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2.24.6

Perry, Monday, Aug. 26. '07.

1

- = red shale
- = sandstone conglomerate
- = trap
- = rhyolite flows

A

Fig. 2

Section along line A-B, Fig. 1.

(strike & dips see Bachus notes)

- a. 5 ft red shale resting on bedded trap
- b. 8 ft. rhyolite tuff flags
- c. trap dike
- d. red shale capping out in field below RR.
- e. red shale, sandstone and conglomerate capping out on railroad

an examination was made of the series of shales and sandstones in the vicinity of the railroad crossing over the Little River & the highway about a mile west of Perry. Just west of the highway crossing the red shales, sandstones & conglomerates crop out in the railroad cut (B) dip north-east and appear to underlie an exposure in the highway S.E. of the railroad crossing of large fragments of purple rhyolite imbedded in a shale matrix. From this railroad cut down to the river (A) the section is illustrated in the figure 2. At different parts of the fields near exposures of fragile red shale, nearly filling the stratigraphic interval, the soft fragile red shales are the only rocks cropping out in this interval, suggesting that they are the only rocks occurring below the sandstones conglomerates of (B). However passing along the railroad southwardly we come to another railroad cut (C) exhibiting still coarser sandstones and conglomerates apparently stratigraphically below B, and still further south-westward where the railroad crosses the river the conglomerates again appear (3) in the river bank on the N.W. side of the railroad and are overlain by red shales (4). The conglomerates of (2) and (3) appear to underlie B, and ought therefore to crop out in the

Broad Cove, Monday, Aug. 26, '07.

The fossiliferous shale series of Broad Cove when followed westward around the broad point projecting down into 6.5.8 are seen to abut in a fault plane as sketched against a series of purple & green tuffaceous ash beds and including a few feet of purple shale. The fault plane extends approximately N. 80° E. and is somewhat sinuous. In the east the fault plane is occupied by a blue glassy rhyolite dike. Near here the fossiliferous shales of the Broad Cove series yielded some good Ostracods and *Lamellibranchs* and a few of the *Murchisonia*-like Gastropods = 6.5.8.A. On the west the purple tuffaceous have abundant of feldspar phenocrysts in places. a specimen is 1178

Broad Cove

as far as fields below B. whereas the soft red shales are the only rocks cropping out here. It is hardly possible to hold the supposition that they are replaced entirely in such a short distance by shales, and it appears highly probable that some faulting occurs. This throws some doubt on the continuity of the supposed transition passage from the red shales into the conglomerates of the typical Perry series. However the red shales do occur interstratified with the sandstones and conglomerates in the railroad cuts and the red shales only the conglomerates cropping out below the railroad at Little River. South west of Little River some more perhaps a quarter of a mile some more red shales crop out, attaining quite a thickness. Some worm borings (branching) are quite common here, = 2.24.9 A, but no other fossils seen.

2249

Pembroke purple shales, Monday Aug. 27, '07.

At the dam below the post office in Pembroke are exposed on the S.E. side of the creek about 30 feet of sedimentary striking N. 38° W. dipping 27° E. N. 60° E. The rocks are dark purple shales with generally no discernible bedding and splintering vertically in the usual manner. A thin seam of light green shale & another of granular tuff (thin and not much seen) are included in the purple shales. The only fossil observed was a little *Lingula*, which is not rare. It is greatly distorted in various directions depending upon the position of the different specimens. It is elongated in the direction of splintering. (not collected).

The shales continue up into the steep hill along the east bank of the Pomeroy River about 40 ft. contour the back of the hill being gabbro. Passing northward the shales continue to form the base of the hill. Besides the normal purple shale there is also a little bluish purple nearly black shale, and a little red gray shale. The gabbro comes nearly down to the creek at the old upper dam at the north end of the village. I think most of the normal purple shale is exposed here striking N. 36° W. and dipping about 20° N. 55° E. I found a rare *Lingula* (small) not collected. Rocks splintering as normal. The gabbro is seen to only the red purple red shales as a very low sill-like dike cutting across the edge of the shales at a very low angle.

At the cross road opposite the electric power plant the red shale strikes N 36° W. and dip at an angle of 25° N. E.

West of the Pomeroy mansion the purple shales strike N. 25° W. and dip at an angle of 36° N. 65° E. The red shales are here seen to be coarse grained tuffaceous in places. Specimen 1179.

To the north of the great hill, there are no red shales but instead the normal gray very splintering shale. Striking N. 25° W. dipping 25° N. E. Fossils none, include very small distorted *Lamellibranchs* (? *Gemmae irregularis*, small).

(2.31.4a)

$$\begin{array}{r} 4 \\ 23 \overline{) 117} \end{array}$$
[illegible][illegible][illegible]

The middle of the river the position of the river
 some of the old parts of the river, possibly, where
 the river has been shown — about the old
 river, place, in the middle of the river, and
 the river runs in a straight line NW W
 N 40° E. It is a piece of the river, and
 the river runs in a straight line NW W

See page 14.

Friday, Aug 30, 07

When it was found on Tunnahyuan River that the gray shale series is sharply separable from the red by a granitoid tuff (1182 & 1181) an effort was made to trace this boundary northward. On page 5 is an enlarged map of the district between Pembroke & West Pembroke. To the east side of the ~~main~~ road in the northeast corner of 1.45.3 red shales appear, where the line of strike of the boundary tuff ought to bring the tuff thus suggesting a fault, and as a matter of fact the granitoid tuff actually is found to be such as shown on the map, where a ledge runs bearing N. 30° W. indicating the approximate line of strike. Red shales appear to the northwest with a strike of N. 30° W. (no dip), and apparently under the tuff just mentioned, but we find the tuff band again offset by a fault and the tuff appears below the red shales in a long ledge striking N. 54° W. This is also the exact strike of the red shale immediately overlying the tuff, and the gray shale immediately underlying. The red shales ^{red boundary} appear at the church and in the fields to the southeast. The gray shales appear in the fields on a ledge immediately under the tuff. Crossing the Pembroke-West Pembroke road at the church we come to another offset of the tuff, this time to the northwest, and the fault is further accentuated by the occurrence of red shales alongside (laterally) of the tuff. The boundary was not followed beyond this point.

