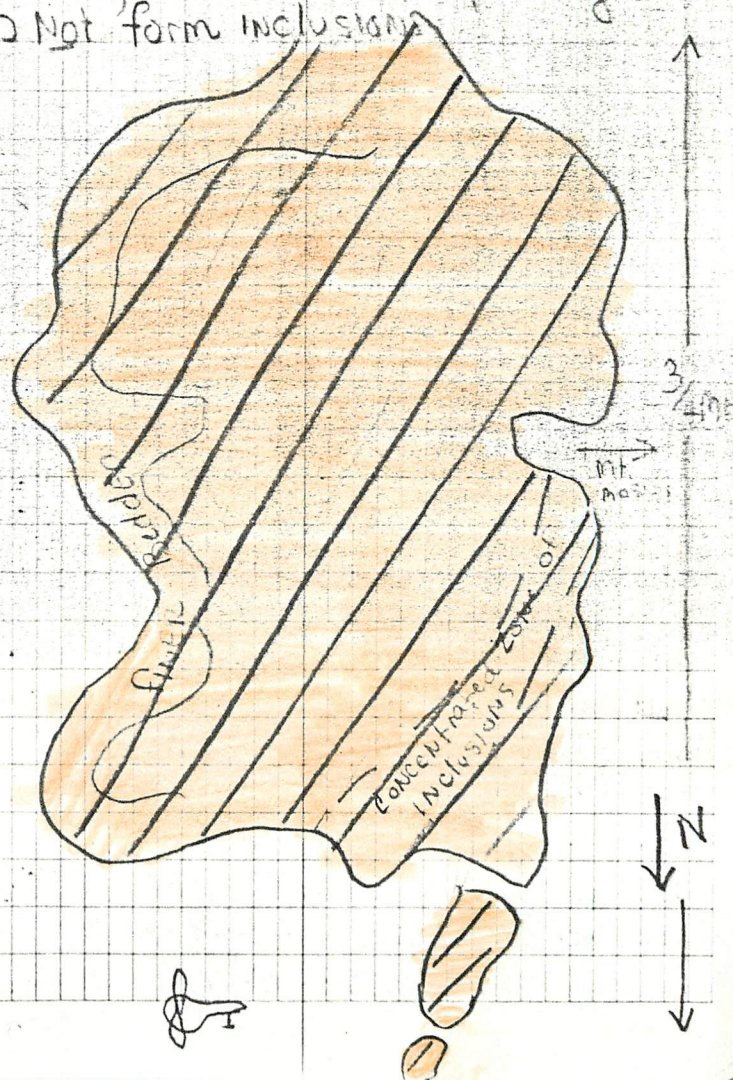
Slucher Nunatak (#26)

Tuff: Strike N53°W

Dip 17° NE

This NUNATAK is composed completely of Tuff. The Tuff is well bedded AND in places is jointed. The Tuff has inclusions of BASALT & Scoria (<1" - <1/2" in diameter). Within the Tuff there are definite zones where inclusions of BASALT and Scoria are more concentrated & zones where there are almost no inclusions.

Irratics are common consisting of gneiss, quartzite, and Shist. One Irratic found near the summit measured approx 14' in diameter. However, this is unusually large. DID NOT form inclusions.



41 A finer bedded Tuff forms
a border for the island.... This
most likely is an effect of
weathering.

Evidently there is a
metamorphic zone up glacier
from here. This is the first time
we've seen a shist as an erratic.
Gneisses & granites were seen on
other outcrops in the Hudsons.

