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9A. Folded segment of the silicated dolomite of Zone 4 southwest of Sylvia Lake. The camera was pointed north and the photo is of a nearly vertical cliff. The folds plunge gently north. Note the short overturned or vertical east flanks, and longer nearly horizontal west flanks of most folds. This asymmetric form is characteristic of almost all of the "refolds" throughout the large syncline that envelops Sylvia Lake. Incipient surfaces and zones of axial plane shear also are apparent in the center and upper left corner of the photo.
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9C. Contorted diopсидic quartzite layers in silicated dolomite. This photo is an enlargement of a small area in the lower left corner of plate 9A. It is apparent from these two photos that most axial areas of the folds in silicated layers are thickened and short flank areas are thinned or disrupted. Presumably the undeformed beds were more continuous and much more uniform in thickness. The diopside in each siliceous layer forms a thin (1/8-1/4 inch+) sheath enveloping a quartz core. Essentially all of the carbonate matrix is dolomite.
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11D. Interlayered siliceous and calcitic members of the footwall marble. The locality is about 1,500 feet northeast of the Wight talc mine. The thinner siliceous interbeds are in incipient stages of disruption and dispersal in the light colored siliceous calcitic marble. Most of the thicker siliceous interbeds are fairly continuous in this area. Some silica is believed to have been introduced into the marble throughout this area.
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13A. Thinly layered and laminated diopsidic marble.

The light colored layers (relict beds) are highly diopsidic quartzite and the darker layers are dolomite. Quartz remains only in the very cores of the diopsidic layers. The incipient dispersal and boudinage features in the silicated layers are clearly visible. Rock of this type occurs in Zone 14 along the footwall contacts of the Balmat, American and Fowler talc belts, and in the hanging wall of the Balmat talc belt......................
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13C. Siliceous talc composed of folia of the mineral talc (T) enveloping and interlayered with quartz lenticules (Q). This specimen and that shown in plate 12D are taken from the Woodcock talc mine...

13D. Highly deformed siliceous talc. The quartz (Q) forms boudins, rods and knots elongated normal to the plane of the photograph. These linear elements are parallel to axes of major folding in the talc belts and associated rock. There are marked similarities between this type of deformation and that shown in plate 9.
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Plates

Plate 14A. A slab of coarsely crystalline tremolitic and anthophyllitic talc, split along the dominant foliation. In this specimen the elongate blades of tremolite (and anthophyllite replacing it) form rosettes and mats of crystals randomly oriented within the plane of the foliation. Viewed in sections normal to this one, however, the rock is thinly and uniformly foliated (schistose). Specimen from the Freeman talc mine, Talcville talc belt.

14B. Section cut normal to the foliation in a slab of tremolitic marble. The rock is approximately 50 percent talcose tremolite in a matrix of calcite. Layers and lenses of this rock merge into purer talcs along and across the strike and are interpreted as representing an intermediate stage in the conversion of an initially dolomitic marble to talc. Note the intersecting foliations (f1 and f2). This specimen is from the Woodcock mine, Fowler talc belt.
Plate 14C. Partly serpentinized, mylonitic pegmatite. The pegmatite (P) has been crushed into a microcrystalline rock and partly replaced by dark green serpentine (S). The specimen is from the Freeman talc mine, Talcville talc belt.  

14D. Partly serpentinized perthite crystal. The single perthite crystal (P) is about half replaced by deep green serpentine. This specimen came from a very coarse-grained pegmatite cutting talc and adjacent marble near Talcville. An analysis of unaltered perthite from this pegmatite is given in table 21.  

15A. Tremolitic marble sectioned normal to the foliation. The long slender blades of tremolite are growing across the initial layering (bedding) and obliterating it. Some of the tremolites are in turn crumpled along axes which are almost normal to the page.  

15B. An advanced stage in the replacement of marble by blades of tremolite growing at right angles to the prominent layering in the marble.
Plate 15C. Anthophyllite-tremolite schist split along the dominant foliation. The anthophyllite fibers form thin mats with a pronounced lineation parallel to (L1). This lineation in the plane of the dominant foliation plunges down the flanks of associated folds at right angles to the axes (FA). Many of the anthophyllite tremolite fibers are crushed and broken. On layers parallel to and less than 1/2 inch from the surface of this slab (shown by cut in upper right of the specimen) tremolite blades define a lineation at right angles to that shown here, and parallel to the axes of associated folds (L2). The specimen is from the International No. 4 mine, Talcville.