The gray shales of the old AS Tunnahyuan place and the fields beyond may be traced downward past the grange hall where they strike E. & W. and dip to the north. They overly, conformably a thick series of tuffs which form a conspicuous ledge on the east side of the river. These tuffs strike W. 2° S. and dip to the north at an angle of 22°. At their south limit they strike W. 12° N. and a bit through a fault plane against a little patch of undulating shales striking N. 70° W. which in turn abut on another fault plane against a tuff series perhaps the same as 1184. These tuffs extend to the little creek at the bend of the road on the east side of which creek is a fault.

These tuffs are grayish to glasses thick bedded, though quite distinctly bedded, and in places are granitoid. A specimen is 1184. The feldspar glauconites are largest & more scattered than in 1181-2. These

bring up some gray shales. These strike N. 55° W. and contain some fossils. 1.45.6 A

1456
x 2

stratigraphically, with the downthrow on the west.
The fault plane extends northeasterly.

Perry Series, east side of Hersey's Point.

Just north of the gabbro of Garnet Point occurs a small patch of purple shale, and this abuts against a series of conglomerates which form the west shore of the cove in the northern half of 2.54.4. The contact appears to be a fault plane. Neither the purple shales nor the conglomerates display distinct bedding sufficiently distinctly to give strike & dip, except that the conglomerate in a couple of places displays coarse bedding with a heavy northeasterly dip. The pebbles are as much as 6 inches in diameter, generally well rounded and consist for the most part of various shades of purple rhyolite. Overlying these conglomerates is a series of brick red shales which are splintered & networked and only rarely show any bedding planes. On the north shore of the cove in the northern half of 2.54.4, the strike is N. 30° W., dip 32°; N. 60° E., and this is the strike and dip in the red rocks where it may be observed apparently as far as a millimetre S. of the northern boundary of 2.53.1 where a little covered interval appears. On the east side of the point in the N.E. corner of 2.54.4, joint planes are well developed bearing S. 64-68° W. in various places inclined series of joint planes appear.

On the shores of Rodgers Point the brick red shales display more persistent bedding than anywhere else and along the entire N. shore of Rodgers Point in 2.44.7 and 2.43.9 the strike is N. 12°-26° E. with an average strike of N. 20° E., dip 22°, to the east 20° S. A couple of conglomerate seams are developed in the lower part.

On the west side of the large cove occurring in 2.43.9, the red massive beds reappear striking N. 75°-80° W., dip 70° (nearly vertical) to the south. The dip is obtained from several cross bedded fine conglomerate calcareous bands in the massive red shale. One seam 5 inches thick is composed of a cream colored agglomerate of quartz fragments with larger bits of purple rock. Specimen 1176. This band strikes E. x W. dip 65° to the south. Some coarse sandstone & conglomerates several feet thick also appear a few feet below. They display washed cross bedding, resembling typical Perry and consist very largely of pebbles of quartz more larger however than the size of a pea.

The gray splintery shales appear on the west side of Pennamaquan River and on the road bed striking N.W. and dipping N.E. Just south of the middle of the extreme north edge of the extreme north edge of 1.45.5, the gray splintery shales display somewhat pronounced asymmetrical dips of 23° E. to N.E., the strike varying from N. 10° W. at the northwest end of the exposure to N. 50° W. at the S.E. end (see p. 5). Fossils 1.45.5a (not collected) include a seam with *Beyrichia* & *Leptodictya* somewhat similar to 1.41-2 B, and another seam with *Tentaculites* common, *Beyrichia*, *Grammysia* "circularis", *Actinopterocha* rare.

A few feet below occur several seams with an abundance of *Chonetes*, *Tentaculites* & minor points. Three shales appear to rise over and overly (unless a fault intervenes) a massive tuff which appears in the middle of the west side of the cove in northeast 1.45.5, and also appears on both sides the road forming a well in the red highland.

The feldspar is usually more scattered and there is a greater amount of glassy rhyolite than in 1.18.1. A specimen is 1192. Several feet above the base, the so called tuff for a couple of feet shows distinct undulose banding resembling fibrous structure and the rock may possibly be a lava. On the east side of the cove the tuff or so called tuff overlies sand shales. The tuff cropping out to the north and the shales to the south, the latter dipping under the tuff. These shales are exposed for a thickness of 32 feet striking N. 54° W. and dipping 16° N.E. at the south end of the cove, striking E. x W. and dipping 25° to the N. The tuff is perhaps 30 feet thick (guessed). The shales contain half a dozen centimetre calcareous seams full of

Chonetes abundant
Camartoechia occ.
Tentaculites
Crinoid joints Abundant
? *Pholidops*
Beyrichia common

The fauna is 1.45.5 B, and the rock appears to be the equivalent of the northern part of the Hersey.

Black farm series containing the calcareous lenticular seams full of *Chonetes* etc. The "tuffs" appear to follow an irregular line of erosion contact in the shales and large clumps of shale are included in the base of the "tuffs" but not higher up.

Some thin splintery shales occur in the extreme corner of the cove on the west side striking N. 15° W and the strike swinging around to N. 30° W in the course of 20 feet northward. Southward, crossing the road at the bridge we find the little creek to run nearly along the line of ~~the~~ dip of the shales which are exposed striking N. 40° W and dipping 25° N.E.

In the cove, on the N.E. boundary of 1.45.9 and S.E. boundary of 1.45.6 shales appear striking N. 50° W. and dipping N.E. at a low angle. The shales appear on the northeast side of the cove, displaying few broad undulations and are overlain by the tuff. Fossils occur in several seams in the shales and include *Chonetes* (abundant), *Camarotoechia* (common), *Tentaculites*, *Pholidops*, *Boyerichia*, *Actinoptereella*, *Grammysia circulata*, *Nuculites*, *Pterinea darbyi*, *Crinoid* etc., *Heterophyllum* sp. = 1.45.6 A

These shales are overlain by a granitoid tuff breccia (with an abundance of pebbles). Immediately under the tuff breccia the shales are intensely crumpled and rolled and a few houses of shale appear to be included at the base of the tuff breccia. Very few rhyolite fragments are included in the lower half which gives the rock the appearance of the grayish tuff rhyolite porphyry. In the upper half, especially the uppermost couple of feet there is some stratification the beds strike N. 35° W and dip 26° N.E. The strike forms the line up to the little deflection where the tuff is displaced to the S.W. a few feet of shale overlying certain *Chonetes* common, *Pholidops* common, *Tentaculites*, *Boyerichia* = 1.45.6 B (not collected). The shales here strike N. 35° W and dip N.E.