STOP # 28 VELIE 2100' EL

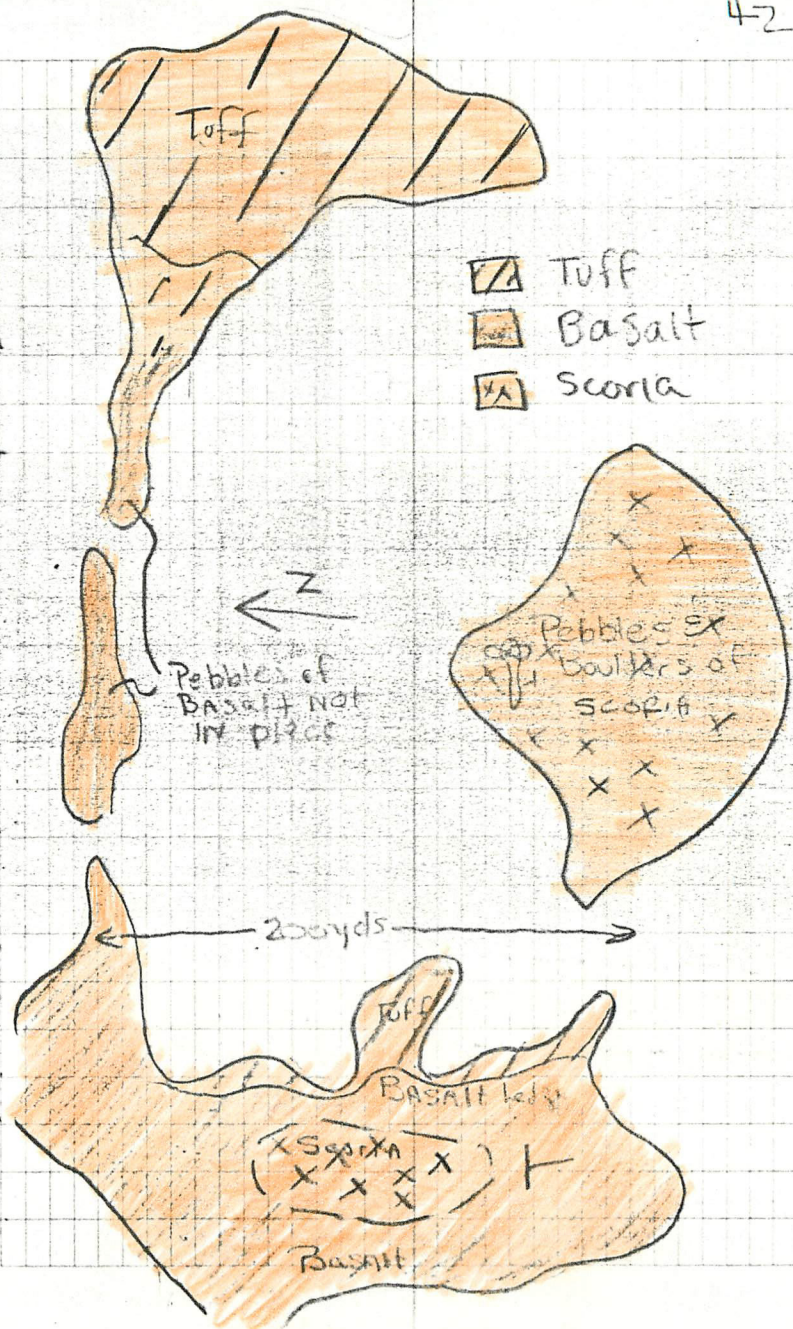
Tuff: Strike N 23° E
Dip 15° SE

We have here what appears to be
two mafic rock sequences separated
by a bedded Tuff (> 50' thick)

A BASALT (sample: 28-7-A)
caps the Tuff and on this basaltic
layer is a "hump, buldge" of
Scoria (sample: 28-8)

Tuff: 28-6-A

42



43 It appears that the scoria
where plane is setting is the same
Scoria on top of the Hill. The
Dip in the Basalt is such to make
this reasonable.

