Mica Deposits of the Southeastern Piedmont

Part 11. Alabama District

GEOLOGICAL SURVEY PROFESSIONAL PAPER 248-G

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By E. WM. HEINRICH *and* JERRY C. OLSON

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Distribution and structure of pegmatite bodies in the area, their mineralogical characteristics, and the economic possibilities of the mica and other pegmatite minerals

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PART 11. ALABAMA DISTRICT

By E. Wm. Heinrich and Jerry C. Olson

ABSTRACT

Between May 1944 and February 1945 a total of 120 mica mines and prospects in Alabama were examined. The mica-mining areas are underlain largely by mica schist, presumably of pre-Cambrian age; however, a few pegmatites occur in hornblende schist that is of post-Carboniferous age. The Pinckneyville granite forms one large and several small bodies in and near the mining areas. The belts of metamorphic rocks and the granite bodies trend northeast. The regional dip is to the southeast, and most folds plunge southwest.

Most of the mica-bearing pegmatites occur in five areas which lie alongside and northeast of the large mass of the Pickneyville granite. The pegmatite bodies are as much as 600 ft long. Nearly four-fifths of the bodies are parallel to the foliation of the enclosing rock and plunge to the south at low to moderate angles. Nearly two-thirds of the pegmatites are unzoned. Some of these contain closely spaced platy quartz masses. The zoned deposits may contain border zones and feldspar-quartz-muscovite cores, or they may contain feldspar-quartz-cores and one or more intermediate zones rich in muscovite or plagioclase.

Between June 1942 and January 1945 as much as 8,894 lb of sheet mica was produced; of this, 20 percent was no. 1 quality, 55 percent no. 2, and 25 percent no. 2 inferior. Most of the mica produced in Alabama has come from the wall zones of pegmatites, yet this is the least common type of mica concentration. Intermediate zones yield much "A" mica. Both brown and green mica have been obtained and some is heavily stained.

INTRODUCTION: FIELD WORK AND ACKNOWLEDGMENTS

The Geological Survey began a survey of mica deposits in Alabama in May 1943, when the M. and G. mine was mapped by W. C. Stoll and W. B. Baldwin. During June and July 1943 Stoll also mapped the Bob Lee No. 1 mine and investigated the tin pegmatites of Coosa County (Stoll, 1943). The Great Southern No. 1 mine was mapped in May 1944 by M. R. Klepper, and during June of the same year a systematic investigation of the mica deposits was begun. This was carried on intermittently over a period of 8 months by E. Wm. Heinrich, J. C. Olson, R. W. Lemke, and J. R. Wolfe, Jr. A total of 120 mines, comprising 153 individual pegmatite bodies, were mapped or examined. Their distribution by counties is as follows:

Clay	39
Cleburne	6
Coosa	1
Randolph	65
Tallapoosa	9
Total	120

About 50 other deposits are recorded, although their exact locations are not known. Many small prospects that were not brought to the attention of the Colonial Mica Corporation or the Geological Survey doubtless are present as well, and a total of about 250 mica mines and prospects is estimated to exist in the State. Descriptions of about 25 deposits are represented in the following pages mainly by extracts from the published record (Clark, 1921, pp. 52–53, 55–56, 74–80, 95–104; Sterrett, 1943, pp. 30, 39–40, 42, 54) and reports of field engineers of the Colonial Mica Corporation.

Generous assistance in locating deposits and in supplying information concerning their history, operation, and ownership was given by Clyde S. Burleson and Frank H. Wollschlager, field engineers for the Colonial Mica Corporation. Without exception, property owners and mine operators cooperated wholeheartedly throughout the investigations.

During 1943 and 1944 the U. S. Bureau of Mines explored eight deposits by diamond drilling and trenching. The seven deposits that were drilled are the Bob Lee No. 1, Smith No. 1, Liberty, Hurst, Haynes No. 1 Great Southern No. 1, and Kidd. Trenching was done at the Bob Lee No. 1, the Gibson, and the Kidd. The positions of trenches and drill holes made by the Bureau of Mines are shown on the maps of these deposits. The friendly cooperation of H. D. Pallister, engineer in charge of the exploration, is gratefully acknowledged.

This and additional work of the U. S. Bureau of Mines is published in their Report of Investigation 3905, "Mica and beryl examination and exploration in Cleborne, Randolph, Clay, Coosa, Chilton, Tallapoosa, and Lee Counties, Ala." The following mines or prospects, listed according to counties, are described in the Bureau of Mines report but are not covered by this report.

Cleborne County:
- Caver mine.
- Hoyle beryl deposit.
- John Creed prospect.
- Woodstock prospect.

Randolph County:
- J. W. Turley prospect.
- Globe Mica Co.—Spring Mica mines:
  - Spring mine No. 1.
  - Spring Hill No. 2.
  - Spring mine No. 3.
- Whitehead prospect.
- Knopp prospect.
- Silver Leaf prospect.
- Foote prospect.
- Consolidated Mica Mines:
  - Edwards—Consolidated No. 1.
  - Consolidated No. 2.
  - Consolidate No. 3.
- Weeks mine or Hugh McIndoe No. 2.
- Hugh McIndoe No. 3.
- Wallace mine No. 1.

Clay County:
- Good Hope Old Workings.
- Mrs. W. H. Lane property.
- McKay prospects.
- McClure prospect No. 1.
- J. Warren May-Furstwangler mine.
- McCain prospect.
- A. Statten Tate property.
- Cleve Campbell prospect.
- Alabama Gold and Mica Co.
- E. S. Mitchell-Shirey prospect.
- Jackson mica pit.
- Rudd prospect.
- Jenkins prospect.
- Allen prospects.
- McClure prospect No. 2.
- Henderson prospects.

Coosa County:
- Bentley-Herzfeld-Rawls prospect.
- Dennis prospects.
- McMain prospects.
- Katherine Williams mine.
- Penton-Anderson mica prospects.
- O. F. Carlton prospect.

Tallapoosa County:
- Pinkston prospects.
- Saxton prospect.
- Washburne prospect.
- Taylor-Collum mine.

Tallapoosa County—Continued
- Hicks prospects.
- Vines prospect.
- Harry Herzfeld property.

Lee County:
- Morris mine.

GEOGRAPHY OF THE DISTRICT

The district lies in east-central Alabama, chiefly in Cleburne, Randolph, Clay, Coosa, and Tallapoosa Counties (fig. 144). Outlying deposits occur in Lee and Chilton Counties. The largest towns in or near the mica areas are Lineville and Ashland (Clay County), Rockford (Coosa County), and Dadeville (Tallapoosa County). The district is served by numerous paved Federal and State highways, as well as by a closely spaced network of good gravel and dirt roads. In general the deposits are readily accessible. The Atlanta, Birmingham, and Coast Railroad passes through Pyriton in Clay County, and the Central Railroad of Georgia extends through the south end of the district near Dadeville.

The mica deposits are in rolling Piedmont country, at altitudes ranging from 500 to 1,000 feet. The Coosa River and its tributaries drain the western part of the region, and the Tallapoosa River bisects it in a north-south direction. Vegetation is abundant, and much of the land on which the mines lie remains uncultivated or in timber. Outcrops are very scarce, and exposures in road cuts and in near-surface mine workings generally are thoroughly weathered. Locally weathering extends far beneath the surface, as at the Smith No. 1 mine in Clay County, where hard rock was not encountered above a depth of 100 ft. The decomposition of the country rock and of the pegmatitic material has had a significant bearing upon the economy of mica mining. The deposits are easily prospected, but most mine workings are difficult to maintain. Thus many operations have been shallow and short-lived. Moreover, heavy clay staining due to weathering has been an important factor in lowering the quality of mica obtained from the near-surface parts of the deposits.

GEOLOGY OF THE DISTRICT

ROCK FORMATIONS

METAMORPHIC ROCKS

The metamorphic and igneous rocks that underlie the district are believed to range in age from pre-Cambrian to post-Carboniferous (Stose, 1926). Most of the mica-bearing pegmatites are within two belts underlain by the Ashland mica schist. The northwestern belt, which includes the Pinetuckey, Pyriton, and Lineville areas, is bounded on the southwest and north-

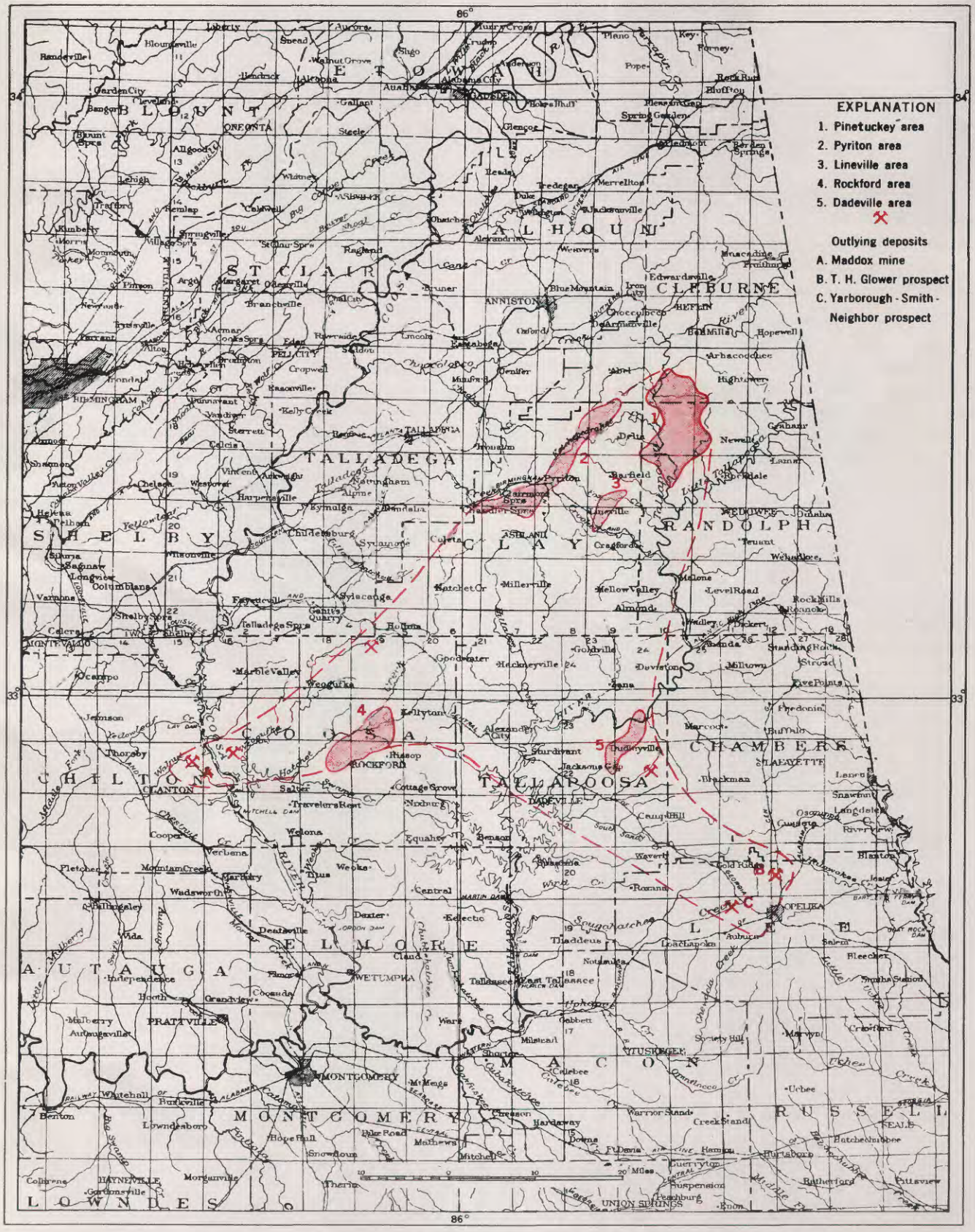

FIGURE 144.—Index map of a part of Alabama, showing the location of mica-bearing pegmatite areas.

west by a narrow curving belt of the Hillabee chlorite schist, on the north by hornblende gneisses and schists, and on the southeast by a narrow strip of Pinckneyville granite and a broad belt of the Wedowee formation. The mica deposits in the southeastern belt (Dadeville area) are confined to Tallapoosa County. The belt is not differentiated on the geologic map of Alabama, but lies within the area of "igneous schist and gneiss." This second belt of Ashland mica schist is bordered on the northwest by a strip of the Wedowee formation. The deposits in Coosa County (Rockford area) lie within the Ashland mica schist on both sides of a central belt of the Wedowee formation that includes the Rockford body of the Pinckneyville granite.

The Ashland mica schist, which is believed to be pre-Cambrian in age, consists of mica schist (both muscovite and biotite), mica-garnet schist, and graphitic schist. Foliation is generally well developed. Locally the schists have been invaded by igneous material, chiefly along their foliation planes, with development of hybrid rocks in which varying quantities of quartz and feldspar occur in distinct layers and pods. At the northern end of the northwestern belt are bodies of hornblende schist and amphibolite that are thought to be metamorphosed intrusive rocks.

A few pegmatite bodies occur in the narrow belt of Hillabee chlorite schist at the south end of the northwestern Ashland mica schist area. The Hillabee is considered to be post-Carboniferous in age and to have been formed by the metamorphism of a series of mafic igneous rocks that were intruded into the Ashland mica schist. It includes chlorite schist and gneissic amphibolite. Around the margins of these metamorphosed igneous bodies are phyllite and "knotted" sericite schist.

The Wedowee formation is believed to range in age from Cambrian to Carboniferous. It resembles the Ashland mica schist and comprises phyllite, micaceous quartzite, mica schist, and local sillimanite schist. Very few large pegmatite masses occur within this formation, and in general the amount of igneous injection that has taken place is small with respect to that in the Ashland mica schist.

IGNEOUS ROCKS

The Pinckneyville granite is intrusive into the Ashland mica schist and Wedowee formation and is probably post-Carboniferous in age (Gault, 1945, pp. 181–246). It is the youngest rock in the district and is relatively unmetamorphosed, although both gneissic and massive varieties occur. The main body is about 40 miles long in a northeast-southwest direction and 10 miles wide. It lies parallel with and between the two major belts of Ashland mica schist. Many smaller satellitic granite bodies are present as outliners from the main mass. The schist near the granite masses contains many sills and conformable lenses of granite that range in thickness from a few inches to several feet. Many pegmatite bodies and scattered masses of aplite have also been injected into the metamorphic rocks. Most of the larger masses are in the Ashland mica schist, which locally has been impregnated with pegmatite material. The main granite body, as well as some of the satellites, plunges to the southwest.

STRUCTURE

The belts of metamorphic rocks and the long axis of the main granite mass trend northeast. In general the foliation in the Ashland mica schist strikes northeast and dips southeast. The majority of the strikes range from N. 30° E. to N. 65° E. and most of the dips from 30° to 70° SE., but locally the strikes are northwest and the dips southwest. Very few northwest or northeast dips have been recorded. The foliation is crumpled or otherwise contorted near some of the larger pegmatite bodies.

Minor folds were observed in a few places. A syncline, for example, is exposed in a road cut near Sardis Church in western Clay County. It is 75 to 100 ft across, and its axis plunges 10° NE. Most folds, however, plunge to the southwest at low to moderate angles. Structures in the Hillabee chlorite schist and in the hornblende schist members of the Ashland mica schist appear to be more complex than those in the main belts of Ashland mica schist. Faulting, both older and younger than the pegmatite bodies, is a minor, small-scale feature. Some discordant pegmatite masses may have been emplaced along fractures.

DISTRIBUTION AND OCCURRENCE OF THE PEGMATITES

Most of the large pegmatite bodies occur in two areas of Ashland mica schist that lie on opposite sides of the main mass of Pinckneyville granite. Some occur within the hornblende schist member of the Ashland mica schist, and several others are in the Hillabee chlorite schist. Very few major pegmatite masses lie in the Wedowee formation, and none is within the main granite body. Many, however, are closely associated with small sills and other masses of granite.