There is another fault plane extending N. 37° E and bringing the tuff & the shore again continuing to the deflection indicated where a small deflection apparently a fault extends N. 5° E. The tuffs are displaced S.W. inland as well as on shore so that it is fairly certain that the displacement of the shore line indicates faulting.

On the hill road running S.W. toward the col some gray splintery shales crop out in the road about 100 yds from the Tunnahagan Road. Fossils found in these shales 1.45.9 A

Spirifer sparse
Chonetes *denysii* common
Camarotoechia scarce
Pteronotus rare

Northwest of Small's Island in a little cove near the north edge of 2.51.1 occurs some ledges of very fossiliferous shales striking a few degrees (10-15°) east of north and dipping south of east, and containing

Lingula (large, finely striate, same as the rare *Schuchertia* from Young's Cove).

Lingula (small, elliptical), occasional

Orthis (large, elliptical), occasional

Camarotoechia (? *Petzia*), common

Chonetes (common in a single seam which was not however found in place).

Modiolopsis 3 or 4 spp. abundant

Actinoptereella common

Dawsonoceras rare

Tentaculites occasional

Boyerichia abundant

Hyalites primitive, occasional

Orthis "

Perhaps 5 feet of shales are exposed at this point. A transported boulder found here (not in place) contains 2.51.1 X

Dalmanella 2 spp. abundant

Camarotoechia "

Whitfieldella rare

Platyschisma (abundant) "

Tentaculites "

Platyschisma occasional

Lepidodonta "

Boyerichia common

The fauna of interest in exhibiting the association of *Platyschisma* with the brachiopod fauna.

On the shore west of Small's Island occurs about 10 feet of gray & blue gray shales overlain & cut by a like soil of very coarse grained trap (? gabbro, = 1193). The northern part of shales strike N. 25° W & dip to the N.E. Just across the line into 2.51.2 the shales strike N. 55° W and dip N.E. at about 15°. They contain in the lower half *Lepidodonta* (common), *Lingula* (occasional), *Grammysia* (rare) = 2.51.2 A, in the upper half they contain a seam with *Boyerichia* (abundant), *Lepidodonta* (common), *Lingula* rare. A *Platyschisma* was observed in one specimen but not served in one specimen but not

in place. This fauna is 2.51.2 B. An off shore ledge colored purple is finer grained than 1193 and is

1194

Falls Point.

To the west of the section including 5.33.1 a-b-c-d etc. on the southeast side of Falls Pt., there is a covered gap about 125 yards wide. When there appear 5 feet of dark bluish black splintery shales striking N. 45° W. and dipping to the N.E. at about 45°. These shales over a 5 inch blue glassy rhyolite flow, and descending in the section to the west we come to a thick series of massive tuffs striking N. 45° W. and dipping 40° to the N.E., and including a mass of about 225 yards. These tuffs form the shore line for nearly half a mile on the southwest side of Falls Point. Specimens are 1158, 1159, 1160. The rock may be called a feldspar porphyry or breccia. The magma is a light gray phase of rhyolite containing an abundance of feldspar phenocrysts the rock resembling white granite except for the occurrence of rhyolite fragments and in places small pieces of black basic ashes, also large rounded rhyolite bombs a foot thick. In several places along the S.E. of a mile outcrop on the southwest side of Falls Point, there are masses of bluish black shale from 2 to 6 feet thick and several rods in extent, apparently entirely included in the tuffs. These shales are also crumpled and excessively rolled and slickensided on the ^{peripheral} portions, suggesting that they were not contemporaneous deposits but instead large "boulders" included in the tuffs, perhaps while still clay (excessive slickensiding). No patch of shale is over 2 yards thick and no bedding planes are discernible. Fossils extremely scarce hardly recognizable: 5.32.3 A, including a small *Ctenodonta* occasional, *Chonetes cf. cornuta* (small, coarsely striate) rare, *Orthoceras* rare.

About 100 yards northwest of the main mass of the white granitoid tuffs and still in the tuffs, there occur some fossiliferous tuffs bearing a very interesting fauna. The tuffs for five feet are very fossiliferous deep blue rhyolite glasses with many bands full of *Wilsonia*. There are also included a couple of thin seams of coarser tuffs with fragments the size of a pea. These fossiliferous beds strike N. 34° W. and dip N.E. at an angle of 38°. The point of outcrop bears E. 20° S. from a little land tied island bearing a couple of pine trees half a mile N.W. of the tip of Falls Point. The fauna is 5.22.2 A and includes

Wilsonia abundant
Camarotoechia
Dalmanella (2 spp.)
Schizophoria
Strophonella
Actinoptereella
Grammysioid
Myalinoid
Pterinea danbyi
Horiostoma
Neurotomaria (very large, cf. *Horiostoma*).
Orthoceras myrice
Calymene Trochoceras sp.
Dalmanites

This may be taken as probably the average dip of the tuff series on the S.W. side of Falls Point, which with a minimum width of 225 yds. would give 405 feet thickness for the tuff series. The real thickness may be decidedly greater.

These fossiliferous tuffs dip under about 6 feet of gray coarse grained tuffs, then follow 2 feet of purple coarse grained tuffs, then several feet of the granite-like feldspathic tuffs.

The fossiliferous tuffs are underlain by a series of coarse tuffs and about 100 yards to the S.E. begins the exposure of the main mass of whitish granite-like tuffs extending for a third of a mile to Falls Point. The fossiliferous tuffs must therefore occupy an horizon near the top of this tuff series and ought to appear on the S.E. side of Falls Point.

in the NW of the fault. Below F. on right hand
 margin of page 19. The main vein some feet feet of
 material purple color. Looking approximately northwestward
 & dipping about 25 feet of green shale. Tuffs in
 the upper part. The green shale is highly resistant
 but a couple of seams show a strike of N. 35° W. and dip
 N.E., slight. At the south portion about 250 at the
 upper part. Then beds cut out by a 3 foot trap dike
 which runs N. of W. and underlies a thick mass of
 purple shale. Strike N. 35° W. & dip 25° N.E. and
 occur on both sides of the "narrows". No fossils were
 observed in the purple shale (after only a cursory search).
 but in the gray shale some few distinct *Planolites* were
 seen. 2.43.74 of *Pteronitella* & *Grammysia cuneolata*
 but without crinoids.