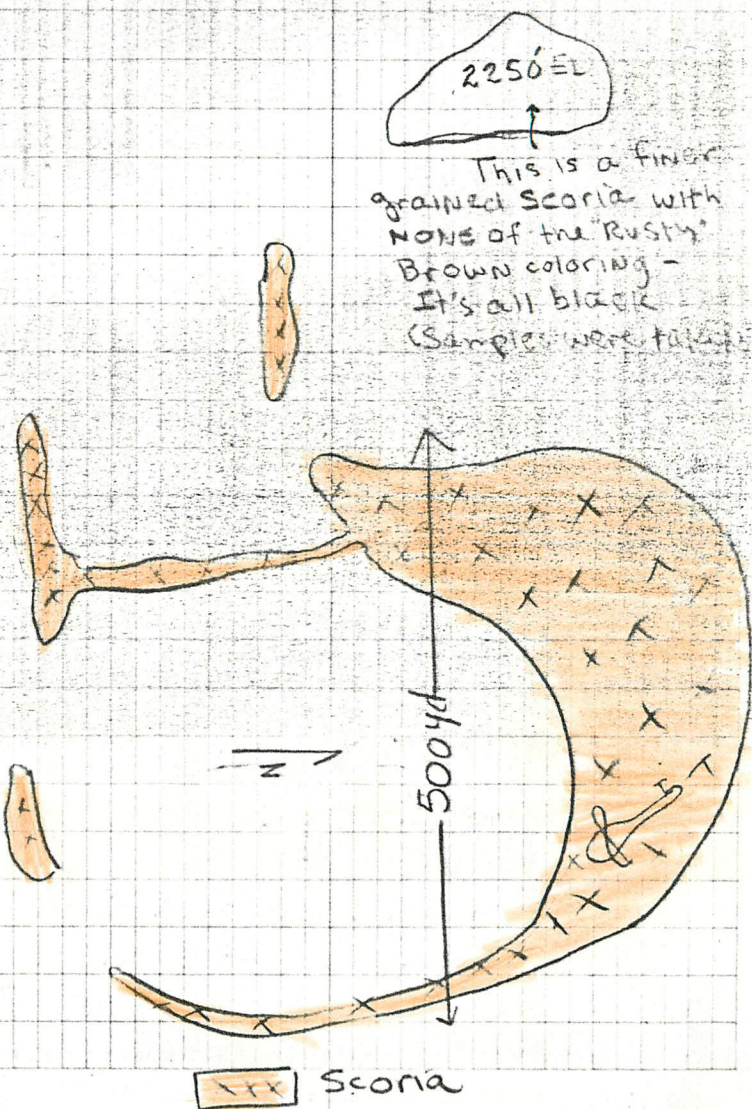
My First Impression is probably
Wrong. We have here a Trff (bedded)
Overlain by a Basalt and this
overlain by scoria

STOP #30

2400' EL

unnamed Nunatak #115
Completely "Rusty" red & gray-black
Scoria. All are cobble & pebble
size pieces - I see none in place
($< 1\frac{1}{2}$ ' in diameter)

44



30-3-A SCORIA (RED & BLACK)

Stop #32 2175' E

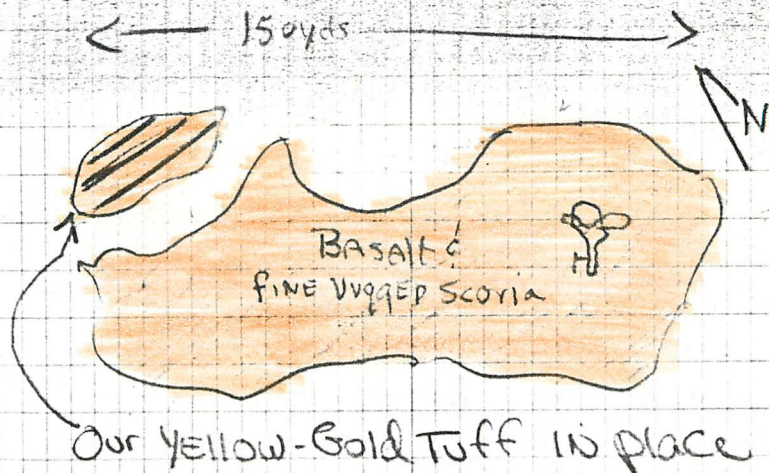
SIREN Rock:

(A very unusual Tuff (as compared to that before) in that it contains a great amount of Basalt (from grain size to $>10" < 1'$) when this Tuff weathers the Tuff is carried away for the most part, and the BASALT is left to form very DARK TALUS Slope. The presence of so much BASALT causes the Tuff to lose its characteristic yellow-gold color - It's a deep BROWN color.

IRRATICS present

Stop #34

Small UNNAMED Nunatak NNE of Meyers (toward edge of map, many Irratics of Granite. Again this is a scoria-basalt Nunatak with only rubble on the surface for identification - no outcrops



47

STOP # 36Meyer's Nunatak
2000' EL

As it turns out, this nunatak is a Tuff zone injected with many almost vertical mafic dikes.

The Basalt Dikes at first appeared to be "Basalt" beds in an alternating sequence with the Tuff beds. However, upon close observation the Basalt "beds" did not continue as individual beds, and in fact appeared to be following jointing and fractures in the Tuffs (irregular Basalt beds). The Dikes (almost without exception) showed cooling contacts (glass) on both sides with the Tuff.