On the basis of their geographic distribution, the pegmatite deposits can be grouped into five major areas (fig. 144), all of which are elongated in a northeasterly direction:

1. The *Pinetuckey area* (pl. 43) is the largest and contains 92 deposits. It includes all of those in Ran-

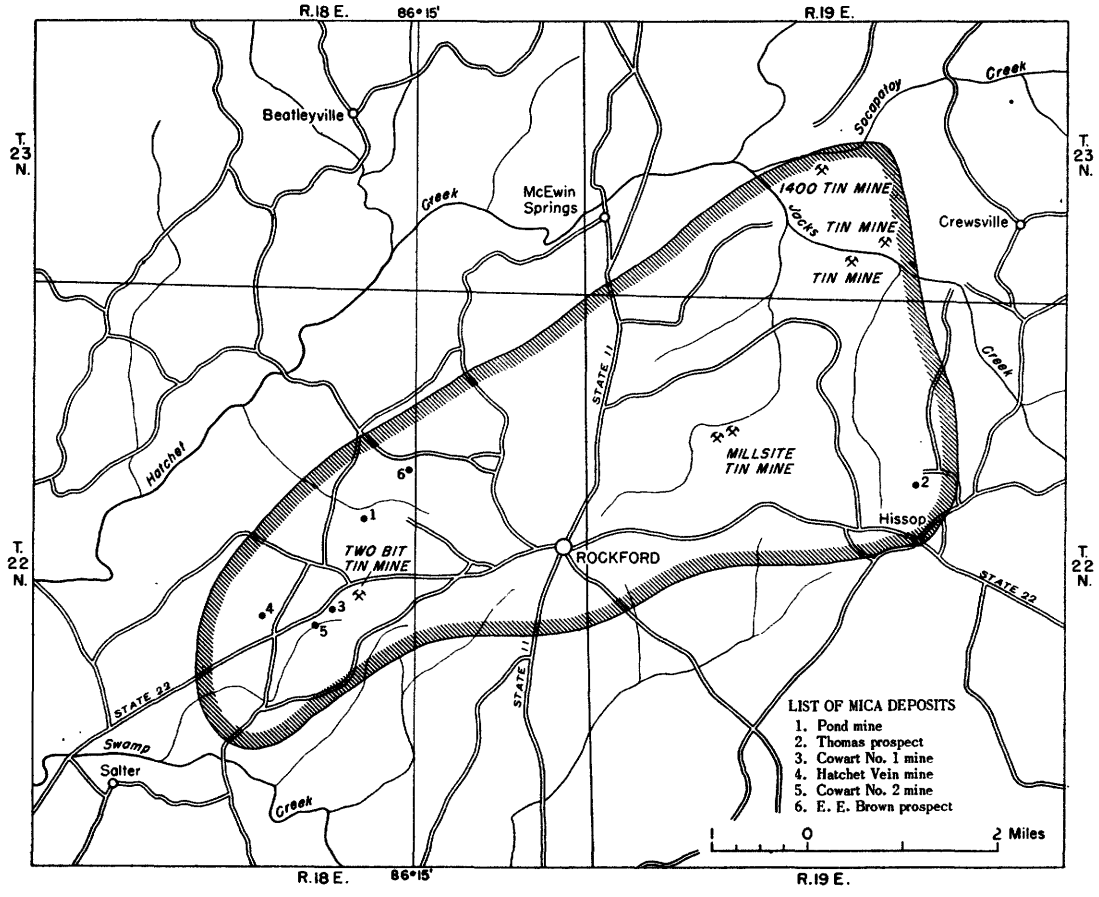

FIGURE 145.—Index map of the Rockford area, in Alabama, showing the location of the mica deposits.

dolph and Cleburne Counties, as well as one in Clay County. The country rock is the Ashland mica schist, although two or three deposits in the north end of the area are enclosed by the hornblende schist member of the Ashland mica schist. The area is 13 miles long and as much as 7 miles wide.

2. The *Pyriton area* (pl. 43), which lies entirely in Clay County, is the second largest and contains 41 deposits. It is 21 miles long and as much as 7 miles wide, but its average width is only 2 to 3 miles. At its northeast end several deposits occur in hornblende schist, and at the opposite end a few are in the Hillabee chlorite schist; the remainder are in the Ashland mica schist.

3. The *Lineville area* (pl. 43), which includes 4 deposits in eastern Clay County, is 5 miles long and 1 mile wide. The country rock is Ashland mica schist.

4. The *Rockford area* (fig. 145), which is in Coosa County and on both sides of the granite body, is underlain by Ashland mica schist. It is 8 miles long and 4 miles wide and contains 4 mica deposits and 5 tin deposits.

5. The *Dadeville area* (fig. 146), in Tallapoosa County, is 3 miles wide and 8 miles long. It includes 14 deposits, plus another small deposit that lies southeast of the area.

Most of the pegmatites are in the Ashland mica schist. Several outlying deposits occur in Lee and Chilton Counties, but these were not examined.

GENERAL STRUCTURAL FEATURES OF THE PEGMATITES

SIZE

The pegmatite bodies are remarkably uniform in attitude, shape, structure, and composition. As compared with most other pegmatite deposits in the southeast, they are small and petrologically simple. Among the largest bodies are the following:

	Explored strike length (feet)	*Explored dip length (feet)*	*Maximum thickness (feet)*
Liberty	300	250	18
Indian	450	50 (?)	9
Great Southern No. 1	250	100	20
Hurst	600	160	25
M. and G	200	250	6
Mica Hill	370	60	75

Pegmatite bodies only a few inches thick have been explored, but the bodies that have been most extensively mined are at least 3 ft. thick.

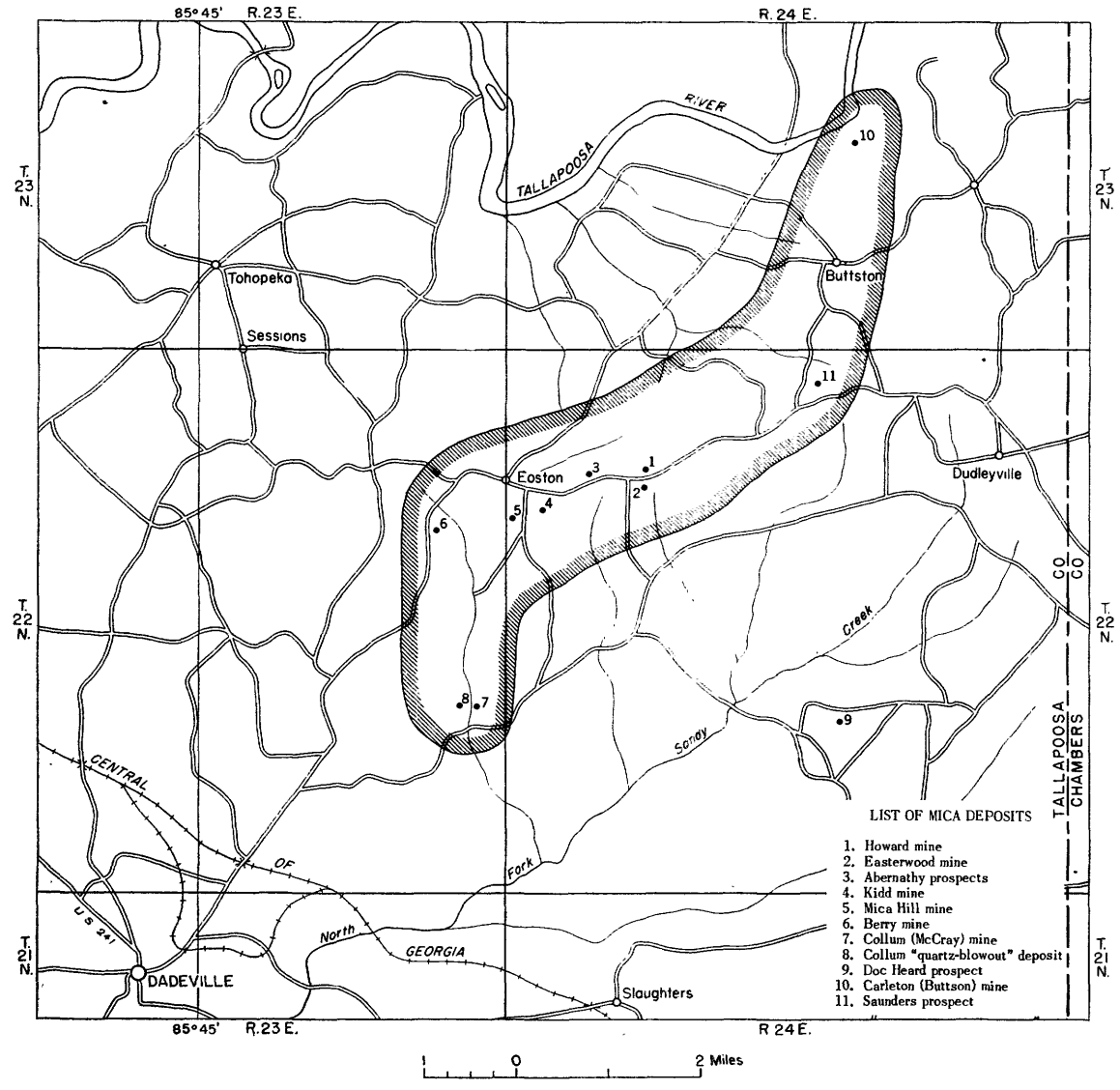

FIGURE 146.—Index map of the Dadeville area, in Alabama, showing the location of the mica deposits.

FORM AND RELATION TO COUNTRY ROCK

The deposits can be classified on the basis of their form and structural relationship to the country rock as follows:

1. Sills (concordant).
   - A. Tabular or lenslike.
   - B. Curving or otherwise irregular.
2. Dikes (discordant).
   - A. Tabular or lenslike.
   - B. Irregular and branching.
3. Discordant cigar-shaped bodies.
4. Concordant pipes.

Sills constitute nearly four-fifths of the pegmatite bodies examined. Most of the sills are lenslike or tabular in shape, and a few are arcuate in plan. All are conformable or very nearly conformable with the foliation of the country rock. The main Hurst body is a typical regular sill, and the Crews body is a curving sill. Most of the bodies are regular in shape, and contacts with the wall rock are generally sharp and not broken by offshoots.

About a tenth of the deposits examined are dikes. They comprise tabular lenses and very irregular bodies with many apophyses and septa of wall rock. They cut across the structure of the country rock, which commonly is contorted near the contacts. The main Kidd dike is a typical example. Dikes are most common in the Dadeville area and in two parts of the Pinetuckey area (secs. 3 and 4, T. 18 S., R. 10 E., and secs. 5, 6, 7, and 8, T. 18 S., R. 11 E.).

Only five cigar-shaped bodies have been noted. They are roughly oval or lozenge-shaped in cross section.

In general they cut across the structure of the country rock and plunge south at low to moderate angles.

None of the larger mica pegmatite deposits is known to be pipelike in shape, but many small pipes of cassiterite-muscovite pegmatite occur in Coosa County (Rockford area). These bodies range in diameter from a few inches to 4 ft, with lengths of as much as 25 ft. They occur in great numbers and occupy the crests of small anticlines in the foliated country rock. They are oval, roughly circular, or triangular in cross section and plunge south at angles of 15° to 30°.

ATTITUDE

The rather uniform foliation of the metamorphic rocks appears to have controlled the attitudes of most pegmatite bodies. Their strikes and dips are summarized in figures 147 and 148. Most of the strikes are northeast, with a majority between N. 30° E. and N.

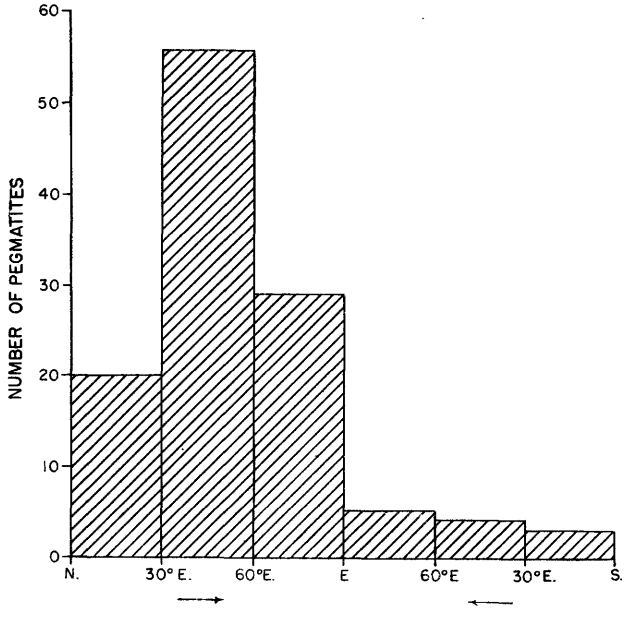

FIGURE 147.—Concentration diagram of the strikes of pegmatite bodies in Alabama.

60° E. A high proportion of the dips are to the southeast, with a majority between 30° and 60°.

Nearly all the pegmatite structures plunge south at low to moderate angles. These structures include the keels and crests of cigar-shaped bodies and a few lenslike sills, as well as the axes of small pipe-shaped bodies and the cores of the larger bodies. The observed plunge structures in five cigar-shaped bodies are as follows: Great Southern No. 5 mine, crest plunges 32° S.; Hodge No. 2 mine, keel plunges 45° S. 45° E.; Mica Hill mine, keel plunges 10° S. 22° E.; Randolph Mica Co. mine, crest plunges southwest (?) at a low angle; Clein scrap-mica deposit (aplite), crest plunges 10° SW. It is interesting to note that the main axes of the Pinckneyville granite and at least one of its outliers plunge gently to moderately in a southerly direction (Gault, 1945, p. 242; Park, 1935).

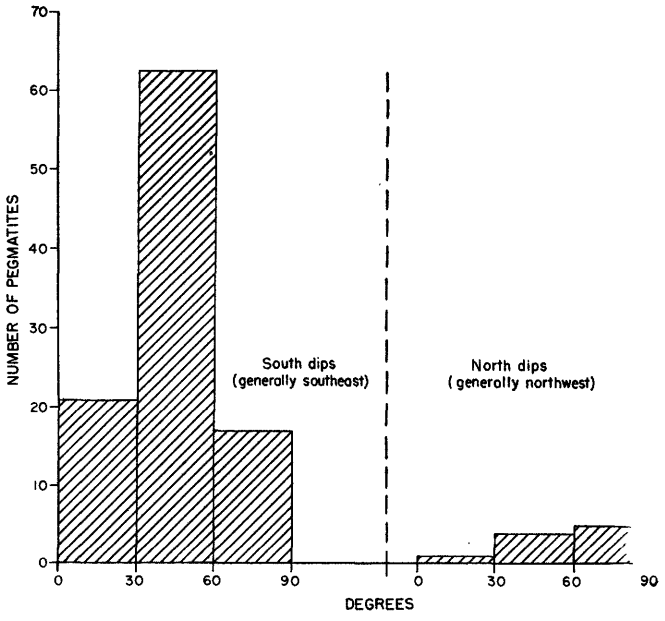

FIGURE 148.—Concentration diagram of the dips of pegmatite bodies in Alabama.

INTERNAL STRUCTURE OF THE PEGMATITES

PRIMARY STRUCTURE

The internal structure of the Alabama pegmatites is generally simple. Clear-cut zones are lacking in nearly two-thirds of the bodies, although in some bodies a poorly defined, small-scale platy structure is present. In the other third of the pegmatites two to four zones occur. The pegmatites can be classified and described on the basis of their internal structure; the relative abundance of each type is shown in figure 149.

Unzoned bodies are structurally the simplest and comprise two general pegmatite types. One consists of a medium-grained aggregate of feldspar, quartz, and muscovite, commonly with biotite, garnet, and black tourmaline as accessory minerals. The other consists of a quartz-muscovite intergrowth (burr rock) with very little feldspar. Both types contain relatively small quantities of coarse book mica and are of minor commercial importance. Most are small sills or lenses.