2.43.7
 A

Denysville

Read 9.3.8
 2.4.10

about the Post office and cross roads occur purple
 tuffs with small angular purple fragments & greenish
 purple matrix. On the west side of the road north of
 the post office occur a banded purple rhyolite rock
 with fragments but with angularly sandstone.
 The boundary strikes N. 40° W. approximately and dips
 northeast. The matrix is dark purplish blue, having
 reddish. Fragmental purple beds appear as far as the
 northern bridge opposite the church where a massive
 glass appears, dark bluish in color, with feldspar
 plates and a very rare small fragment of greenish
 rhyolite. Specimen 1196.

On the east side of the river opposite the church
 fragmental beds appear and extend as far east as the
 west side of the point in S.E. 4.2.5. On the east side
 of the point & for about 100 yards east are lead-gray
 rhyolite glasses without fragments but with small
 grains of white pyrite. They are followed on the
 east by massive fragmental beds the fragments
 large 1-3 inches angular composed of the lead
 gray glass & in places jacked together as to make
 the bulk of the rock. These gray tuffs are cut by a
 trap intersecting about 20 feet broad trending N. 47° W.
 specimen of trap = 1197.

The purple tuffs reappear on the west side of
 the little point in central 4.2.7. The tuffs are blue
 new fragmental consisting of banded dark purplish blue
 & red banded fine grained glassy rhyolite
 similar to 1196. On the east side of the point the tuffs
 reappear in fragmental form and are generally colored
 in color west of the little point S.E. of the 2 foot boundary the
 fragmental tuffs are whitish with an abundance of
 associated little fragments (pink, purple, dark blue
 on the east side of this core and to the little core
 on the north edge of 4.3.7, the tuffs are gray color
 glassy with very few fragments.

Each of the bounding 1 foot in 4.3.4 occurs a
 massive little dark blue finely grained rhyolite
 with cubical feldspar phenocrysts displaying well
 columnar structure (false jointing). Below the
 1 foot & 6 foot sounding the heavily fragmental bed
 (gray) reappears. On the line between 4.3.5 and 4.3.4
 occurs a patch of blue banded rhyolite without frag-
 ments but grading up into a coarsely fragmental
 mass with fragments of gray & buff colored rhyolite
 in a hard blue matrix. Specimen of banded
 portion = 1198. This banding strikes N. 72° W. and
 appears to dip southerly but not quite certainly so.

On the east side of the little core west of the
 middle of 4.3.5 occurs a hard dark blue glassy rhyolite
 with cubical feldspar phenocrysts similar to those occur-
 ing east of the one foot sounding in 4.3.4. No fragments.
 Dark fragmental beds occur at the point a few yards to
 the N.E. in the shore for a couple of hundred yards to the
 east as far as angle indentation in the shore in S.W.
 4.3.6 occur light gray tuffs, generally frag-
 mental. A less fragmental specimen 1199 is from
 the boundary between 4.3.5 and 4.3.6. At this W.
 corner of the stretch of shore running N.E. & S.W. in
 4.3.6 occurs some strata & some stratified beds
 striking N. 40° W. & N. 60° W. (the latter more nearly normal)
 and abutting abruptly in what resembles a fault
 plane (running N. 20° W.) against hard massive
 dark fragmental rhyolite. The bulk west of the 7 foot
 sounding in 4.3.6 is composed of the dark blue glass
 with feldspar phenocrysts.

In the shore on the west side of the core in
 easternmost 4.3.6 occur S.E. of the 7 foot
 sounding, greenish gray, lead argillaceous tuffs
 occur weathering greenish gray. Similar tuffs appear
 to continue along the shore eastward to the point
 4.4. The tide was too high to permit following along
 the shore here. In the west side of the core in easternmost
 4.3.6, west of south of the 7 foot soundings there occur
 in the greenish gray tuff about 5 inches of what
 appears to be shale of similar color, vertical, striking
 N. 50° W. It may be unusually closely jointed tuff, but is
 probably shale.
 In the corner of this little core appears sand

stratified agglomerate greenish gray tuffs with small fragments. Strike $N. 50^{\circ} W.$ dip $40^{\circ} N. E.$. These strata resemble those occurring west of the fault plane in 4.3.6., and underly some ~~gray~~ fragmentary tuffs.

The hill on the boundary line between 4.3 and 4.4 is composed mainly of a non-fragmental tuff, generally glassy, light to a very dark bluish color. In places very closely resembling a highly metamorphosed trap. The true nature of the rock is well shown on the point in 4.4.4 at the ^{lowest} corner of the cove. The rock here is a banded glass, the banding extending in a general direction, not direction varying from $N. 40^{\circ} W.$ to $N. 60^{\circ} W.$ and dipping $N. E.$ about 40° .

In the middle of the cove on the boundary between 4.4, 4.5-7-8 occur some fragmental beds, dark purplish fragments in a matrix of greenish gray to purplish green color.

On the east side of the cove the promontory in 4.4 contains the two houses composed of a columnar agglomerate (tuff) containing large fragments (boulders) of purple rhyolite in a grayish green matrix on the S.W. side of the promontory there occur under this columnar tuff, about 5 feet of stratified shaly tuffs, the upper half reddish purple, the middle dark purplish blue, and the lower bluish bottle green. Strike $N. 85^{\circ} W.$ dip north amount western 30° . Specimens of the red shaly tuff 1200. These shaly tuffs are almost buried in the shingle & over a tuff 1201. On the east side of the point there occurs underneath the position of these shaly tuffs (which are not visible) some banded blue and bluish gray glassy tuffs, generally not fragmental, but becoming more fragmental toward the S.E. (lower down).

On the south shore of the cove on the boundary between 4.4.5 and 4.4.8, & south of the 3 foot soundings over some banded purplish glasses, the banding extending $N. 85^{\circ} W.$ and dipping south about 25° .