48^v

The dikes in several cases (more the case than the exception) showed viscular Basalt in the central zone and graded both directions into a fine grained basalt & into a volcanic glass. The Tuff was altered to a dark color up to several inches from the contact.

At one point (A1) we found the Tuff in place with almost horizontal beds*. This was very limited, and in every other location all bedding planes and structure in the Tuff had been destroyed.

In some areas it appeared that a basaltic dike injected another basaltic dike. In such a case one would find: Basalt grading into scoria - scoria back into basalt into glass, etc.

* Dipping slightly South

49



This map is to indicate relationships
is not Factual.

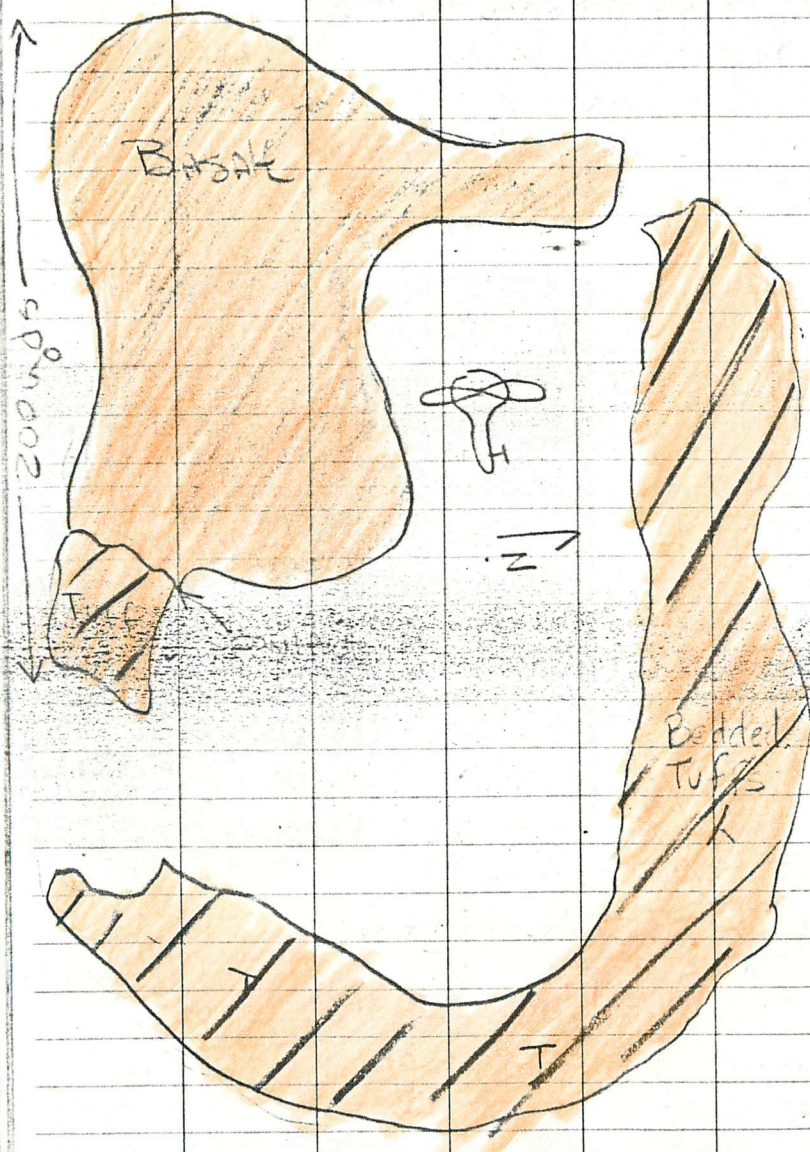
50

Stop # 38 INMAN 2700' EL

This Nunatak can be divided
into two parts - Although both
parts will be volcanic.

A Bedded tuff, Dipping
EAST, though not UNiformly, seems

51



v 52

to be associated with a homogen. Basalt. Possibly this Basalt intruded the Tuff causing the Tuff Beds to dip gently away from the Structure.

The contact between the two is sharp.