One of the most common internal structures is a parallel arrangement of numerous platy quartz masses that range in thickness from about an inch to a foot and in length from 1 to 6 ft. The plates tend to be parallel with the walls of the pegmatite body and commonly are closely spaced and abundant. The enclosing pegmatite generally is rich in feldspar and

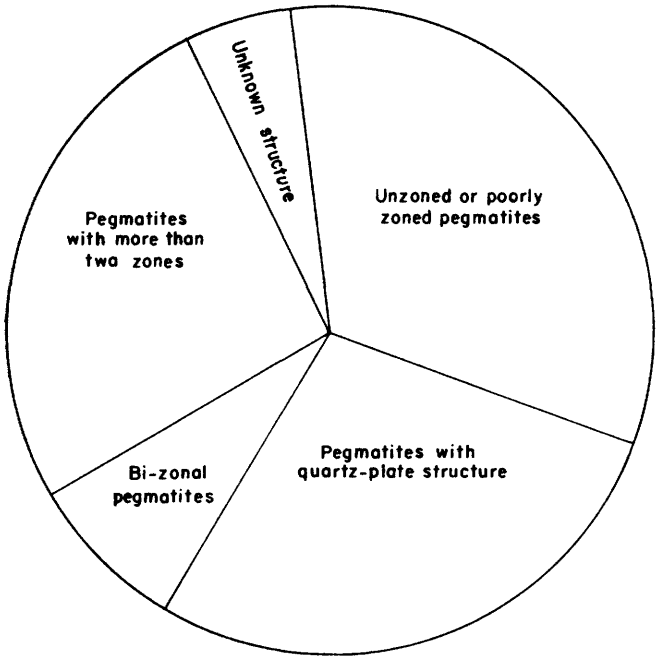

FIGURE 149.—Relative abundance of pegmatite types, on the basis of internal structure, in the Alabama district.

contains some granular quartz and muscovite. Mica books are clustered along the margins of the quartz plates, and each plate is not unlike a quartz core that is surrounded by a typical, core-margin mica zone and a feldspathic wall zone. About a third of the pegmatite bodies in the district are characterized by this structure, which may represent discontinuous or rudimentary zoning. Gradations from multiple quartz plates into a single central quartz mass occur along the strike of some of the pegmatites. The change from plates to quartz core takes place from northeast to southwest. In some pegmatite masses the markedly streaky appearance is accentuated by thin, discontinuous layers of gneiss that are parallel to the walls and the quartz plates; indeed, the quartz plates may well represent zoning developed with respect to the layers of gneiss.

The typical bizonal pegmatite bodies contain thin, fine-grained selvages or border zones and central zones or cores of medium-grained feldspar-quartz-muscovite rock or quartz-muscovite rock (burr rock). The polyzonal pegmatites contain cores of massive quartz or coarse blocky feldspar, generally perthite. Almost all these cores plunge south at low to moderate angles. Flanking them are mica-rich intermediate zones. In some deposits an inner intermediate zone of coarse feldspar lies at the nose of the core and tapers out along its flanks, so that the mica-bearing unit along much of the core actually is an outer intermediate zone. The wall zones consist of medium-grained feldspar-quartz-muscovite pegmatite, quartz-muscovite (burr rock) pegmatite, and rarely graphic granite. Biotite, black tourmaline, and garnet are common accessory constituents. A fine-grained intergrowth of quartz and feldspar is the most common border-zone material, but selvages of muscovite and discontinuous pods of quartz-tourmaline rock occur along the margins of some deposits.

OTHER STRUCTURE

Other, later-stage pegmatite units, either fracture fillings or replacement bodies, occur in very few of the deposits, and the total amount of such pegmatite material appears to be insignificant. The Collum "quartz blow-out" pegmatite, which consists chiefly of massive quartz, is transected by late-stage veinlets that contain muscovite and a little plagioclase. In the pegmatite at the Pat Ayers No. 4 prospect is a central unit that consists of radiating blades of wedge-A mica. It seems likely that this unit, although poorly exposed, was formed by replacement of feldspar-rich pegmatite outward from a central fracture. Vugs, pseudomorphs, crosscutting rock units, and pegmatite minerals commonly associated with replacement and hydrothermal processes are absent from the deposits of the Alabama district.

MINERALOGICAL FEATURES OF THE PEGMATITES

Most of the pegmatites contain quartz, plagioclase, microcline, and muscovite. Black tourmaline, biotite, and garnet, in that order of abundance, are the common accessory minerals. The rare minerals include apatite, pyrite, beryl, cassiterite, kyanite, and graphite. Tantalite (Palache, Berman, and Frondel, 1944, p. 785) is reported from a pegmatite in Coosa County, but the exact locality is not known.

Massive milky quartz forms the cores of many deposits. The quartz of the smaller plates is generally glassy and gray. Veinlets of quartz extend outward from the cores of some pegmatites, transecting the outer zones. Both perthite and plagioclase are present in many deposits. Much of the potash feldspar occurs as coarse crystals, either in cores or in generally discontinuous intermediate zones along quartz cores. The feldspar of the wall zones and that associated with mica-rich parts of the deposits is chiefly plagioclase, which is white to pale green. The perthite, in contrast, is cream-colored and gray. Graphic intergrowths of perthite and quartz, which are rare, were observed at the Crews, Friendship No. 1, and Mica Hill mines. In general plagioclase is more abundant than the potash feldspar; thus most of the pegmatites are not truly granitic, but are light colored members of the granodiorite and quartz diorite groups.

Muscovite occurs as scattered books and flakes in wall and border zones, as well as throughout pegmatites that are not clearly zoned. The largest books are concentrated in intermediate zones along the margins of cores and in mica-rich wall zones near contacts with the country rock. In some pegmatites the feldspar contains abundant sericite. This late-stage mica is bright green and occurs as small flakes and very fine grained films.

Black tourmaline, which occurs as well-formed crystals, is abundant in some deposits. Many of the crystals have been fractured and subsequently "healed" by veinlets of quartz. Small pods of a vermicular intergrowth of quartz and tourmaline were observed in a few pegmatites. Biotite, which is less common than tourmaline, occurs as small books scattered throughout wall-zone rock. Some is intergrown with muscovite. Scattered small crystals of pale-green apatite were seen in several deposits. This mineral is unusually abundant in the Jones No. 1 pegmatite, where it is bright blue and is associated with pink garnet and black tourmaline. Garnet, in small grains and in partly faced crystals as much as 1½ in. in diameter, is a common accessory constituent. Some well-developed crystals were noted at the J. J. New No. 2 deposit. Beryl was found at only one deposit, the Pat Ayers No. 2. It is reported from the Smith No. 1 mine, and from the Thomas deposit near Hissop in Coosa County (Rockford area).

Pyrite was observed as scattered small specks and blebs in many of the cores from the Bureau of Mines drill holes, but it was not seen in any of the weathered pegmatite exposures. An unidentified silvery sulfide mineral occurs along fractures in quartz at the Randolph Mica Co. mine. Cassiterite occurs as scattered grains in many border-zone greisens in the pegmatites of the Rockford area (Stoll, 1943). A few of the tin-bearing pegmatites have been explored for mica, but in general they do not contain many books of commercial value. The pegmatite bodies that contain cassiterite, the chief rare mineral in the district, are those that are closest to the major granite bodies.

Kyanite was found in three deposits, the Friendship No. 1, Smith No. 1, and Jim Flemming. These are at the north end of the district, and the Smith No. 1 and the Jim Flemming are within the hornblende schist member of the Ashland mica schist. Minute flakes of graphite occur sparsely in the Hurst No. 1 deposit, which lies near the border of the graphitic schist belt. Coarse flake graphite is intimately associated with pegmatites and quartz veins at several graphite mines, which include the Bama in Chilton County, the Goodwater, Parkdale, and Seminole in Coosa County, and the Eagle in Clay County (Clemmer and others, 1941).

Minerals formed by alteration of the primary pegmatite minerals include limonite, goethite, manganese oxides, and kaolin. The feldspar in nearly all the deposits is weathered to kaolin at the surface, and in some deposits the decomposition extends to depths of more than 50 ft. Kaolin, limonite, and manganese oxide stains are present in many of the mica books. Thick encrustations of mammillary goethite were observed along fractures in massive quartz at the Gopher mine.

Most of the hypogene pegmatite minerals appear to be primary constituents in the strictest sense. Consolidation of the pegmatite bodies appears to have begun with formation of quartz and plagioclase, followed closely by the initial crystallization of muscovite. Quartz continued to develop throughout the late stages, during which crystallization of plagioclase was supplanted, wholly or in part, by that of microcline. Biotite, tourmaline, apatite, and garnet probably are assignable to the quartz-plagioclase-book muscovite stage, but beryl and tantalite-columbite might well be later minerals. Kyanite and graphite probably are early-stage contamination minerals, and cassiterite appears to have been developed in border zones with quartz and plagioclase. The relationships of the common constituents are much more clearly defined than those of the rarer minerals. Very late minerals, possibly in part of hydrothermal origin, include sericite, some plagioclase and muscovite, and possibly pyrite.

WALL-ROCK ALTERATION

The intrusion of the pegmatite bodies appears to have had little effect upon the wall rocks. Locally garnet and muscovite are coarser and more abundant near the pegmatite contacts, and in a few places permeation by pegmatitic solutions has produced a coarse, recrystallized, silvery quartz-muscovite schist that contains some feldspar.

ORIGIN OF THE PEGMATITES

Pegmatite and granite are closely associated, both locally and on a regional scale. The belts of Ashland mica schist into which the pegmatites were intruded lie northwest and southeast of the largest body of Pinckneyville granite, most of which is actually quartz diorite. The intrusion of pegmatites and aplites appears to have been one of final stages in a long period of igneous activity. Neither the granite nor the pegmatite has been fully affected by the metamorphism that altered the older rocks. The position of the peg-

matites around the largest granite body suggests a common source of material for both types of rock.

Apparently little large-scale faulting accompanied the intrusion of these igneous rocks, although minor fractures were developed in the schists. In general these fractures trend northwest and dip southwest, and they are believed to have controlled the emplacement of the crosscutting pegmatite dikes. The intrusion of cigar-shaped bodies probably was guided by fractures also, whereas the concordant pegmatite pipes were injected along the crests of small anticlinal folds in the schist.

Consolidation of most pegmatites appears to have proceeded inward from the walls, with crystallization of border zones, wall zones, intermediate zones, and cores in that order. Thin stringers of quartz extend outward from cores of massive quartz and cut across the zones that were formed earlier. The general plunge of the pegmatite bodies is southward, and where gradations from platy quartz bodies to cores of massive quartz occur, the cores lie near the south ends of the pegmatite bodies and hence near their crests. This is in marked contrast to relations in the Petaca district, N. Mex., where the quartz cores are consistently near the keels of most plunging pegmatite bodies (Jahns, 1946, pp. 88–93).

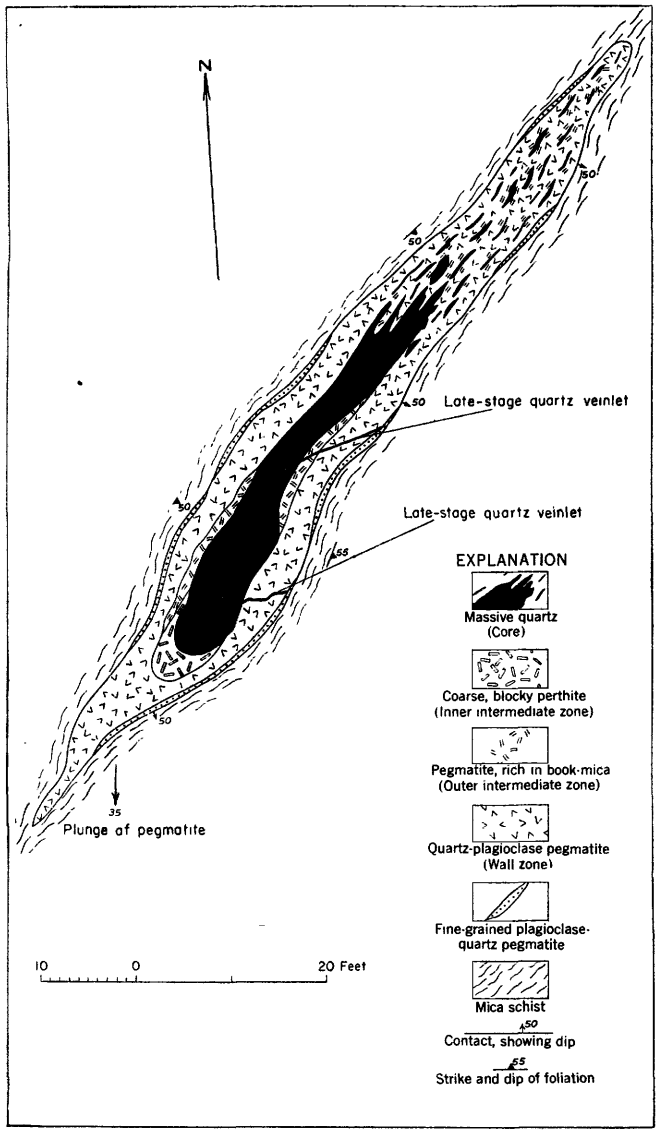

FIGURE 150.—Idealized plan of a typical Alabama pegmatite.

The lower or keelward parts of the Alabama bodies may have consolidated before complete segregation or differentation could take place, or their internal structure may reflect zoning developed around thin, platy masses of country rock. An idealized plan of a typical Alabama pegmatite is shown in figure 150. In general the pegmatites do not appear to have formed under open-system conditions, but show an overlapping sequence of mineral development. Postcrystallization fracturing and corrosion or replacement of minerals by later hydrothermal solutions probably were very minor processes.

ECONOMIC ASPECTS OF THE PEGMATITE MINERALS

MICA

DISTRIBUTION

Book mica occurs in all pegmatite zones except cores, and the minable concentrations can be classified as follows:

1. Disseminated deposits.
2. Deposits along platy quartz masses.
3. Wall-zone deposits.
4. Intermediate-zone (generally core-margin) deposits.
5. Replacement and fracture-controlled deposits.

Books of mica are disseminated through the unzoned or poorly zoned pegmatites, or through those parts of pegmatites in which zoning is not clearly developed. The books are generally small and not very abundant. This, the most common type of deposit, is of little commercial importance.

Pegmatites in which alined platy masses of quartz are present commonly contain mica concentrations along the sides of these plates. Such deposits are numerous, and as a group they have been an important source of mica (figs. 151 and 152). The mica is generally abundant, hard, and free splitting. Its average diameter, about 6 in., is larger than that of the books in the disseminated deposits (fig. 153). Cracks, reeves, rulings, warping, and quartz inclusions are the most common defects.

As far as total production is concerned, the wall-zone mica deposits have been the most important in

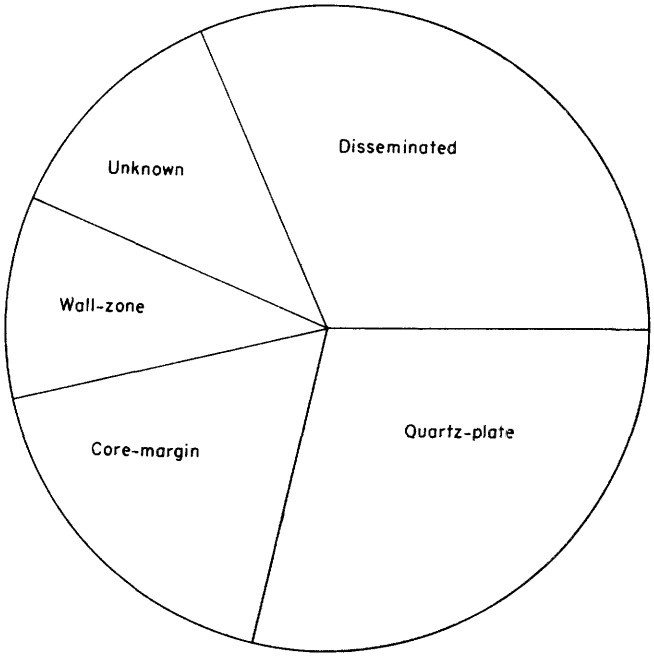

FIGURE 151.—Graph showing the relative abundance of Alabama mica deposits by type.

Alabama, chiefly because of the M. and G. mine. Such concentrations, however, are the least common of the

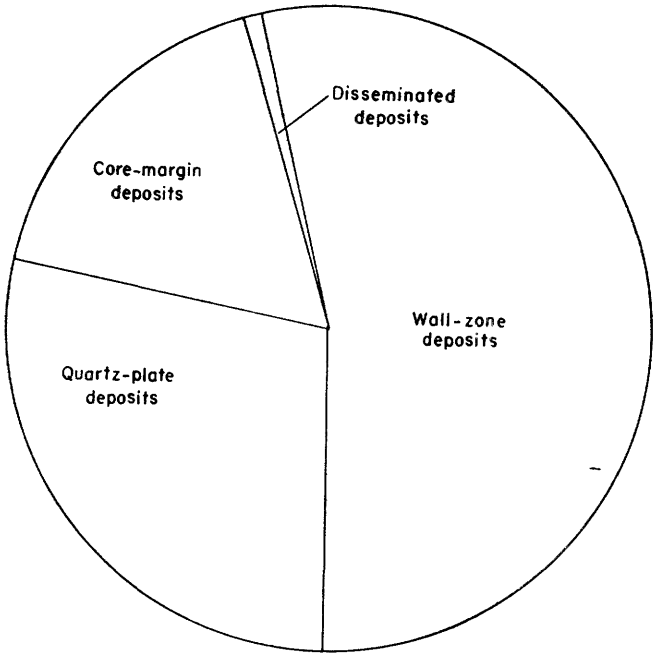

FIGURE 152.—Production of mica in Alabama, June 1943–January 1945, by type of mica deposit.

major types. The quality of the mica generally is better than that from the other classes of deposits. The books range considerably in size and generally are confined to or concentrated in relatively thin pegmatite layers near contacts with country rock. Thin border zones separate the mica-bearing rock from the walls in some deposits, but in others such selvages are discontinuous or absent.