In the northeast corner of 4.4.8 (between the 3 ft. sounding in 4.4.5 and the 2 foot sounding in 4.4.9, slightly nearer the latter) occurs a fine anticline with the axis extending $N. 40^{\circ} E.$ and also dipping quite strongly in that direction. Traces of the anticline also appear on the opposite shore at the point opposite the 25 foot and 2 foot soundings in 4.4.6. The rock brought up is the red shaly tuff which is so characteristic as to be appear to be

noticeably bedded in places but the real bedding strikes $N. 60^{\circ} W.$ and dip $N. 30^{\circ} E.$ (about 30°) on the N.W. side. These beds dip with a series of blue purplish & grayish glasses, usually banded and not fragmental until about 100 yards northwest of the reef ledge

in western 4.4.9. and the south of the 2 foot sounding where the tuffs contain large angular fragments several inches in size and standing out as boulders on large smooth surfaces which seem to indicate strike & dip. (Strike $N. 50^{\circ} W.$ dip $28^{\circ} N. E.$)

Just inside the angle formed by the reef ledge occurs a 5-10 foot gabbro dike running $N. 35^{\circ} W.$ = 1202. The reef ledge is formed by a purplish glass with feldspar lathes = 1203. The purplish red feldspathic rhyolite here is finely laminated some of the laminae readily cleave direction $N. 5^{\circ} W.$ dip east $45^{\circ}-60^{\circ}$. The rock continues to the head of the cove in the S.E. corner of 4.4.9 producing massive overhanging cliffs. On the east side of the cove the same rock continues but however, striking $N. 40^{\circ} W.$ and dipping $28^{\circ} N. E.$, stratified iron planes are here well developed near

Rounding the point into 4.5.9 the west edge of the latter the banding (not accompanied by stratification planes) strikes $N. 10-25^{\circ} W.$ and dips S.W. at the fence and on the west side of the little cove in W. central 4.5.9 the banding is beautifully stratified striking $N. 5^{\circ} E.$ and dipping west 35° . These beds maintain a remarkable uniformity in texture for over a mile. They are very variable in place, the rock is strongly laminated and banded, though the direction and dip are quite variable. In places where the structure is well developed, but generally the rock is massive. In a couple of cases the color approaches towards dark bluish instead of purplish red as at central 4.5.9 and in the cove in the northern 4.25.1. At the latter locality there is developed a very peculiar feature in the rhyolite. This consists of a bright carmine red film $1/4$ to 1 centimeter thick in the shape of a concentration of compressed elliptical or oval outline. The ellipse or oval is elongated vertically and also $N. W. \times S. E.$; the length being 2 or 3 times the thickness. It is compressed $N. E. \times S. W.$ This rhyolite maintains a remarkable freedom from fragments for a long distance. Fragments first begin to appear at the point west of the 5 fathom soundings in western 4.25.2 and east of the houses.

Read to last
Mar/5/10

Monday Sept. 9, 07

On the hill between the road forks in 4.2.5 some
mass of granitoid tuff (grayish color, feldspar abundant)
specimen 12041. The tuff becomes fragmental higher
up in the hill and continues fragmental along the
road till 60 ft. contour in 4.2.2. Tuff reappears
between the 2 road forks running roads in 4.2.1
and in the orchard. In the latter place on the
boundary between 4 & sheet 1, appears a gray
rock resembling trap, but which may be shale. A
specimen in 1205. Tuff appears in the same apple
orchard.

In 1.52.4, west of the road in the
hill, some along the 2 foot contour occurs
some tuff 1206, which closely resembles at
first sight in the field some of the tuff associated
with distinct fragmentals.

In 1.42.8 there occurs in the river bed a bank
underneath the highway ledge and to the west some
distinctly stratified sedimentary beds which hold some
fossils. Strike N. 35° W. dip 44° N.E. Fauna 1.42.8 A
includes, shelled, not slaty, over 5 feet exposed

<i>Dalmanella</i> (minute)	common
<i>Rhipidomella hybrida</i> (minute)	"
<i>Chonetes cornuta</i>	"
<i>Leptana rhomboidalis</i>	rare
<i>Strophomenoid</i> (flat) (<i>Leptostrophia</i>)	occasional
<i>Camarotoechia</i> (<i>acutus</i>)	occasional common
<i>Rhynchonella</i> (<i>abrupta</i>)	"
<i>Wilsonia</i> (<i>affordi</i>)	"
<i>Trematospira</i>	"
<i>Spirifer crispus</i> (small)	common
" (<i>simplex</i>)	"
<i>Atrypa reticularis</i>	occasional
<i>Cypricardina</i> (<i>indenta</i> type, small)	occasional
<i>Murchisonia</i> (<i>Actisina</i>)	rare
<i>Horriostoma</i>	"
<i>Platyschisma</i> (high spired, <i>Macrochile</i>)	rare
<i>Orthoceras</i> (large, smooth)	rare
<i>Dalmanites</i>	"
<i>Chonetes</i> (small, <i>monoploid</i>)	abundant
<i>Favosites</i>	rare
<i>Rugose coral</i> (simple)	"

- Megambonia*
Grammysia (*angulata*)
Actinoptereella (*reticulata*)
Pterinea darbyi
Mediolopsis sp.

Monday Sept. 10, 07

On the road running northward to Hinkle's
Point, at the top of the hill in 4.2.5, some rather
gray granitoid tuff in the road bed. The tuff
becomes less granitoid descending the hill northwardly.

On the shore west of Hinkle's Point, on the
boundary between 4.2.8 & 4.3, occur some stratified
sediments interbedded with extremely dark banded
glasses of a grayish blue color resembling flint.
About 15 feet are exposed in generally smooth bench
above high tide when the beach was melted. Strike
N. 65° to N. 75° W. the beds being rather wrinkled.
The dip is 22° N.E. (average strike about N. 72° W.).
A specimen of the fine almost like grayish blue banded
tuff which compose the bulk of the exposure is 1207.
The other end of the hill point in 4.3.1, northward
of the 4 foot contour is composed of stratified or
banded glasses similar to 1207 associated with frag-
mentals the latter predominating. The tuff
here are strongly injected with calcite representing
a fault. 50 feet to the east occur some dark
gray coarse grained tuff striking N. 25° W. dip about
30° N.E.