16A. Steeply dipping, uniformly foliated zone of commercial talc. The darker layers represent highly serpentinous tremolite. The lighter bands are slightly to moderately talcose and serpentinous tremolite and anthophyllite. The locality is the fifth level of the Woodcock mine, median zone, just west of the shaft.
Plate 16B. Highly contorted commercial talc. This is the same zone shown in plate 15A, in an area of pronounced folding about 150 feet farther northeast. At this point the talc contains less tremolite and more of the mineral talc than that shown in plate 15A. The folds plunge at moderate angles northeast (toward right foreground).

16C. Contorted and schistose commercial talc and serpentinous marble separated by a slickensided surface of discontinuous shear. The shear surface lies subparallel to the foliation in both rocks. The talc (T) is composed largely of folia of the mineral talc, with small amounts of serpentine, anthophyllite, tremolite, quartz and calcite. The marble (M) is serpentinous calcite. Folds and rods of quartz in the talc plunge gently away from the camera (arrows marked F), whereas slickensides on the fault ("slip") surface plunge normal to the fold axes as shown by the arrow marked (S). The locality is the fifth level of the Woodcock mine, hanging wall zone.
Plate 17A. Photomicrograph of highly fibrous talc showing paragenetic relations. The blades of tremolite (TR) are largely replaced by fibers of anthophyllite (A) which in turn is partly replaced by microcrystalline aggregates of the mineral talc (TC). When this talc is ground the anthophyllite fibers fluff up and produce an asbestiform mass. If ground to a minus 250 mesh this talc has an oil absorption of about 50. X50.

17B. Tremolitic talc partly replaced by microcrystalline grains of the mineral talc. The light colored boundaries of each tremolite grain and cleavage lines are altered to the mineral talc. This variety of talc is not fibrous and has an oil absorption of about 34 when ground to a minus 300 mesh. X16, crossed nicols.

17C. Slightly serpentinous and talcose commercial talc. It averages about 80 percent tremolite, 5 percent serpentine, 14 percent talc and 1 percent calcite. It has an oil absorption of about 36 when ground to a minus 300 mesh. X50, crossed nicols.
Plate 17D. Commercial talc composed of diopside, tremolite, serpentine and talc. Tremolite and very rare diopside (light and dark laminae) comprise about 18 percent of this talc, serpentine about 50 percent, and the mineral talc (the very light colored spots) about 32 percent. This talc ground to minus 300 mesh has an oil absorption of about 48. X16, crossed nicols.................................

18A. Diopside (D) veined by serpentine (S), the whole partly replaced by microcrystalline talc (T). Layers and lenses of this type lie in contact with commercial talc at numerous localities in the district. X50.................................

18B. Commercial talc composed of tremolite (TR) altered to and veined by serpentine (S). The tremolite comprises about 64 percent of this rock. This talc ground to minus 300 mesh has an oil absorption of about 38 to 40. X50, crossed nicols......

18C. Commercial talc composed in large part of contorted folia of the mineral talc. Both coarse folia (FT) and microcrystalline talc (MT) are present. Talc of this type forms the zone shown in plate 16C. X50, crossed nicols.................................
Plate 18D. Highly tremolitic commercial talc. The blades of tremolite are somewhat randomly oriented and only slightly altered. Some parts of this rock are almost pure tremolite and have an oil absorption of about 30 when ground to a minus 300 mesh. X50, crossed nicols.

19A. Partly ground anthophyllite and fibers of the mineral talc. The mineral talc tends to be fibrous when it replaces fibrous anthophyllite. This specimen is about 77 percent anthophyllite, 23 percent the mineral talc. Prior to crushing the anthophyllite looked like that shown in plate 17A, although the fibers in this photo are much longer. This material is the most asbestiform talc in the district, but is rarely found in lenses or layers of minable dimensions.

19B. Partly ground talc in which folia of the mineral talc are the major constituent. About 10 percent of microcrystalline serpentine (S) also is present, as well as a few fibers of anthophyllite. There is little or no tremolite. Almost none of the commercial talcs contain this much of the mineral talc. X50, reflected light.
Illustrations--long list (cont'd)

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Figure 1. Index map showing location of the Balmat-Edwards (Gouverneur) mining district in the northwestern Adirondacks, New York.