Intermediate zones of mica-bearing pegmatite are most common along the margins of massive quartz cores. In a few deposits they are outer intermediate zones that flank discontinuous inner intermediate zones of blocky feldspar. The books generally are large, and in some deposits they are unusually abundant. Mica from core-margin zones is characterized by strongly developed "A" and herringbone structures and commonly is wedged as well. Black specks are

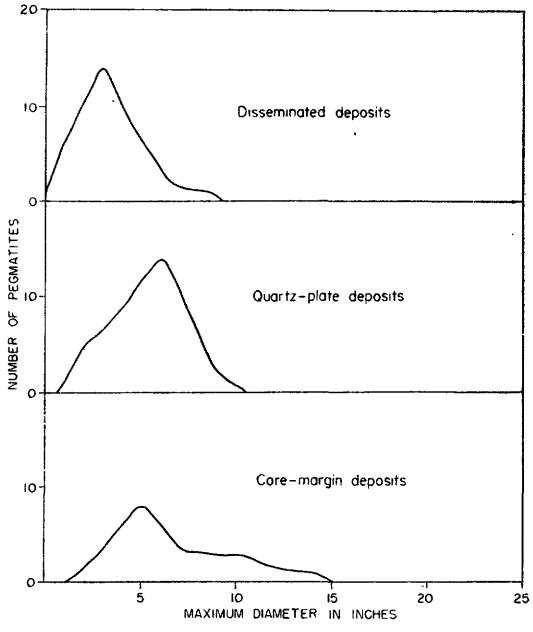

FIGURE 153.—Relation of maximum diameters of mica books to mode of occurrence in Alabama pegmatites.

another serious defect. "A" structure is not restricted to core-margin mica, but it is most widespread in such material. Of 27 core-margin deposits that were examined, 23 contain mica in which this structure is the chief defect. Although the books may be large and abundant, the proportion of sheet mica that can be obtained from the mine-run material generally is small.

Two deposits that contain late-stage mica of probable replacement origin have been described in a preceding section. Mica from the Pat Ayers No. 4 is of the wedge-A type, and nearly all of it is of scrap grade. Mica from the Collum "quartz blow-out" pegmatite is of electric grade, owing to a heavy dark-green mottling. These deposits are of limited commercial importance.

PHYSICAL PROPERTIES

The principal defects of Alabama mica are cracks; warping; reeves; "A," herringbone, and wedge structures; and mineral inclusions. Ruling is rather uncommon, a feature that may reflect the relative insignificance of fracturing in the district after pegmatite formation. Cracks, warping, and inclusions of biotite, tourmaline, quartz, and garnet, are the principal defects in mica from the disseminated, quartz-plate, and wall-zone deposits. In contrast, "A," herringbone, and wedge structures, as well as black specks of iron oxide, constitute the chief defects of the core-margin mica. Mica books from the quartz-plate and wall-zone deposits are harder and split more easily than core-margin books. Most near-surface mica is soft and stained by kaolin, limonite, and manganese oxides.

The color of the mica ranges from light cinnamon brown through deep brown and brownish olive to yellowish green and pale green. Much of the mica is uniformly light or medium brown, but color zoning is an outstanding characteristic of the books from many deposits. Brown centers are enclosed by narrow, pale- to bright-greenish rims, although in one deposit, the Bob Lee No. 1, this color arrangement is reversed, with brown borders and brownish-olive centers. Most of the deep-greenish and olive-colored micas occur in the southern part of the Dadeville area, as at the Berry, Mica Hill, Collum, Collum "quartz-blowout," and Doc Heard deposits. This mica is heavily specked with magnetite and contains much deep-green mottling. Most is of electric grade.

Scattered through the Pinetucky and Pyriton areas are several deposits that contain both brown and greenish mica. The greenish mica generally occurs in larger books and is soft, tied, warped, and marked by reeves and "A" structure. The brown mica, on the other hand, occurs in small, flat, hard books. The greenish material is associated with the larger quartz cores and the brown with the smaller quartz plates. It is interesting to note that in these deposits the color of the core-margin mica, which presumably crystallized later than the mica around the quartz plates, is the same as that of the outer rims of the quartz-plate books. Magnetite specks, where present, are concentrated in the greenish borders of the color-zoned books.

QUALITY

Owing to the development of "A," herringbone, and wedge structures, as well as black specks, the quality of the core-margin mica generally is somewhat poorer than that of micas from wall-zone and quartz-plate deposits. The average quality of wall-zone books appears to be a little better than that of books from the quartz-plate type of deposit. As may be seen in figure 154, mica from the Pyriton area (Clay County) ordinarily is of slightly better quality than that from the Pinetuckey area (chiefly Randolph County).

OTHER MINERALS

A little kaolin has been mined from the Mica Hill deposit and from others near Micaville (Clark, 1921, pp. 50–51, 106–115), but the total amount was small. Alabama pegmatitic kaolins have been found suitable for ceramic purposes, but in general the deposits are small and the material must be washed to free it of quartz and mica.

Much prospecting for tin has been done in Coosa County, most recently during the period 1940–42 (Stoll, 1943).

The kyanite-bearing pegmatite near the Jim Flemming mine has not been explored, but appears to merit prospecting. Much coarse kyanite float is present over a wide area.

MINING

HISTORY

Evidences of prehistoric mining operations for mica have been found at the Liberty (Curley), Great Southern No. 1, and Miller mines (Sterrett, 1923, pp. 28, 32, 34, 35). The Indian mine is reported to be another site of mining by the aborigines, and the Indians are said to have dug beryl for adornment from the Smith No. 1 deposit. According to Mrs. E. W. York, of Heflin, the first systematic mining in the district was done about 1870 in the Pinetucky No. 1 deposit. Some of the mines in Randolph County were opened about 1885, and others were worked in 1893.

Late in the nineteenth century Hugh McIndoe prospected and mined in the Pinetuckey area and John Boyd opened many deposits near Pyriton. From 1906 to 1908 the Great Southern Mica Co. operated several mines in Randolph County. Following a decade of near-idleness, activities were renewed during the period 1918–22, when mining was carried on, for example, in the Mica Hill and Abernathy (Coosa County Mining Co.), Arnott (Minot Mica Co.), Great Southern Nos. 2 and 3 and Crystal Clear (Consolidated Mica Co.), and Liberty (Liberty Mica Co.) deposits. Production dropped to very low levels after 1922, and it was not until 1941 that intensive prospecting and mining were resumed in response to more favorable market conditions. Among the larger mines that were operated are the M. and G., Hurst, Liberty, Haynes No. 1, Bob Lee No. 1, Smith No. 1, Arnott, and Kidd. The Colonial Mica Corporation maintained a field office

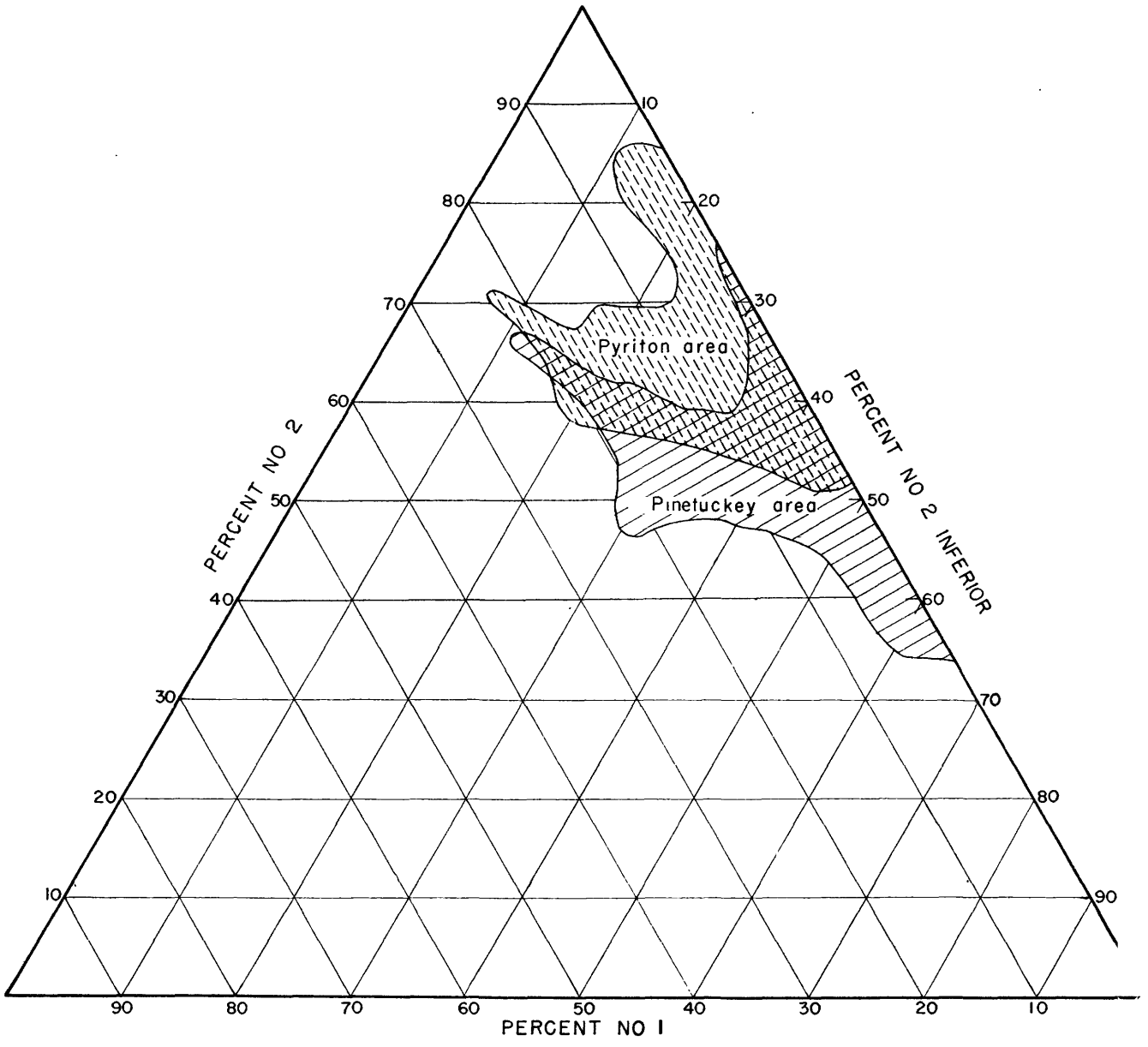

FIGURE 154.—Average percentages of no. 1, no. 2, and no. 2 inferior mica produced in the Pinetuckey and Pyriton areas in Alabama during the period June 1943–January 1945.

and a custom rifting and trimming shop in Ashland during the period of maximum activity.

MINE WORKINGS AND MINING METHODS

Most of the deposits have been developed by means of small pits, trenches, and shallow open-cuts, from many of which short underground workings extend. Mines worked largely by underground methods include the M. and G., Mica Hill, and Great Southern No. 1. In some mines, such as the Arnott, Liberty, and Haynes No. 1, work was done in both surface and underground openings. Owing to the general low dip of the deposits, many mines have been developed by means of inclines (termed "slopes" by the Alabama miners) driven down the dip. Stopes have been extended laterally from these openings. The gentle topography reduces the value of ordinary adits as a means of opening a deposit and obtaining backs. Vertical shafts have been sunk in or to many of the more steeply dipping pegmatites.

Much development has not extended below the zone of weathering, and the soft material can be mined by hand methods. Mine openings are seldom timbered and hence cave easily. Open-cut operations are commonly conducted by means of a dragline and scraper pan.

PRODUCTION

Considered from the standpoint of total production, the district is among the least important in the Southeast. From June 1942 to January 1945 a total of 8,894 lb of trimmed sheet and punch mica was obtained. Nearly 59 percent of this total was from the M. and G. mine, and 71 percent was from only six deposits, the M. and G., Arnott, Haynes No. 1, Great Southern No.1, Smith No. 1, and Hurst. The mica obtained during this period comprised 20 percent no. 1 quality, 55 percent no. 2, and 25 percent no. 2 inferior.

FUTURE OF THE DISTRICT

The future of extensive mica mining in the district depends much more upon market conditions than upon available reserves. During the two most important mining periods, 1918–22 and 1942–45, production was stimulated by unusually high prices, in part involving subsidies. During periods of normal prices only sporadic, small-scale operations have been undertaken. Additional reserves probably are present in many of those deposits from which a considerable proportion of the 1943–45 production was obtained. Moreover, numerous small and promising prospects that were opened during this period remain to be developed, and still other deposits undoubtedly remain to be discovered. Under favorable market conditions the resumption of relatively widespread and intensive mining activity is to be anticipated.

Another possibility for the future is the development of mining for scrap mica begun in Randolph County by M. L. Clein in 1944. The Clein deposit is a shell of recrystallized mica-rich schist that surrounds a cigar-shaped body of aplite. A moderate reserve of rock that contains scrap mica appears to be available, but the operation was abandoned because the quality of the first shipment did not attain expectations. Scrap mica, however, is the most common byproduct of all the operations for sheet mica. Most mica from core-margin zones yields a very high proportion of scrap, and some of these deposits are rich enough to be mined for scrap with a view to obtaining sheet mica as a byproduct. Possibilities for scrap-mica mining exist, for example, at the Mica Hill deposit, from which 50 to 80 tons of such material is said to have been obtained from previous operations.

DESCRIPTIONS OF DEPOSITS

CLEBURNE, RANDOLPH, AND CLAY COUNTIES: PINE-TUCKEY AREA

MORRIS MINE

The Morris mine, which is in Cleburne County in the NE¼NW¼ sec. 21, T. 17 S., R. 10 E. (location 1, pl. 43), is 150 ft north of a dirt road near the top of the north side of a prominent ridge. The deposit was opened by the Midland Mica Syndicate, of Minneapolis, Minn., in 1919 or 1920. A little mining has been done during the past few years. The workings consist of two pits. One is 11 by 10 ft in plan and 12 ft deep, and the other, which is 30 ft to the southwest, is 18 ft in diameter and 10 ft deep. Recently a small pit has been dug in its floor.

The footwall contact of the pegmatite body is exposed in the northeastern pit, where it strikes N. 60° E. and dips 25° SE. The body, which is at least 6 ft thick and is reported to be more than 10 ft thick, is conformable with the foliation of the enclosing mica schist. It consists of a medium-grained quartz-kaolinized feldspar-muscovite intergrowth with pods and lenses of quartz as much as 6 in. thick. Black tourmaline, in crystals half an inch in diameter, is locally abundant.

Mica books as much as 5 by 8 in. in size are associated with the quartz pods. Books 2 or 3 in. in diameter are abundant. The color ranges from medium brown to light brownish olive, and some of the books contain light yellowish-green rims. Fractures and ruling are the most common defects. Some "A" structure is present, and a few flattened inclusions of tourmaline were noted. Despite weathering and clay staining, some of the mica appears to have been of good quality. About 200 lb of scrap is stockpiled.

JIM FLEMMING MINE

The Jim Flemming mine, which is in Cleburne County in sec. 24, T. 17 S., R. 10 E. (location 2, pl. 43), is described by Clark (1921, pp. 84–85), who states that "it is marked on the outcrop by heavy masses of quartz containing large hornblende crystals (which are scattered thickly over the ground in cultivated areas below the outcrop) . . ." A long, flat-topped ridge, corresponding in position to that given for the old mine, is marked by outcrops and float of massive white quartz. Numerous boulders of coarsely bladed blue kyanite are associated with the quartz. Neither feldspar nor mica was noted.