The tuff on the west side is composed of granitoid
of rhyolite glasses to mottled pinkish greenish
reddening into red glass. Underneath specimen 1208
rather rare these colors may be due to partial weather-
ing. On a few places coarse grained tuff appears, and
in one place about 100 yards west of, and above the
cross at the end of the road, occurs a banded
coarse grained tuff the banding striking to S. 70° W. and
dipping 45° N.W. It is not certain that this is glass
at the top of the hill in some coarse grained tuff as well
as in the porphyry like glasses the banding is distinctly
N. 10° E. nearly horizontal, while on the west end of the
hill the banding is N. 30° W. in greenish & gray
rhyolite glass, porphyry.

Between the two top knolls of the hill occur
some glasses with scattered feldspar & leucocrysts, which
except for the feldspar & leucocrysts & greenish glass re-
semble gray to the dark bluish black color.

All of the rock of the hill is blue rhyolite
porphyry, rhyolite glass with scattered feldspar & leucocrysts, the
color varying from pinkish to greenish gray, dark purplish
black and bluish black, sometimes with some light gray.

West of the road in 4.2.3, north of the little
inverted knoll where in the porphyry appears
some glassy rhyolite with feldspar & leucocrysts - red

West of the road in 1.52.9 (see 1.52.8) in a
at the 20 foot contour a roughbedded fragmentary dark glass
similar to 1207, and higher up in the hill, occurring in a
a ledge of 1209, a pinkish banded rhyolite glass, por-
phyry with large feldspar & leucocrysts & having in addition
some greenish black filled with dark epidote.

Wilson's Stream

152.2
A About 200 yards southeast of the road in front of a little wooded occur some ~~low~~ stratified indurated shales & tuffs, on the west bank. Strike N 40° W. Dip 4° 12' E. contain *Thyridionella* cf. *ventricosa* (small). C *Artinopterella* 152.2 A
Wilsonia saffordi C *Paraspirifer* *danbyi*
Canarotæcia acinus C *Camptopora*
Atrypa reticularis O *spirifer* *crispus* *Chonetes*
Leptostrophia etc. *Orthis* *reticularis* *Dalmanella*

A couple of hundred yards further S.E. occurs a little patch of indurated stratified tuff, striking N. 40° W. and on the broad point in S.W. 152.3 occurs

152.3
A, fossiliferous indurated fine grained tuffs striking N. 42° W. and thick bedded and containing the *Chaetetes* in abundance together with rimoid bryozoa and a *Trochomena* like gastropod, B distinct fragmental beds with fragments a cm or more (C) coarse grained purple tuffs. A, B, C not more than 30 feet broad on surface.

On the south side of the inlet on Wilson's Stream west of the Teller V there occur some stratified indurated fine grained tuffs interbedded with a few inches of splintery gray shale and a few inches of splintery red shales, and some bands of coarse grained and distinctly fragmental tuffs. These beds strike N. 40° W, dip N.E. 48° are about 50 feet wide and ~~are~~ are underlain by massive tuffs.

The west shore of Wilson's stream below here is composed of a varied assortment of pink, reddish-brown, purple, blue, siliceous black, gray & greenish rhyolite porphyry (felsite) with some few fragmental beds, at the end of which on the boundary between 152.6 and 153.4 occur some mottled green & gray rhyolites resembling calcareous schists except for having a glassier texture. A couple of hundred yards to the southeast at the 2 foot sounding in 153.8 occur a few feet of red argillaceous tuffs similar to 1200 abutting against coarse fragmental.

The rhyolites continue down to and including 153.2 all the point in 4.3.2, but along the southwest shore of this point below high tide occur some ledges of dark purplish red shale, gray & green shale & greenish fragmental tuffs, although only a few feet thick and containing a few *Dalmanella*. 4.3.2.A (*Wilsonia* observed in field not collected) (further elaborated in Fils not Book Ch. 5, p. 32)

end of this point near dark purplish amygdaloidal lavas similar to 1455 on the north end side of the point appears a coarse gabbro dike a couple of yards wide bearing N. about 60° west. It also appears on the east side of the point. The extreme northeast corner is composed of tuffs and mostly amygdaloidal purple lavas, specimen 1220. There also appears a few bands of a (basic tuff) resembling gabbro in texture. A specimen 1221 is from a point in 5.31.1 near the sounding 3 ft. V bearing 5.55° N. from the S.E. end of the narrow island.

One west of the lower end of the figure 5 at 5.3 comes of 5.3.1 occurs a patch of dark reddish purple mottled lava and the same rock again appears at the head of the little cove west of the 3 ft. sounding in western 5.31.4, here associated with gray glassy and volcanic gray glassy gneiss. On the west side of the cove just south of the smaller mull in #5.31.4, and near the east end of 5.31.4 coarse fragmental with purple fragments in a greenish gray matrix material appears - 1222

Saturday, Sept. 14, 07.
East Side of Wilson's Stream.

On the west side of the little peninsula putting from 1.4218 into 1.52.3 in Wilson's Stream there occur some massive unfossiliferous tuffs near the bridge and about 15-20 ft. above tide.

A 20 foot gabbro dike occurs east of the middle striking N. 30° W. & while on the east side of the peninsula and east of the lava occurs some stratified but unfossiliferous tuffs striking N. 45° W. and dipping 32° N.E. Tuffs occur along the east side of Wilson's Stream being mostly granitoid and of red & gray color. In the little cove in western

1.53.4 and on the shore N.W. occur some fossiliferous sediments striking N. 49° W. and dipping 37° N.E. The rocks are bluish fine grained shales & buffaceous shales in massive thick indurated beds one foot to 2 feet thick, and overlain by 50 feet of granitoid tuffs which are imperfectly stratified in the lower 4 or 5 feet. The fossiliferous beds are about 10 feet thick and contain a rich fauna 1.53.4 A, including

Spirifer of vanuxemi
" of octoplicatus
" of crispus

Dalmanella
Camarotoechia
Wilsonia
Chonetes
Leptostrophia
Strophomenella
Whitfieldella
Atrypa reticularis
Leptæna rhomboidalis

Mytilarca
Pteronitella
Horiostrona Actinopteria reticulata
Trachoceras
Dalmanites
Haprites
Rugose coral
Favosites
Chonetes (Munitryps)

On the southwest side of Deer Point near the NE corner of the S.W. quarter of 5.24.6 near some baked shale strata N. 87° W. and apparently nearly vertical. About 3 feet are exposed to the N.E. corner of the S.W. quarter of 5.24.6 near a couple of feet of splintered gray shale overlain by a splintered fragmentary tuff, accompanied by a layer of light gray rhyolite as the top of the shale N. 88° W. so generally, the N. 88° W. is a splintered fragmentary tuff about 50 feet wide.