Dike RR. N10°W Basalt
N35°W

Stop 40

Wold Nunatak
2600' EL

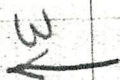
A fine grained Scoria-Basalt overlies Bedded Tuff (150' thick) and is in turn overlain by a 6' bed of Tuff. The Basalt forms 3 or 4 "tits" which are probably caused by weathering.

CONTACTS: not conclusive

53



STOP 40-A



Schaefer

54

Stop 42 Manthe Mtn.
(1200' EL) ^{360m}

42-A Tuff with numerous
Basaltic Inclusions. Cf friable
Basalt caps this tuff. Locally
a Plateau 400 ft below
forms a striking canyon like
contrast to our volcanic mtns.
42-B will describe this Plateau-
cliff forming rock

42-A Tuff. Strike N60°W
(1600' EL) Dip: 24° SW

Stop 42-B. Bottom of cliff forming-
plateau forming rock. It appears
we have about 450' of Golden Brown

55

Tuff capped by about 150' of basalt showing signs of columnar jointing.

Within the Tuff sequence are "lenses" of Basaltic Boulders as well as scattered basaltic boulders. (Some as large as 35' along its axis). An unconformity exists between the Tuff sequence and the capping Basalt flows.

From stop 42-A I know that a Bedded Tuff overlies the capping Basalt. The Tuff sequence below the cap rock only shows traces of bedding.

Due to the large number of boulders & lenses most structure is obscured. Some striations indicating bedding in the Tuff are present of course.

As coarse as the inclusions are in this Tuff sequence suggest a close origin. (Mother Volc, near). This Tuff contains a lot of volcanic glass.

Schaefer

56



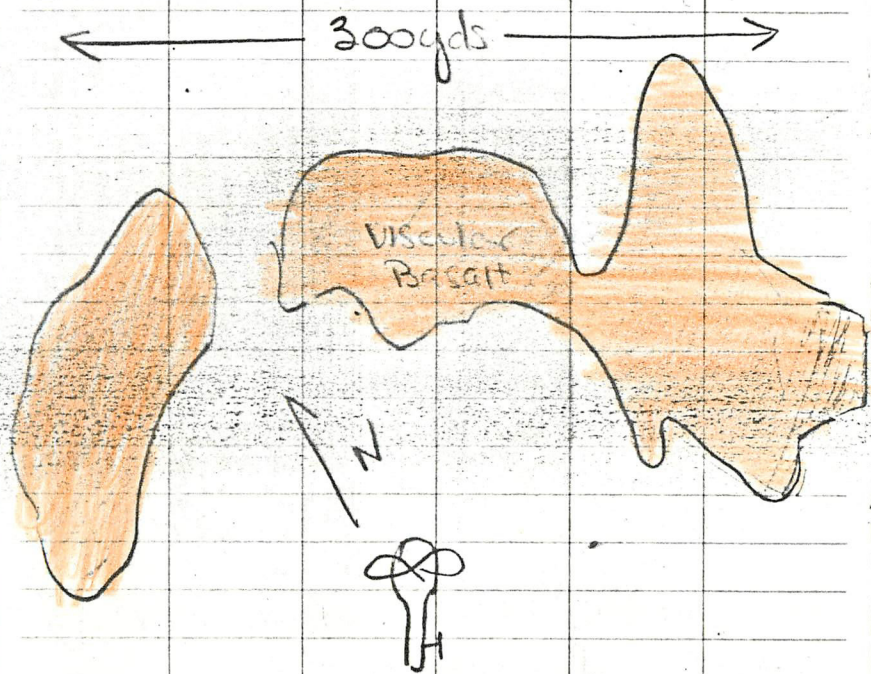
57

Stop 44

SHEPARD DOME

2650' EL.

Viscular Basalt. No outcrops!
 All pebbles & cobbles of viscular
 Basalt. It appears some Tuff
 may underlie this cover