JORDAN MINE

The Jordan mine is in Cleburne County in the SW¼ SW¼ sec. 31, T. 17 S., R. 11 E. (location 3, pl. 43), half a mile east of Micaville Church on the south side of the county road. It is owned by Mrs. E. W. York and Mrs. Margaret Verge and was worked for a short time in 1944 by a Mr. Jordan, who lives nearby. The workings consist of three pits, which, from west to east, are 10, 8, and 6 ft deep. Short down-dip inclines were dug from all three, and short drifts were driven east from the central and the eastern inclines. South of

the pits is a 21-ft shaft in which no pegmatite was encountered.

The pegmatite body strikes N. 80° E. and dips 35° SE. It contains a 1-ft quartz core flanked by a 2- to 4-ft zone of pegmatite rich in kaolinized feldspar. Books of mica as much as an inch in diameter are scattered throughout the feldspathic material but are not abundant.

MICAVILLE ROAD PROSPECTS

The Micaville Road prospects are in Cleburne County in the SE¼SE¼ sec. 35, R. 10 E., T. 17 S. (location 4, pl. 43). The workings lie on both sides of the Micaville road 0.5 mile due west of Micaville Church and about 0.2 mile north of the Randolph County line. The prospects are owned by Mrs. E. W. York and Mrs. Margaret Verge, and all but prospect 1 were worked under Mrs. York's direction for a short time during the summer of 1943.

Prospect 1 is an old pit 25 ft north of the Micaville road. It is 10 by 6 ft in plan and 3 ft deep. In it a poorly exposed pegmatite strikes N. 43° E., dips 43° SE., and is at least 2 ft thick. A 3-ft outcrop of massive white quartz lies 10 ft northeast of the pit. Weathered sheets of medium-brown mica, some as much as 2 in. across, are present in the dump. Twenty pegmatite bodies, ranging in thickness from 6 in. to 4 ft, are exposed within a distance of 200 ft along the road cuts to the southwest. They strike northeast and dip moderately southeast and generally are conformable with the foliation of the enclosing muscovite-garnet schist. Some contain central quartz pods. Mica is abundant, but most of the books are small.

Prospect 2 is at the south side of the Micaville road 250 ft west of prospect 1. A pit 20 ft long and 7 ft deep and two shallow down-dip stopes expose a 3-ft pegmatite sill that strikes N. 43° E. and dips 20° SE. Contacts with the mica schist country rock are sharp. Along the hanging wall is a 2-in. selvage of muscovite books, most of which are oriented with their cleavage surfaces normal to the contact. The remainder of the pegmatite is a fine- to medium-grained aggregate of kaolinized feldspar and subordinate quartz, with small platelike bodies of quartz that tend to be conformable with the walls of the sill.

The mica is light yellowish olive and occurs in books as large as 4 by 6 in. Much of it is soft and badly cracked, and many books contain "A" and herringbone structure. The mica is chiefly of scrap grade.

In prospect 3, which is 50 ft southwest of prospect 2, a pegmatite body that strikes N. 42° E. and dips 45° SE. is exposed in two pits. The north pit is 8 ft in diameter and 10 ft deep, and the other is 5 ft wide and 4 ft deep. The pegmatite is at least 5 ft thick, with only the hanging-wall contact exposed. It contains a medial series of quartz pods. Mica books, most of which are marked by wedge-A structure, are clustered around the pods. The mineral is light yellowish olive, soft, and cracked and contains black iron specks. It is heavily stained by limonite. Books as much as 5 in. across are present, but nearly all the mica is suitable for scrap only.

FRIENDSHIP NO. 1 MINE

The Friendship No. 1 mine is in Randolph County on the nose of a low east-west ridge in the SW¼SW¼ sec. 4, T. 18 S., R. 10 E. (location 5, pl. 43). It was first worked about 1918 and is owned by Mrs. E. W. York and Mrs. Margaret Verge, of Route 1, Heflin. It was leased to W. D. McLaney and R. J. McLaney of Lineville, who operated it during the period October–December 1944. For a short time the brothers maintained a rifting and trimming shop in Lineville. Between April and December 1944 a total of 98 lb of trimmed sheet and punch mica was obtained.

The surface workings consist of a long, shallow trench and an open-cut. From the bottom of the east corner of the open-cut an incline extends southeast down the dip of the pegmatite body for 56 ft (fig. 155). Short drifts were run to the south at the 10- and 23-ft levels. The incline was worked by means of a dragline scraper from a double-drum hoist. The pegmatite body, which is 2 to 6½ ft thick, strikes N. 32° E. and dips 25° to 35° SE., but on the northeast side of the incline the strike swings to due north. This change coincides with a thinning that is also observable on the northeast wall of the open-cut. The dike cuts a muscovite-garnet schist whose foliation strikes N. 70° W. and dips steeply southwest and northeast. Float blocks of coarse blue kyanite were found north of the open-cut.

The dike is exposed for a strike length of 105 ft and for 90 ft down the dip. It is well zoned, with a core of massive white quartz, an intermediate zone of muscovite-rich pegmatite, and a wall zone that consists of decomposed feldspar, abundant small muscovite books, and minor quartz. Graphic granite is locally abundant. Slip planes with prominent slickensides transect the wall zone. The core ranges from 1 to 3 ft in thickness and appears to plunge southeast at a low angle. Pegmatite-schist contacts are not sharp, and small reworked country-rock inclusions are abundant in the dike near its margins.

The mica zone, which flanks the core, is thicker and more persistent on the hanging-wall side, although books are abundant on both sides. Unusually rich concentrations occur where the core thins abruptly. The

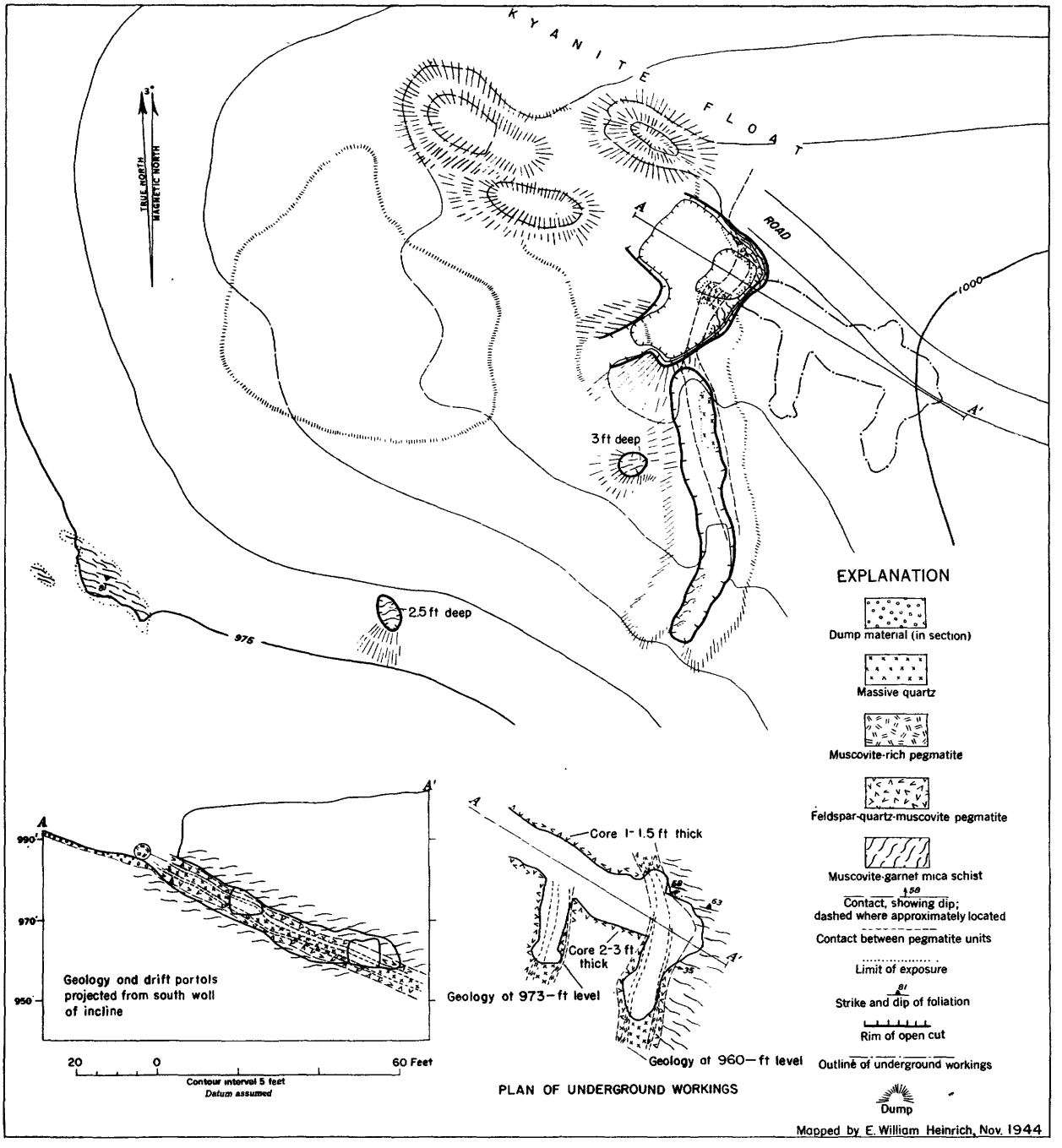

FIGURE 155.—Geologic map, plan, and section of the Friendship No. 1 mine, Randolph County, Ala.

mica is almost entirely of the wedge-A and herringbone types. Black specks are common, especially along the "A" reeves. The books, which are pale brown to brownish olive, are generally rather large. Some are as much as 10 in. in diameter, and clusters of books 2½ ft long were observed on the hanging-wall side of the core. The proportion of scrap in the mine-run mica is very high. The deposit is persistent along both the strike and the dip, and if operating costs could be kept low, it might well be a satisfactory source of scrap mica with sheet material as a byproduct.

FRIENDSHIP NO. 2 MINE

The Friendship No. 2 mine is in Randolph County 0.2 mile northeast of the Friendship No. 1, in the NE¼SW¼ sec. 4, T. 18 S., R. 10 E. (location 6, pl. 43). The deposit is owned by Mrs. E. W. York and Mrs. Margaret Verge, of Route 1, Heflin, and was

first worked by John Boyd before World War I. In the fall of 1944 it was leased to the McLaney brothers, who dug a pit 11 by 8 ft in plan and 10 ft deep in the floor of the old open-cut. The operation was abandoned after several hundred pounds of mica was removed. The old cut is L-shaped, with a southern arm 60 ft long, 15 ft wide, and 6 ft deep and a western arm 35 ft long, 15 ft wide, and 6 ft deep. The new pit was dug at the junction of the two arms.

The pegmatite body strikes N. 55° W. and probably dips steeply northeast. Massive white quartz crops out for 60 ft northwest of the cut. Abundant quartz float persists for another 150 ft, but only mica schist is exposed in the creek bed to the east. Scattered quartz float is present southeast of the cut for a distance of 80 ft. A 10-ft thickness of pegmatite is exposed in the new pit, but contacts with the schist are not exposed. From the rim of the pit to the floor is the following lithologic sequence:

	Feet
Massive white quartz	3
Quartz-muscovite pegmatite, with 30 to 40 percent mica in books whose long axes tend to lie normal to contact with massive quartz	1–3.5
Massive quartz; contact with mica-rich zone strikes N. 77° W. and dips 68° NE	2.5–3
Kaolinized feldspathic pegmatite with minor quartz and small mica flakes; 2-in. veinlets of quartz cut across feldspar	0.5–3.5

The zone beneath the upper quartz mass is unusually rich in mica. Nearly all the books contain wedge-A or herringbone structure, and their average size is large. The mineral is light brownish to yellowish olive and contains abundant light-green mottling. Most is hard but is marred by heavy clay and limonite staining. In the outer parts of many books are numerous minute biotite crystals. The pegmatite is unusually rich in mica, but the proportion of recoverable sheet and punch material is very low. The deposit appears to offer excellent possibilities for the production of scrap mica with small quantities of sheet material as a byproduct.

ARNOLD PROSPECT

The Arnold prospect, which is in Randolph County in the SE¼NW¼ sec. 3, T. 18 S., R. 10 E. (location 12, pl. 43), lies on the north side of a low rise 300 ft east of Alabama Highway 37. It is owned by a Mr. Arnold, of Anniston, and was worked during 1943. The openings consist of a new, uncribbed 7-by-7-ft shaft that is 11 ft deep and an old shallow, caved pit that is 8 ft in diameter and lies 25 ft to the southwest. The pegmatite body which is exposed in the shaft, strikes east and dips 80° N. It appears to cut across the foliation of the enclosing mica schist. It is 4 ft thick at the collar but thins to 3 ft at the bottom of the shaft.

The pegmatite consists almost wholly of massive quartz with scattered, well-faced muscovite crystals and very minor quantities of feldspar. In this burr rock the mica is medium brown and occurs in books as much as 3 by 4 in. in size. Most books, however, are rather small, and the mica is badly cracked, warped, and clay-stained. Inclusions of garnet also are present. The material is chiefly scrap.

ARNOTT MINE

The Arnott mine is in the SW¼NE¼ sec. 2, T. 18 S., R. 10 E. (location 13, pl. 43), about three-quarters of a mile south of the Randolph County-Cleburne County line. The workings, which lie on the gentle east slope of a low hill, are easily reached from Alabama Highway 37 over 3 miles of the Micaville road and over a wood road that extends southwest for 2.2 miles. The mine is owned by Mrs. E. W. York and Mrs. Margaret Verge, of Route 1, Heflin. The following operators are known: 1918–20, Minot Mica Co., Minot, N. Dak.; 1926, John Arnott, Heflin, Ala.; 1929, Johnson, Hamilton, and Lisle; May–December 1943, Victor Mica Co. (G. C. Gentry); December 1943–April 1944, A. C. Bromberg and Colbert, Atlanta, Ga. About 45 tons of mine-run mica was obtained by the Minot Mica Co. (Clark, 1921, pp. 60–61). From May 1943 to April 1944 a total of 202 lb of trimmed punch and sheet mica was produced. No records are available for the other operations, but the total production probably is about 70 tons of mine-run mica.

The workings consist of a large, partly backfilled open-cut, a surface-stripped area northeast of the cut, an incline from which irregular stopes extend to the north and south, an adit driven through schist to intersect the incline, and a shaft at the junction of the adit and the incline (pl. 44). The lowest part of the incline was filled with water at the time the mine was mapped. The stopes are partly backfilled but are reported to extend to the north for a maximum distance of 60 ft. and to the south for 40 ft.

The pegmatite is a gently dipping sill in muscovite-garnet schist of uniform texture and attitude. It ranges in thickness from 6 to 15 ft, strikes a few degrees east of north, and in general dips 30° SE. It has been explored over a strike length of 180 ft and for a vertical distance of 55 ft. It is poorly zoned and is chiefly a medium-grained intergrowth of quartz, kaolinized feldspar, and small flakes and books of muscovite. Quartz nodules that are exposed in the stripped area are 2 to 6 in. long. In this area the body contains an 8-in. hanging-wall rind or border zone

similar in composition and texture to the main mass of pegmatite but of distinctly smaller grain size. In the incline and the workings from it, books of muscovite are scattered throughout the pegmatite body and are especially abundant near quartz-rich pods. Concentrations of coarsely crystalline mica occur locally near the hanging wall. Black tourmaline is an accessory constituent. Large blocks of granular quartz on the dump suggest that a quartz core is present in the southern part of the deposit. The workings southwest of the main cut expose another, smaller pegmatite body.

Very little mica can be seen in the workings. Minor concentrations of books are associated with quartz-rich pods, and other concentrations occur near the hanging wall, but no clear-cut mica zone was observed. According to Clark (1921, p. 59), however, a well-defined mica-rich zone was present along both schist contacts in the southern stopes, where very few books lay against the quartz core. The mica is in brownish-olive books as much as 8 in. across, and nearly all of it contains "A" structure. Many books are intensely crumpled, and very few are entirely flat. Reeves and cracks are other common defects. The proportion of sheet mica in the mine-run material probably is low. Should mining operations be resumed, they might well be directed toward the southern part of the body, beyond the limits of the old stopes.

ARNOTT NO. 1 PROSPECT

A pit 6 ft deep and 11 by 7 ft in plan was dug on a low rise 400 ft S. 10° W. of the main Arnott mine workings (location 14, pl. 43). The pegmatite body, which is conformably enclosed by quartz-muscovite schist, strikes N. 47° E. and dips 41° SE. It is 2 ft thick and consists of burr rock, or massive quartz with scattered muscovite flakes. Along the hanging-wall contact is a podlike mass of fine-grained black tourmaline in a matrix of garnet and quartz. This mass is 12 in. long and 6 in. thick. Mica is abundant in books as large as 2 by 3 in. It is light brown with a greenish cast, soft, warped, and fractured.