North of this small area occurs some grayish & greenish fragmentary, irregularly indurated. A rhyolite dike 13-23 from the shore for a couple of hundred feet. The western end of Deer Point is formed by bluish gray tuffs which are stratified in places. At about the outer limit of the bluff on the N.W. side of the point were found about 5 feet above high water, the base of these bluish gray tuffs is 5.24.6 A and includes

Chonetes
Leptæna
Dalmatella
Camarotoechia
Ptiloceras
Phylloporina
Calymene
Dalmatella
Monotrypa
Camarotoechia
Helophylloids
Corals, local as in Young Cove

on Barro Negro south of Young's Bay 8 mi. far on the
S.E. corner of 5.25.4 is a series of dark gray
shale. In the middle of these they
strike N. 42° W. and dip 44° N.E. and contain an
abundance of fossils. - 5.25.4 A chiefly

$$\left(\frac{5.254}{A} \right)$$

Dalmonella, (Ino Alisi) Yasuni.

7. Reclusione (2400) occasione

Theriot type

The shells are not flattened and are well
well rounded.

near the south end of the shales zone
an abundance of large boulders of shale with
limestone bands etc. and a thick bed of
fossiliferous shale specimens which appeared
from shale strike N. 50° W. and dip N. E. about

400. They contain 5.25.4 A_2 chiefly alternating
(5.25.4) A_2 *Polynella* *Carinuloceras* *Carinuloceras* *Carinuloceras* *Carinuloceras*
The fossils collected were not in place but appeared to
belong here

underlying 5.25.4 A2 are some small
gray lumps scattered to cross on line 6. But
this thing are not certainly in place. The point
in N.W. 5.25.5 is 300m.

Young Point in full of (5, 25) (P)

$$\frac{5.25.4}{B}$$

March 10, 1900

Salicoides $\rightarrow$ 30' 10" - 31.8

Grey horn strike N. 20° W. and dip 71° E. about

Between 5.25.4 A & B the shales are cut by an intruded sill of amygdaloidal ~~basalt~~ trap and by a vertical line of basalt dyke which is white trending NW 50° E. The core of dyke appears as a trace at the S. end of the exposure of shale.

On the north the top of the 5.25.4 A & B shales is about 6 ft. feet are exposed and against the gable of Youngs Point in a fault plane trending NW 230° E. the shales have been sheared near the fault.

On the east side of Deer's Pond
in the north-west corner of the lake lay
in 5.24.5 occurs the same type etc as at
ground on the west side of Deer's Pond (see 3)

The rhyolite has no intrusions into
reverse trap (1250) and is followed to the east by
the phosporite layer, the

524.6
B.C.T.D

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around the point near station
apparently base alternating
with light grey appearing

all the time
 about the lake
 1/2 of the lake
 along the shore - get the same

valley to 1250. Road through
meadow - some red & blue SE
to blue 1.50. a few red
flowers in meadow - the

grayish light colored buff color
specimen is 1251B, a light

- RHYOLITE TUFFS
- BASIC TUFFS
- GABBRO
- SHALES
- RHYOLITE DIKE
- Trap dike
- RHYOLITE FLOW

The core in the middle of the point of Black Head contains in the uppermost side at the base of Black Head some stratified tuffs dipping approximately $N. 30^{\circ} W.$ and dipping at an angle of about $20^{\circ} N.E.$

In the easternmost head of the core occurs a 152 foot trap sill striking $N. 25^{\circ} W.$ On the west side of this easternmost arm occur some stratified bluish gray tuffs similar to those slightly to the west of the point. The strike is $N. 45^{\circ} W.$ dip $50^{\circ} N.E.$

On the west side of the point the tuffs on the upper portion of the point are greenish gray and gabbro. Strike $N. 75^{\circ} W.$ dip $10^{\circ} N.E.$ and mostly some coarse gabbro. There is a piece of gabbro which contains all of purple rhyolite porphyry. The rhyolite is embedded in a bluish gray micaceous structure. A border of bluish gray shale in the point.

contains a few *Leptæna* but not in place. In the second little core to the west of Black Head, some splintery blue shale on the west side overlying some tuff which forms the top of the point. The shale strikes $N. 35^{\circ} W.$ the tuff dipping around to $N. 55^{\circ} W.$ at the tip of the point. The dip is $35^{\circ} N.E.$ The lower 10 feet of shale contains a rare *Murchisonia* or *Hydrichia* - 6.42.4 A

West of point 7 at the top of the point is a dark bluish shale about 35 feet thick. It is dipping $N. 60^{\circ} W.$ dip $25^{\circ} N.E.$ The tuff on the point is gabbro.

In the core NW 6.42.7 there is a piece of tuff which is dipping $N. 60^{\circ} W.$ dip $25^{\circ} N.E.$ The tuff is gabbro. The tuff is dipping $N. 60^{\circ} W.$ dip $25^{\circ} N.E.$ The tuff is gabbro.

On the west side of the point the tuffs on the upper portion of the point are greenish gray and gabbro. Strike $N. 75^{\circ} W.$ dip $10^{\circ} N.E.$ and mostly some coarse gabbro. There is a piece of gabbro which contains all of purple rhyolite porphyry. The rhyolite is embedded in a bluish gray micaceous structure. A border of bluish gray shale in the point.

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The shales 6.32.7 B are separated from 6.32.7 A by a 20 foot argillaceous silt.

undulation N.W. 6.53.7. about 5 feet or there gray shales under the trap E. 20° and strike N. 5° E. They contain some nodulopores & Cyrtodonts do = 6.53.7 B. The shales are much pitted & thick bedded & they & the fauna recall the Prince's Cove shales.

From this spot proceeding north and around the Point cliffs of trap are exposed, till on the east side of the point, northward of the tin island there seen in the slings at the foot of trap cliff some dark blue thin bedded shales containing a few rare, compressed & slickensided fossils, 6.53.7 A (last coll.) including small nodulopores & Lingulid (cf. 6.53.7 A) and ~~Lingulocaris~~ shales. The shales strike N. 8° W at the N. end and N. 5° E at the south end a few rods away.