$$\frac{3}{10} = \frac{2}{2650}$$

58

Stop 46

2nd UNNAMED

NUNATAK South of WEBBER

1650 EL.

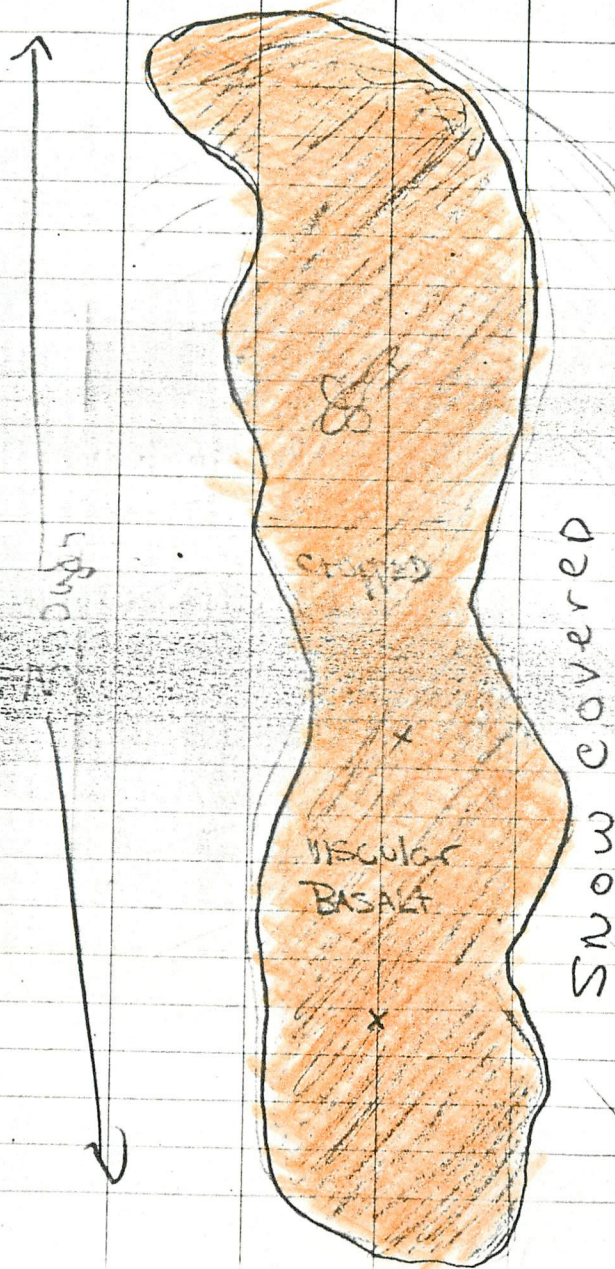
This Nunatak is covered completely
 with rubble - et al. Outcrops
 being present but scarce.
 On the north end I found traces
 of aropy (Pillow) Lava structure

Other than irratics of granitic
 gneiss, etc. the island is homogen.

Actually, I found several small
 areas suggesting an original "ropy"
 structure. However, the weathering
 of the Basalt hides its own

beauty

59

**Stop 48**1st UNNAMED Nunatak
SW of WEBBER

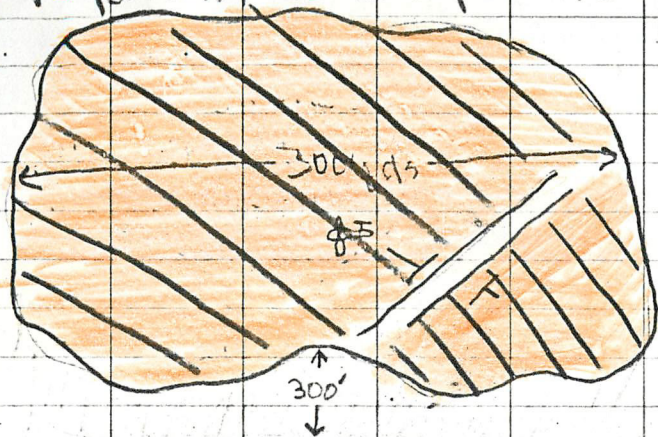
Consists of several Hundred Feet of Layered tuff. The Tuff is a light brown. It does have small inclusions of Basalt, but nothing larger a few inches.

Irratics other than granite include a Shist, scoria, and Basalt.

In one location on the _____ side of the Nunatak is an anticline? The beds dip in opposite directions from each other. The change occurs in <math>< 10^\circ</math>.

What caused it? There's no visible intrusion for a 300' cliff which

bl is present would expose it



STOP 50 WEBBER (1725' EL)

Very large area of black
viscous basalt and in this
area are beds of Tuff (5-1-A)
This Tuff is more rotten than
what we've seen before. of course
it has its inclusions of basalt
(although not large) & obsidian
Very few fractures

12