ARNOTT NO. 2 PROSPECT

The only opening at the Arnott No. 2 prospect, which is 250 ft S. 45° W. of the No. 1 (location 15, pl. 43), is a pit 6 ft in diameter and 8 ft deep. No contacts are exposed, but the pegmatite appears to strike northeast and dip southeast. In its composition and the quality of its mica it is similar to the pegmatite in the Arnott No. 1 prospect. Books of medium-brown mica as much as 3 in. in diameter are present. Black tourmaline is an accessory constituent.

CONSOLIDATED PROSPECT

In Randolph County in SE¼NE¼ sec. 2, T. 18 S., R. 10 E. (location 16, pl. 43), is an old, partly caved pit that is 12 by 8 ft in plan and 5 ft deep. It lies near the top of a hill half a mile southeast of the Arnott mine and probably is one of those described by Clark (1921, p. 76) as a prospect of the Consolidated Mica Co. The pegmatite body, which strikes N. 80° E. and dips 65° SE., is 2½ ft thick and is conformably enclosed by quartz-mica schist. It contains a central 2-ft layer of massive quartz that is flanked by a thin zone of quartz, flakes and books of muscovite, and minor feldspar. Light-brown to brownish-olive mica occurs in books as much as 4 in. in diameter. It is weathered, cracked, and warped. Black specks also are present. The mica is not abundant and contains only a small percentage of sheet material.

ARNOTT ROAD PROSPECT

There is mica prospect 150 ft north of an abandoned farmhouse on the southeast side of the dirt road that extends south from the Arnott mine. It is a third of a mile from the Arnott mine in the NW¼SE¼ sec. 2, T. 18 S., R. 10 E. Randolph County (location 17, pl. 43). An uncribbed 30-ft shaft that appears to have been worked recently is collared in schist but intersects pegmatite at depth. From it a drift extends southwest. The pegmatite body appears to strike northeast, with a moderate southeast dip.

Pegmatite fragments on the dump consist of quartz with scattered muscovite flakes and books and minor feldspar. Biotite and black tourmaline are accessory minerals. The mica, which is abundant, is medium brown and brownish olive. Some of the brown books are rimmed by narrow light-greenish borders. The mineral is cracked and wavy, and much of it is badly ruled. Intergrowths with biotite also are present. Most of the material is scrap, and a little of it has been stockpiled near the shaft.

TROMMELL NO. 1 AND NO. 2 PROSPECTS

The Trommell No. 1 and No. 2 prospects are in Randolph County in the SW¼NW¼ sec. 1, T. 18 S., R. 10 E. (locations 18 and 19, pl. 43), about a third of a mile south of the Randolph County-Cleburne County line. They are reported to be on land owned by Mrs. A. G. Haynes, of Route 1, Heflin, and were worked early in 1944 by Arthur Trommel, of the same address. The workings, which lie in a cornfield just beyond the end of the access road, are in two groups. The northern group comprises a shallow open-cut, a 15-ft shaft, and several small pits. The pegmatite body is exposed near the bottom of

the shaft and in an irregular down-dip stope along the southern side of the cut. It strikes due east, dips 35° S., and is 2 ft thick. It is rich in decomposed feldspar and contains minor granular quartz and scattered books of muscovite. Most of the mica is in flat books as much as 4 in. in diameter. It is medium brown, although some of the books are marked by pale-greenish rims. They are so badly cracked that most of the mica is of scrap grade.

About 250 ft due south of the cut is an 8-ft shaft (Trommell No. 2 prospect) in medium-grained quartz-kaolinized feldspar pegmatite. No contacts are exposed. Mica occurs in scattered brownish-olive books 8 in. in maximum diameter. Almost all is of scrap grade, owing to warping and through-going fractures. Sheets of biotite as much as 5 in. across were noted on the dump.

SCHEFNER NO. 1 AND NO. 2 MINES

The Schefner No. 1 and No. 2 mines, in the NW¼NE¼ sec. 1, T. 18 S., R. 10 E. (locations 20 and 21, pl. 43), are about a third of a mile south of the Cleburne County-Randolph County line. The No. 1 mine is directly north of the Trommell mine access road, and the No. 2 mine lies along both sides of the access road 0.2 mile southwest of the No. 1. The mines were opened by Frank Schefner in 1919 and later were operated by the Midland Mica Syndicate, of Minneapolis, Minn. Still later, a Mr. Smith, of Wetumka, Ala., operated them for a short time. Clark (1921, pp. 69–70) reports that "some larger crystals, one weighing 300 pounds," were recovered. A new shaft was sunk at the No. 1 mine early in 1944. With the exception of this shaft, all the workings are inaccessible. The mineral rights of the property are said to be owned by Mrs. E. W. York and Mrs. Margaret Verge, of Route 1, Heflin.

The workings at the Schefner No. 1 mine consist of two partly caved open-cuts, a small pit, and the new 14-ft shaft. Pegmatite was seen only in the shaft, in which no contacts are exposed. The pegmatite body is at least 6 ft thick and consists chiefly of kaolinized feldspar with sparsely distributed books of mica. It probably strikes northwest and dips steeply southwest. It is said to contain a core of massive white quartz, around which most of the mica is localized. In the dumps from the larger cut are 4-in. books of mica with strongly developed "A" structure. Large blocks of massive quartz with impressions of mica books also are common. The books are brownish olive, with narrow, pale-greenish rims. Most are badly clay-stained and weathered.

Three hundred feet south of the No. 1 mine are eight prospect pits whose dumps contain pegmatitic debris. Flat 4-inch mica books that are light brown and of good quality were noted. The pegmatite body, which is not exposed, probably is worthy of further prospecting.

The Schefner No. 2 mine, which is 0.2 mile northeast of the Trommell No. 1 prospect, consists of one inclined and two vertical shafts. The 35-ft southern shaft is entirely in mica schist and was apparently sunk in an effort to intersect the pegmatite body mined in the inclined shaft. The northern vertical shaft, which is 140 ft to the northwest, is 23 ft deep and likewise appears to be in schist. The caved inclined shaft, which is 20 ft north of the northern vertical shaft, apparently was sunk in a pegmatite body not now exposed, which may strike nearly east and dip steeply south. The dumps from the inclined shaft are rich in weathered books of mica as much as 3 in. across.

INDIAN MINE

The Indian mine is in Randolph County in the SW¼NE¼ sec. 1, T. 18 S., R. 10 E. (location 22, pl. 43), and the eastern end of the workings adjoins the access road to the Crystal Clear mine. The oldest workings are ascribed to ancient mining activities of the Cherokee Indians. Some mining was done at the eastern end of the deposit near the close of World War I by the Alabama Mica and Manufacturing Co. of Baltimore, Md., but only the western part has been prospected recently. From east to west, the workings and exposed geology are as follows:

1. The east pit is 40 ft long and 20 ft wide. It has been backfilled to a level within 5 ft of the surface, and a newer pit 4 ft deep and 5 ft in diameter has been sunk at its northeast corner. A 4½-ft thickness of pegmatite is exposed in the southwest corner, but no contacts are visible. The rock consists of coarse, kaolinized feldspar, minor granular quartz, and small flakes of muscovite. The dumps contain books of mica as much as 8 in. in diameter, from which sheets as large as 3 by 3 in. could be trimmed. The mica, which is weathered, is brownish olive, flat, and generally free from cracks and specks.

2. A pit 50 ft south of the east pit is 18 ft in diameter and 10 ft deep. A 7-ft thickness of pegmatite is exposed on the east wall. The dumps contain abundant weathered mica similar to that already descibed.

3. A shaft 40 ft west of the east pit is 4 ft in diameter and 30 ft deep, and from it underground workings extend to the southwest. The absence of a dump may indicate a connection with the large open-cut to the north.

4. A shaft 70 ft southwest of the 30-ft shaft is 43 ft deep; no pegmatite material is present on the dumps.

5. The main open-cut is 25 ft north of the 43-ft shaft and 100 ft west of the Crystal Clear access road. It is 100 ft long, 50 ft wide, and 20 ft in maximum depth. A body of pegmatite exposed in the south-central face strikes N. 45° E., dips 22° SE., and is at least 9 ft thick. Only its footwall is exposed. It is a medium-grained aggregate of kaolinized feldspar, quartz, and muscovite.

6. A new pit 100 ft southeast of the main cut is 8 by 6 ft in plan and 10 ft deep. An irregular underhand stope extends down the dip of the pegmatite body, whose hanging-wall contact strikes N. 47° E. and dips 45° SE. The minimum thickness of pegmatite in the pit is 9 ft. A discontinuous core of quartz pods as much as 2 ft long and 1 ft thick is surrounded by medium-grained feldspar-quartz-muscovite pegmatite.

7. Two hundred feet southwest of the new pit is another recent pit that is 12 ft in diameter and 12 ft deep. An underhand stope extends down the dip of the pegmatite body, which strikes N. 25° E., dips 43° SE., and is conformable with the enclosing garnetiferous muscovite schist. It is 4 ft thick, with a 1-ft central inclusion of schist, and consists of medium-grained quartz and mica with minor feldspar. Accessory black tourmaline crystals also occur.

These workings are in a single body of pegmatite, which trends northeast and dips moderately southeast. Its thickness ranges from 3 to more than 9 ft, and its known strike length is about 450 ft. A quartz core is present locally, and most of the mica appears to be concentrated around the margins of the quartz. The mica is light brown to brownish olive, and the best material was seen at the eastern end of the workings. Some books are as large as 4 by 6 in. Mica from the new western pits is chiefly of scrap grade. It is badly fractured, ruled, and marred by quartz inclusions. Much of it is in narrow ribbons, and many of the books are soft. "A" structure is subordinate. Mica from the westernmost pit contains scattered black specks, and some of the books are tied.

Mining operations have been extensive, especially near the eastern end of the deposit. Little is known concerning the underground workings, but the occurrence of weathered books of good mica in the dumps of the easternmost pit indicates that this part of the deposit may be worthy of further prospecting.

EAST INDIAN PROSPECT

The East Indian prospect lies on the east side of the Crystal Clear access road about 200 ft east of the easternmost workings of the Indian mine (location 23, pl. 43). The property is owned by Mrs. E. W. York and Mrs. Margaret Verge. A little prospecting was done in 1944, but most of the workings were dug about the end of World War I. They consist of two open-cuts and three small pits, in which two bodies of pegmatite are exposed.

In the northernmost pit, which is 20 ft long, 13 ft wide, and 5 ft deep, a body of pegmatite trends N. 15° E. and appears to dip moderately northwest. The footwall contact is not exposed, but the pegmatite is at least 8 ft thick. A second pegmatite body was explored in the southern cut, which is 20 ft long, 8 ft wide, and 8 ft deep. A short drift extends from its northwest corner. The pegmatite, which strikes N. 20° E. and dips 50° SE., may be as much as 12 ft thick. It contains a central quartz rib that is 1 to 2 ft thick. The wall zone is a medium-grained aggregate of quartz and muscovite with minor kaolinized feldspar. Very little coarse mica was seen.

On the dumps are mica books as much as 3 in. in diameter. The mineral is light brown to brownish olive, contain quartz inclusions, and is badly cracked and warped. Narrow bands of minute biotite crystals are parallel to the edges of some books. Most of the visible mica is of scrap grade only.

CRYSTAL CLEAR MINE

The Crystal Clear mine is in the NW¼SE¼ sec. 1, T. 18 S., R. 10 E. (location 24, pl. 43), in the northwestern corner of Randolph County. It lies about a quarter of a mile west of the Liberty mine and half a mile south of the Randolph County-Cleburne County line, on land belonging to Mrs. E. W. York and Mrs. Margaret Verge, of Route 1, Heflin. The deposit was worked by the Consolidated Mica Co., of South Bend, Ind., at the end of World War I. A little prospecting was done for short periods of time in 1943 and 1944. The workings consist of an incline formerly connected with a 28-ft shaft, a 22-ft shaft in mica schist, two shafts (12 and 18 ft deep) with appended short drifts in pegmatite, and a small prospect pit in pegmatite (fig. 156). West of the road are three shallow pits, only one of which appears to have sunk in pegmatite. Two of these pits are shown in figure 156. The incline and the two deeper shafts were dug by the Consolidated Mica Co.

Three sill-like pegmatite bodies are exposed. The northern one, which is at least 3 ft thick, strikes N. 50° E. and dips 30° SE. A narrow zone that contains small mica flakes occurs along the hanging wall and overlies medium-grained quartz-kaolinized feldspar pegmatite. The footwall is not exposed. The central body, which has been most extensively mined,

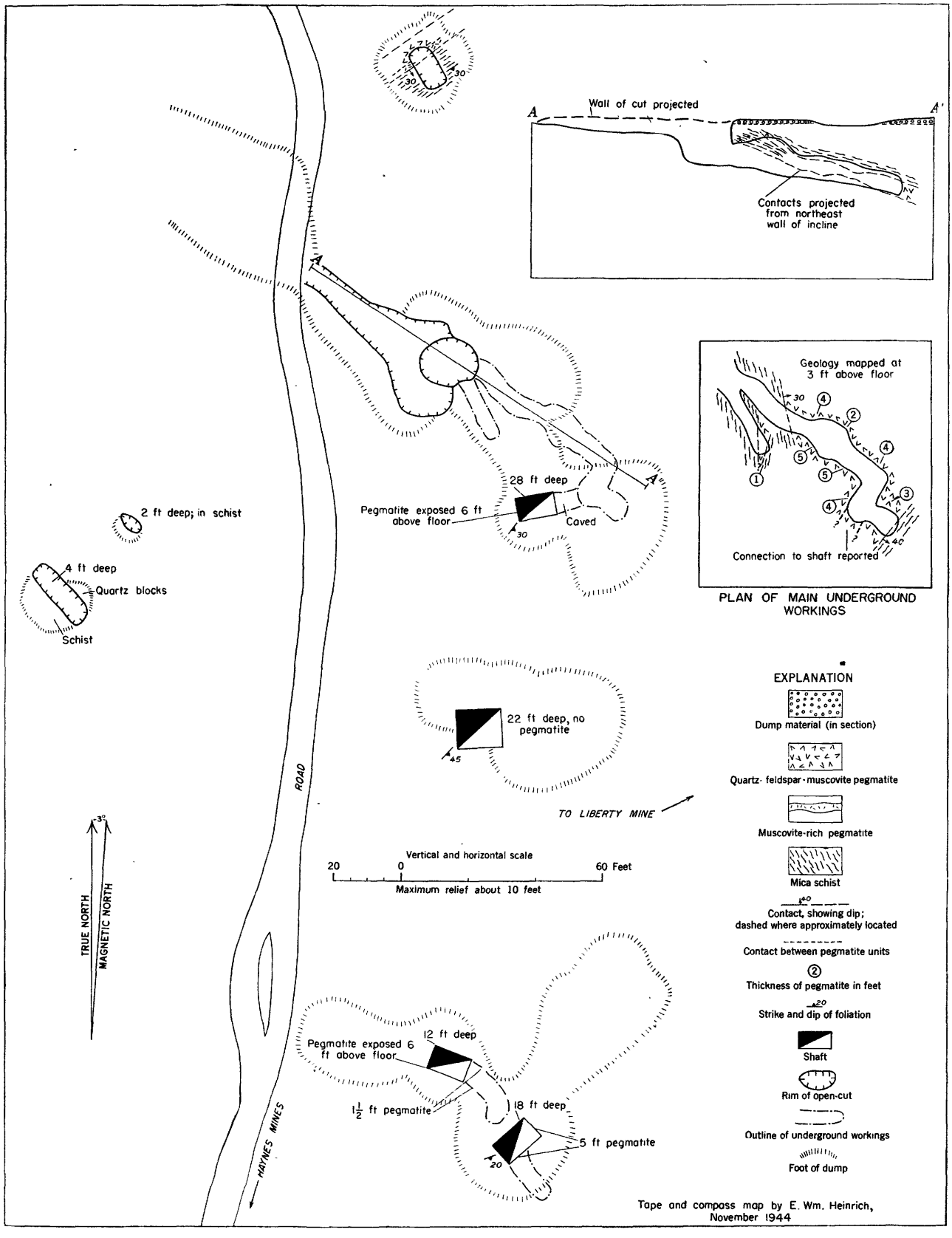

FIGURE 156.—Geologic map, plan, and section of the Crystal Clear mine, Randolph County, Ala.

appears to be the largest of the three. It strikes N. 65° E. to N. 15° W. and dips 30° to 40° SSE to ENE. It ranges in thickness from 1 to 5 ft and is very irregular in shape. Near the portal of the incline it splits into several thin fingers. The pegmatite is a medium-grained aggregate of gray quartz and kaolinized feldspar, with abundant flakes and scattered small books of muscovite. A well-developed platy structure is caused by a subparallel orientation of small quartz pods and associated mica books.