The dip is to the east $\pm 25^\circ$. At the north end, this little patch of dark blue shale abuts against the contact trending N. 75° W. The trap cliff forms the high tide shore on the west. South end of shales unknown.

Due west of the little island occurs another patch of shale of a somewhat color being a very light gray. This patch of shale is cut off on the north and south by trap the north boundary trending N. 80° W and acrossing S. of the island; the S. boundary trends N. 30° W. in a well developed fault plane. This little patch of light gray shales strikes N. 25° E and dips East at $\pm 20^\circ$. No fossils. Mud balls common near the south contact the shales are charred a darker color.

The trap on the south of the little patch of light gray shale forms only a very narrow wedge and is followed on the south by a mass of shales. The contact with the trap runs E. W. or S. 85° W.

Near the contact the shales strike N. 3° E and dip east at an angle of 1° . They contain a species of *Lingulocaris* of which a couple of whole specimens were obtained. Obscurely slickensided specimens of *Platyschisma* also occur as well as *Boyrichia*. The fauna is 6.53.7 A. The shales are various in color from a dark bluish black to gray & light gray. The latter seems to be due to bleaching. The shales continue for no

100 yards of exposures to the south. A short way down the strike becomes N. 35° E and dip 24° S. E. The shales here contain a few isolated valves of *Lingulocaris* with a rare *Platyschisma* & *Boyrichia* = 6.53.7 A². Near the south end of the exposures of shales, a slab was found not ~~quite~~ in place but evidently belongs to these shales containing a seam of *Platyschisma* & a seam with *Cyrtodont* = 6.53.7 A³.

6.53.7
A

6.53.7
A²

6.53.7
A³

In the stream at the Bridge near Grand Point ~~base~~ fragments of tuffs occur in thick strata striking N. 10° W, dip east @ 26° . These thick bedded tuffs on the south side of the stream east of the bridge form a narrow

ridge for a thick gabbro dike, 40-50 feet thick which here trends N. 72° W. A specimen a couple of feet from the north contact is

1231. It is moderately coarse or a gabbro. In the middle of the dike however the gabbro is extremely coarse and the pink feldspar gives the rock a granitoid aspect (specimen 1232). On the southeast of the bridge nearly 200 yards, the thick

bedded basic tuffs, about by narrow shoots of trap (1230) only a couple of feet wide irregular in outline and abruptly terminating at the shore line. The basic tuffs continue along the shore southward for over a quarter of a mile. Specimens are 1234-42. They display a uniform strike of N. 10-12° W and dip east

22-28° (average dip 25°).

The fine grained trap 1233 might at first be considered a contact of the gabbro finer than 231, but this is not probable as 100 yards northwest of the bridge the tuffs (here massive & columnar) are cut by a 20 foot dike of similar trap which is homogeneous throughout. A specimen from the middle 1243 is similar to 1233.

A pebble like concretion in the shales contains
a *Dalmanella* & *Camartoechia* = 6.52.8 A2

On the west side of the Bay including the
wharf & most of the Lubec Head wharves is a series
of evenly laminated thin bedded shales of a light
lead gray color, similar shales occur on the shore facing
trap intrusions for a couple of hundred yards south of the
wharf. The strike varies swings around from N. 4° E
(dip 37° E, through N. 5° W. (dip 32°) through N.
30° W. (dip 24° N.E) to N. 40° W. dip 25° ~~N.E~~ N.E.

At the south end of the cove containing the
wharf the shales are cut by a trap dike extending
N. 60° E. South of the wharf they are cut by another
dike trending N. 70° E, and the north part of the
bay is formed of trap. The south margin trending
about N. 65° E

The upper part of the shales in the cove
just north of the wharf grade into dark bluish
black which is the color of the shales containing
upward

On the point at the N.E. end of the cove
these blue shales appear forming the top in sea-
weed covered ledges below high tide. The shales
here strike N. 5° E dip 20° E. They contain some spec-
imens of *Spizifer vanuxemi* = 6.52.6 A (not coll.)

In the little cove containing northward
with (6.52.2 subcentral 6), dark bluish ^{black} very fossiliferous shales
occur, the fossils rendering some shales calcareous. The
strike is N. 15° W. dip 35° E. Same 6.52.6 B

Spizifer vanuxemi comm.
" of *Cylopterus* abund.
" " *clavatus* occas.
Chonetes cornuta "
Widmeria comm.
Dalmanella rare
Orthis occas.
Glyptodoceras ("Dawsonoceras") r.
Calymene occas.

Between 6.52.6 B & 6.52.6 A there occurs on
the shore a strip of exceedingly amygdaloidal
trap and similar trap occurs in a test-shaft
near Mr. Tansdell's house bearing about N. 15° W.
(of strike). Hence it is possible that the shales
6.52.6 B may overlie this trap

Scrub Island

On the southeast end of Scrub Island on
the N.E. side of the island over water edge
in dark base shales some couple of feet of dark
blue calcareous shales which are a mass of
fossils, the fossils causing the limy character of
the rock. The beds strike N. 43° W. and dip
37° N.E. Same 6.53.2 A includes a mass of
Dalmanella usually very poorly preserved
of *Stenodonta*? abundant
? *Actinoptarella*

6.52.7 B see p 37. represented by only scattered specimens. Some
are by no means common.

Camartoechia of Kelly or species of Kelly, common
Lingula (2 spp.) r.
Orthis occas.
Orthis r.
Meristella of bella R.
✓ *Nucula* of *Anodontopsis bella* McCoy Ocean
✓ *Cypicardina* of *platyphylla* O.
✓ *Goniophora* sp (small) R.
Hemiphaedusa (small) R.
Dalmanella R.
✓ *Edmondia* sp (Platystrophia) R.
✓ *Orthostrophia* (small, single) R.
✓ *Stenodonta* sp. Common
Character of *Lycopodium* (? *Dalmanella*) o.
✓ *Murchisonia* (round whorled) R.
?? *Leperditia* R.

Only about an hour & a half was spent here collecting
with species continually turning up which has not been the
series before. Undoubtedly more ground off collecting here will
bring to light many more species.