The southern sill strikes N. 50° to 60° E. and dips 20° to 38° SE. It ranges in thickness from 7 to 10 ft and pinches and swells abruptly. A thin quartz rib that plunges 5° S. 75° E. is present near the hanging wall in the southwest shaft. At the end of the drift from the shaft this rib pinches out near the center of the sill. The surrounding pegmatite consists chiefly of kaolinized feldspar and minor quartz with a few scattered small muscovite books. The country rock is a mica-garnet schist that contains many small pegmatitic pods and stringers near the contacts with the three main pegmatite sills.

The central pegmatite is the only one that appears to contain much mica. The mineral occurs as books scattered throughout the body and in general is associated with the small, platy masses of quartz. It is light brown, with thin yellowish-green borders. The books are 3 in. in average diameter. They are cracked and tied, though generally flat. Reeves, warping, and "A" structure are subordinate defects. Some of the books are intergrown with sheets of biotite, and others contain very thin, minute crystals of gray-green biotite. Most mica from the southern pegmatite is 2 in. or less in diameter. Its color is a somewhat darker brown. Clay staining is the most serious defect. The outlook for future production of much sheet mica from the deposit is not encouraging.

HAYNES PROSPECT

The Haynes prospect is in the NW¼SE¼ sec. 1, T. 18 S., R. 10 E., Randolph County. It is 700 ft east of the Haynes No. 1 mine at a fork in the logging road (location 25, pl. 43). A pit 5 by 4 ft in plan and 11 ft deep was dug in 1943 by E. S. Haynes, on whose land the deposit occurs. Two parallel pegmatites are separated by 1½ ft of mica schist. Both bodies are sill-like and strike N. 48° E. and dip 67° SE. The upper sill, which is 1 ft thick, is composed predominantly of fine-grained muscovite and quartz, with a few large books of mica along its walls. The lower sill is at least 2 ft thick, but the footwall contact is not exposed. The pegmatite is an intergrowth of quartz, feldspar, and small muscovite books. Mica as much as 2 in. in diameter is present on the dumps. It is light brown to brownish olive, soft, cracked, and tied and contains "A" structure and black specks. Some is wedge-A mica, and all is chiefly of scrap grade. The upper sill is very rich in small mica foils with subparallel orientation. The rock is not unlike a pegmatitized and recrystallized mica schist.

HAYNES NO. 1 MINE

The Haynes No. 1 mine, which is a few hundred yards southwest of the Crystal Clear mine and 700 ft west of the access logging road, is in the NE¼SW¼ sec. 1, T. 18 S., R. 10 E., Randolph County (location 26, pl. 43). It is reported to have been opened shortly after World War I. The deposit is owned by Mrs. A. G. Haynes, of Route 1, Heflin, and was operated from February to December 1944 by E. S. Haynes, her husband. The U. S. Bureau of Mines drilled two exploratory holes on the property in the fall of 1944. The mine workings comprise an open-cut with irregular down-dip stopes along its southeast side, three shafts in schist, and a 70-ft crosscut that did not intersect the main pegmatite body (fig. 157). The country rock is a decomposed muscovite-garnet schist in which the foliation strikes northeast and dips moderately southeast.

Three pegmatite bodies are exposed, two of them in the open-cut. The northwestern one is 1 to 2 ft thick, strikes N. 45° E, and dips 40° SE. It consists of medium-grained quartz-kaolinized feldspar pegmatite with a few scattered books of muscovite. It may be an offshoot of the main pegmatite mass, from which it is separated in some places by only a few feet of schist. It is of little economic interest.

The second, or main, pegmatite body, which is 5 ft in maximum thickness, strikes N. 35° to 40° E. and dips 45° to 55° SE. Its thickness is rather uniform in the open-cut but varies widely in the stopes below. The pegmatite pinches out in the northeast end of the stope near the junction with the shaft, as well as down dip in the lowest part of the stope a few feet from the shaft. Its keel plunges slightly west of south at an angle of about 45°. The pegmatite is a rather uniform, medium-grained aggregate of quartz and kaolinized feldspar, with scattered books and flakes of muscovite.

The third pegmatite, which was encountered 8 ft from the portal of the crosscut, strikes N. 75° E. and dips 45° SE. Three feet above the floor of the crosscut it is 2½ ft thick, but it pinches to 6 in. at the floor. The rock is a uniformly fine grained intergrowth of kaolinized feldspar, much fine-grained muscovite, and a little quartz.

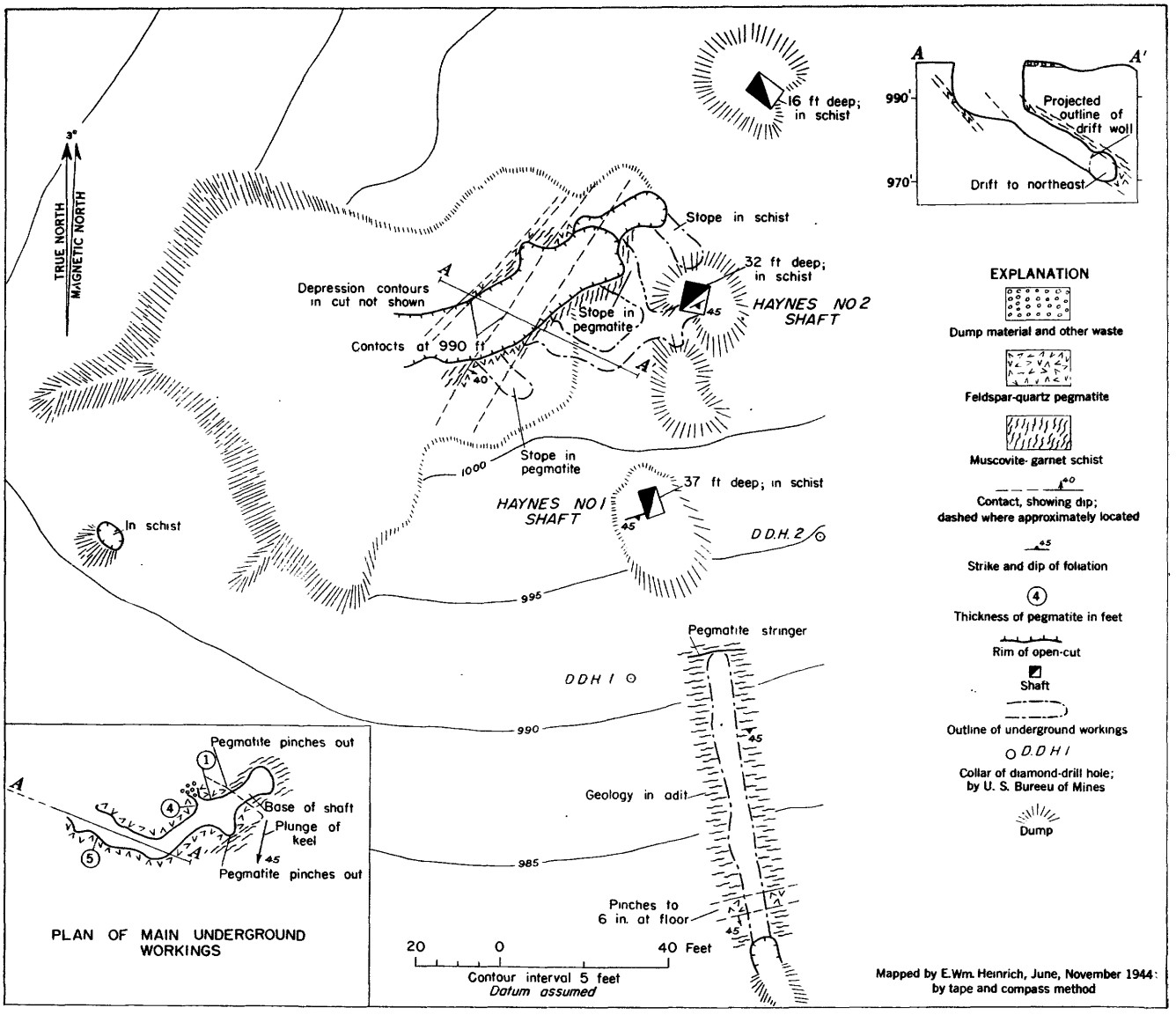

FIGURE 157.—Geologic map, plan, and section of the Haynes No. 1 mine, Randolph County, Ala.

There is no mica-rich zone in the main pegmatite, but many scattered books and clusters of books appear to have been present. The mica is cinnamon brown and generally flat and hard. "A" structure occurs in many books, but cracks are the chief defect. During the period February–December 1944, a total of 633 lb of trimmed sheet and punch mica was produced, and about 10 tons of mica (chiefly scrap) was obtained from the reworking of the old dumps. In general the mine-run mica yields nearly 4 percent prepared sheet and punch material.

Neither the Haynes No. 1 shaft nor the two diamond-drill holes intersected the main pegmatite body. It seems likely that they passed beneath its moderately plunging keel. Further development might well be aimed at the block of ground southwest of the stope.

HAYNES NO. 2 MINE

The Haynes No. 2 mine is 500 ft S. 30° E. of the No. 1 in the NW¼SW¼ sec. 1, T. 18 S., R. 10 E. (location 27, pl. 43). It is owned by Mrs. A. G. Haynes and was worked by Jesse Clouse during the period October–December 1944. A 40-ft incline extends down the dip of a pegmatite sill that strikes N. 85° W. and dips 48° SW. Contacts with the country-rock schist are poorly defined.

The sill, which ranges in thickness from 1 ft at the bottom of the incline to nearly 5 ft at the top, consists of kaolinized feldspar and muscovite with small quartz disks that are parallel with the walls. Thin inclusions of schist accentuate this streaky structure. Biotite is common in sheets as large as 4 by 6 in. Black tourma-

line occurs in well-developed crystals 2½ in. in average diameter. Near the top of the incline a pod of massive quartz, 6 ft long and 4 ft thick, is fringed with small books of mica and crystals of black tourmaline.

Book mica, which occurs along the sides of the oriented quartz disks and around the larger pods, yields hard sheets as much as 7 in. in diameter. The mineral is light brown to brownish olive and commonly is fractured and reeved. Some books are tied, and others contain scattered black specks of iron oxide and flattened crystals of tourmaline. Faint rippling is a minor defect. About 35 lb of trimmed mica was obtained from the 25 tons of pegmatite mined.

CLOUSE PROSPECTS

The Clouse prospects, which lie 200 ft S. 50° W. of the Haynes No. 2 mine, are in the NW¼SW¼ sec. 1, T. 18 S., R. 10 E., Randolph County (location 28, pl. 43). The workings comprise three pits in which four pegmatite bodies are exposed; they are on land owned by Mrs. A. G. Haynes. The deposit was opened by Jesse Clouse in the fall of 1944. Very little mica was obtained.

In a small pit at the Clouse No. 1 prospect two parallel pegmatite sills are separated by a foot of mica schist. The upper sill, which ranges in thickness from 1 to 2 ft, strikes east and dips 47° S. It consists of kaolinized feldspar, granular quartz and abundant small muscovite flakes. The lower pegmatite is at least 2½ ft thick. Its footwall is not exposed. A 1-ft pod of quartz-muscovite pegmatite (burr rock) occurs along the hanging wall. The surrounding material is a medium-grained aggregate of quartz and kaolinized feldspar, with a few scattered flakes of mica and small black tourmaline crystals. The mica books in both sills are medium brown, with narrow, pale-greenish rims. They are small, fractured, and warped.

At the Clouse No. 2 prospect, which lies 45 ft west of the Clouse No. 1, an inclined shaft has been sunk 17 ft in a pegmatite sill that strikes N. 65° E. and dips 51° SE. The sill, which thickens downward from 2½ to 4 ft, contains many small, parallel quartz disks, as well as inclusions of schist as much as 3 in. thick and 2 ft long. Mica books, most of them less than an inch in diameter, are closely associated with the quartz. Some, however, are as large as 3 by 4 in. The mineral is light brown to brownish olive. Most is stained by limonite and clay, and a few books contain "A" structure and scattered black specks. Many are fractured, tied, and warped. A few small flakes of biotite were noted on the dump.

At the Clouse No. 3 prospect, 30 ft west of the Clouse No. 2, a small pit exposes a pegmatite that appears to have been formed by the recrystallization and alteration of many small septa and inclusions of country rock, a coarse-grained, silvery mica schist. Contacts with the schist are gradational. The pegmatitic mass, which is at least a foot thick, strikes N. 70° E. and dips gently south-southeast. It is a fine-grained aggregate of quartz and muscovite, with a little kaolinized feldspar. The mica occurs in cracked books as much as 2 in. in diameter. It is light brown to brownish olive and contains scattered black specks.

LIBERTY (CURLEY) MINE

The Liberty mine is 1.8 airline miles due north of Pinetuckey in the SW¼NE¼ sec. 1, T. 18 S., R. 10 E., Randolph County (location 29, pl. 43). The deposit is in the woods on a very gentle ridge. It is owned by Mrs. E. W. York and Mrs. Margaret Verge and is leased to E. S. Haynes. The first modern mining is said to have been done by Horner and Phillips about 60 years ago, but remnants of ancient pits and dumps were found at that time. The Liberty Mica Co. worked the deposit during World War I, and it was reopened by Haynes in September 1943. Production during the following 17 months amounted to 645 lb of trimmed punch and sheet mica.

The main open-cut, which trends N. 80° E., is 170 ft long, 30 to 40 ft wide, and 8 to 15 ft deep. A series of shallow workings, in part obscured by later dump material, extends S. 75° W. for 120 ft. The pegmatite body, which dips south, was mined underground in a drift that extends 40 ft east from the east end of the open-cut, as well as in workings from at least seven shafts (fig. 158). The deepest of these (reportedly 90 ft) was abandoned in May 1944 and is partly filled with water. All the shafts are vertical to their points of intersection with the pegmatite body and from these points of intersection are inclined down its dip. Much mining was done from a 120-ft adit that reaches the pegmatite from the north; one or more inclines were developed down the dip. Most of the pegmatite probably has been mined out above the 70-ft level. Late in 1944 mining was in progress in the 40-ft shaft southwest of the open-cut; the old workings along the south wall of the open-cut, which were being excavated with dragline to reclaim mica from waste left in previous operations; and the short inclines in the northwest corner of the area. During the fall of 1944 the U. S. Bureau of Mines drilled four exploratory holes on the property (fig. 158).

The pegmatite body, which is enclosed by biotite-garnet schist whose foliation strikes N. 75° E. and dips 45° SE., dips 60° to 65° at the east and west ends of the workings and more gently (45° to 50°) near

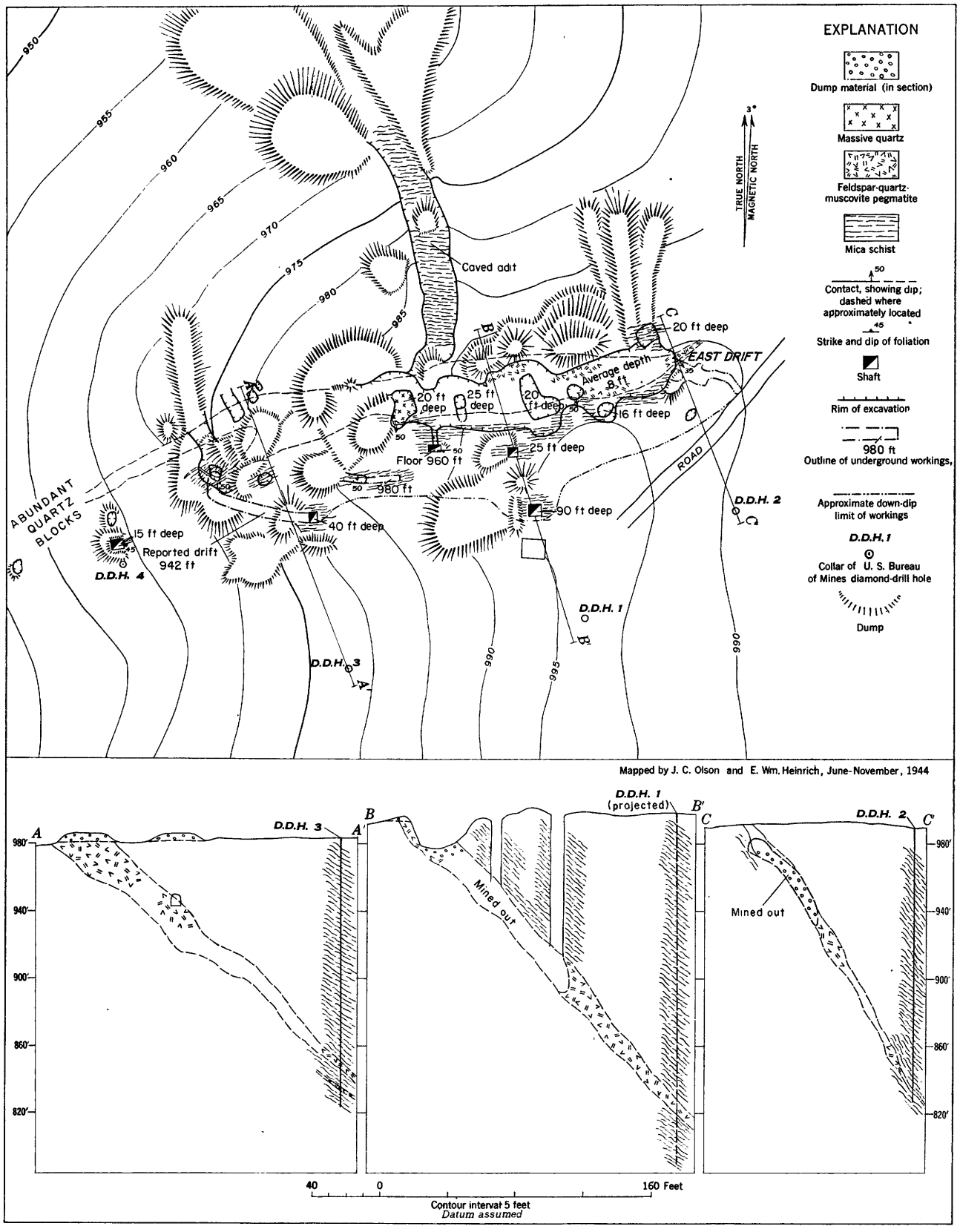

FIGURE 158.—Geologic map, plan, and sections of the Liberty mine, Randolph County, Ala.

the center of the workings. It is about 10 ft in average thickness in the main open-cut and in general thins from a maximum of 15 ft in the open-cut to 5 ft near each end of the workings. It also thins with depth and thus is wedge-shaped in cross section. It tends to be conformable with the wall-rock structure, and near the west end of the workings it splits into two arms.

The pegmatite consists of quartz, feldspar, and muscovite. Accessory minerals are biotite, garnet, black tourmaline, light-green apatite, and pyrite. The feldspar is kaolinized in the deepest workings. Discontinuous layers of quartz form a platy structure. Near the middle of the main workings, a 6-ft central quartz mass is overlain in turn by a muscovite-rich layer several inches thick and a 3-ft zone of kaolinized feldspar. At the east end of the open-cut the pegmatite contains several tabular quartz masses as much as 6 in. thick and 4 ft long. Muscovite books are clustered around them.

Most of the mining has been carried on in the hanging-wall portion of the pegmatite body, where nearly all the mica lies along contacts between the massive quartz pods and the kaolinized feldspar zone. The mineral is light to medium brown, and nearly all of it is clear. Some books are marked by light- and medium-brown bands and many have greenish rims. Books containing "A" and herringbone reeves are very abundant, but flat sheets can be trimmed from some of them. Wedged books also are common, and cracks and warping are serious defects. The mine-run mica yields nearly 5 percent trimmed punch and sheet material. The size of old workings and the large amount of scrap mica obtained from the old dumps indicate that substantial quantities of sheet mica have been produced. Reserves of mica-bearing pegmatite may well occur down the dip below the lowest old workings. The 90-ft shaft was sunk to the bottom of the old workings, and further work could be done from it.

GREAT SOUTHERN NO. 1 MINE

The Great Southern No. 1 mine is a quarter of a mile due east of the Pinetuckey-Micaville road and 100 ft north of a dirt access road in the SE¼SW¼ sec. 6, T. 18 S., R. 11 E. Randolph County (location 30, pl. 43). According to Sterrett (1923, pp. 32–33), the deposit was worked by the aborigines, who dug an open-cut 60 ft wide and 12 ft deep. It was reopened in 1903 and worked until 1907 by the Great Southern Mica Co., which maintained a grinding mill and mica shop in Heflin. Sheets of mica as large as 12 by 14 in. are said to have been obtained. The eastern pegmatite body was opened for a distance of 75 ft along the strike and to a maximum depth of 65 ft (pl. 45). A rich mica shoot is reported to have been mined from shaft A (now caved) at a depth of about 35 ft (water level). Shaft B was sunk to a depth of 65 ft, and short drifts were extended from it at the 658-ft level and at the bottom. A little stoping was done above the lower drift.

The mine was idle from 1907 to 1944, when operations were begun by B. C. Burgess (Burgess Mining Co.), of Spruce Pine, N. C., under lease from the present owners, Mrs. E. W. York and Mrs. Margaret Verge, of Route 1, Heflin, Ala. During the period April–July 1944 shaft B and the bottom level were reopened and a few feet of drifting was done. Owing to an unusually heavy flow of water and the small quantities of mica recovered, the shaft was abandoned. Some work was then done on the 681-ft level of workings C. Later the incline to this level was backfilled with waste from the drift at the 705-ft level.

In the summer of 1944 the U. S. Bureau of Mines drilled six exploratory holes on the property. On the basis of the subsurface information obtained, Burgess sank two shallow shafts (D and E). The quality of the mica recovered in these operations was poor, and the mine was abandoned. The total production from the deposit is not known but undoubtedly is large. Between December 1943 and December 1944, a total of 273 lb of trimmed punch and sheet mica was recovered.

Two pegmatite bodies have been worked. The eastern or main body strikes due east and dips 20° to 75° S. The dip changes from steeply south at the east to gently south in shaft B and to moderately south in shafts D and E. The body thins eastward from more than 20 ft in shafts D and E to 13 ft in drill hole 5, and it has been explored over a strike length of nearly 300 ft and to a maximum depth of 70 ft. Its keel, which probably was intersected by drill hole 1B, appears to plunge moderately southeast. The body is irregular in shape, with numerous inclusions and septa of schist, but in general it is conformable with the foliation of the enclosing gray-brown quartz-muscovite schist. The country rock also contains some biotite and garnet, and a little black tourmaline occurs near contacts with pegmatite.

The western pegmatite, which cuts across the schistosity of the country rock, strikes N. 45° E. and dips 25° to 40° SE. It ranges in thickness from 2 to 13 ft, thinning downward and splitting into several narrow fingers. In general it is more regular in shape than the eastern body, though small inclusions of wall rock are abundant near the hanging-wall contact. The known strike length is 60 ft, and the known down-dip extent of the pegmatite is about 100 ft.

The main pegmatite is a rather homogeneous, medium- to coarse-grained intergrowth of plagioclase,

perthite, quartz, and minor muscovite. Most of the feldspar is partly kaolinized. Mica concentrations are associated with local quartz-rich pods. The accessory minerals are abundant red garnet and black tourmaline and sparse yellow-green apatite and pyrite. The texture and composition of the western pegmatite are similar, but the feldspar is more thoroughly kaolinized and tourmaline is less abundant.

In both pegmatites mica occurs along small, irregularly distributed quartz-rich pods 10 ft in maximum observed dimension, as well as in scattered pods along contacts between pegmatite and inclusions or wall rock. The mineral is light brown to brownish olive with some light-greenish bands parallel to crystal outlines and others parallel to reeves. Books as large as 8 by 6 by 3 in. were observed, but the average size is 3 by 3 by 1 in. The distribution of defects in a 400-lb lot of mine-run mica was estimated to be as follows:

	Percentage of books in which defect was noted
Cracks and reeves with some ruling	90
"A" structure	50
Warping and buckling	50
Tied sheets	50
Inorganic "vegetable stain" and quartz, feldspar, and black tourmaline inclusions	50

Black specks are not common. The mine-run books from the main pegmatite are estimated to yield 3 to 4 percent sheet and punch mica. In general, the mica of the western pegmatite body, though equally abundant and in equally large books, appears to be of somewhat poorer quality, with a lower proportion of recoverable sheet stock.

GREAT SOUTHERN NO. 2 MINE

The Great Southern No. 2 mine (location 31, pl.43) is the easternmost of a group of old mines that are on both sides of the county road, several hundred feet east of the Great Southern No. 1. It is in the SW¼SE¼ sec. 6, T. 18 S., R. 11 E., Randolph County. None of the mines has been operated recently, and most of the workings are caved and inaccessible. They probably were first opened about 1888 by the Alabama Kaolin Co., were worked from 1904 to 1906 by the Great Southern Mica Co., and later were worked by Pat Ayers. One of them may be the old Weeks mine (Clark, 1921, pp. 71–73), which was operated about 1918 to 1920 by the American Mica Mining Co. of Minneapolis, Minn.

The Great Southern No. 2 workings include an open-cut 100 ft long, 40 ft wide, and 15 ft deep and an incline (now caved) that was driven southeast from its southern corner. Near the top of the incline two parallel pegmatite bodies strike N. 60° E. and dip 57° SSE. The lower one, which is separated from the upper by 1½ to 2 ft of mica schist, is 3½ ft thick. It is zoned as follows:

	Ft.	*In.*
Hanging-wall selvage of fine-grained muscovite-rich rock	0	2–4
Chiefly kaolinized feldspar, with minor quartz and scattered boks of mica (wall zone)	1–1½	0
Massive white quartz core supplanted down dip by a thin layer of coarsely crystalline muscovite (intermediate zone)		4–5
Chiefly kaolinized feldspar, with minor granular quartz (wall zone)	1	0

The upper pegmatite, which is at least 7 ft thick, consists chiefly of kaolinized feldspar and scattered muscovite books. Its hanging-wall contact is not exposed.

Mica occurs in the lower pegmatite as light- to medium-brown books 2 in. or less in diameter and is chiefly of scrap grade. It is cracked and warped. In the upper pegmatite it occurs as larger, widely scattered books that are light brown and relatively flat and free splitting. A few small tourmaline inclusions and sparse black specks were noted.

GREAT SOUTHERN NO. 3 MINE

The Great Southern No. 3 mine (location 32, pl. 43), which adjoins the No. 2 workings on the east, is in the SW¼SE¼ sec. 6, T. 18 S., R. 11 E., Randolph County. The workings include an open-cut 75 ft long, 20 ft wide, and 20 ft deep, a broad, shallow pit near the east end of the cut, and a 15-ft shaft immediately south of the cut. In the main opening a pegmatite body strikes N. 55° W. and dips 50° SW. It is at least 6 ft thick and appears to transect the foliation of the enclosing mica schist. It consists of rather coarse grained, uniformly intergrown quartz and kaolinized feldspar. The dumps contain badly weathered mica books as much as 3 in. across. Light-brown specks, cracks, and severe warping are the chief defects. Only scrap material was seen.

The shaft was sunk to intersect the pegmatite body down its dip and originally was probably much deeper than the present opening. On the dumps are a few blocks of quartz as much as 3 ft long, as well as weathered books of mica. Some of these books are reeved, with minute black specks in rows parallel to the reeves. An open-cut that lies 75 ft east of the shaft may be in the same pegmatite body. This opening is 70 ft long, 20 ft wide, and 10 ft deep but has been partly backfilled. Some decomposed pegmatite is exposed on the walls. The dumps contain books of weathered mica 1½ in. in diameter.

GREAT SOUTHERN NO. 4 MINE

The Great Southern No. 4 mine, on the south side of the county road south of the Great Southern No. 3 workings, is in the NW¼NE¼ sec. 7, T. 18 S., R. 11 E., Randolph County (location 33, pl. 43). The opening is a badly slumped cut 55 ft long (parallel to the road), 35 ft wide, and 10 ft deep. Two parallel pegmatite sills, separated by a 1-ft septum of quartz-mica-garnet schist, strike N. 18° W. and dip 55° E. Both are 1½ ft thick and consist of kaolinized feldspar and granular quartz with scattered books of muscovite. Mica books as large as 7 by 4 in. are exposed. The mineral is light brown to brownish olive and is unusually heavily stained by clay and limonite. Much is broken and ruled, and black specks and tourmaline inclusions also were noted. A few 3-in. sheets of biotite are present on the dumps.

GREAT SOUTHERN NO. 5 MINE

The Great Southern No. 5 mine in the NW¼NE¼ sec. 7, T. 18 S. R. 11 E., Randolph County (location 34, pl. 43) is 200 ft south of the county road and midway between the Great Southern No. 4 and Old Ancient mines. An incline 40 ft long and 8 ft wide extends along a pegmatite from the south end of an open-cut 20 ft in diameter and 10 ft deep. The pegmatite body, which is 10 ft in average thickness, strikes nearly north and dips 60° to 70° W. It appears to be cigar-shaped, and the crest and both walls are well exposed in the incline. The crest plunges a few degrees west of south at an angle of 32°. Contacts with the mica schist wall rock are irregular in detail; the body probably cuts across the foliation.

A central zone of quartz pods, some of which are as much as 3 ft thick and 12 ft long, is surrounded by a wall zone in which smaller parallel quartz disks form a layered structure. Coarsely crystalline muscovite is associated with both the pods and the disks. It is very abundant and occurs in 4-by-6-in. books. The color is light to medium brown, with light-brown bands oriented parallel to reeves and "A" structure. Scattered tiny crystals of biotite are abundant. Much of the mica is tied and cracked, and most is scrap.

OLD ANCIENT MINE

About 600 ft S. 60° W. of the Pat Ayers residence and 300 ft southeast of the Great Southern No. 5 mine is a series of workings known as the Old Ancient mine. This mine, which is in the NE¼NE¼ sec. 7, T. 18 S., R. 11 E., Randolph County (location 35, pl. 43), probably is one of those operated by the Great Southern Mica Co. between 1906 and 1908. The workings consist of an open-cut, an old shaft, and a prospect pit recently sunk at the northeast end of the deposit by Ayers. The partly backfilled open-cut, which trends northeast, is 100 ft long, 35 ft wide, and 12 ft deep. In its north face a pegmatite strikes N. 15° E. and dips 55° E. It is at least 6 ft thick. The footwall contact is not exposed. Near the hanging-wall contact is a series of discontinuous quartz pods as much as 1 ft thick. A medium-grained aggregate of feldspar, quartz, muscovite, and biotite constitutes the remainder of the exposure.

Southeast of the cut a 30-ft shaft, collared in mica schist, gives access to a southeastward-trending drift in pegmatite. A few 2-ft blocks of massive quartz lie on the dumps. Around the shaft are three shallow slumped pits. A hundred feet northeast of the open-cut is the recent pit, which is 6 ft in diameter and 10 ft deep. The exposed pegmatite is a fine- to medium-grained intergrowth of quartz. small mica books, black tourmaline, and minor kaolinized feldspar.

Books of mica as much as 4 by 6 in. across are moderately abundant in the old dumps. Most are flat but badly weathered. Cracks and minor warping are the chief defects. The color is light to medium brown, but narrow green rims occur in some of the books. A few scattered black specks, probably minute biotite crystals, were noted. The general quality of the mica appears to be good. The workings indicate that a large amount of mining was done, and the deposit appears to be worthy of further prospecting.

PAT AYERS NO. 1 PROSPECT

At the road junction a third of a mile east of the Great Southern group of mines is the residence of Pat Ayers, who has been mining mica in Randolph County since World War I. From a point a few tens of feet south of the house a series of prospects and small mines extends southeast for about half a mile. The property was first worked by the Consolidated Mica Co. near the end of World War I and has since been prospected intermittently by Ayers, chiefly during the past 5 years. The prospects are in the SW¼-SW¼ sec. 5, T. 18 S., R. 11 E., and the NW¼NW¼ sec. 8, T. 18 S., R. 11 E., Randolph County (location 36, pl. 43).

The Pat Ayers No. 1 prospect, which is 150 ft southwest of the Ayers residence, consists of a shallow pit 10 by 15 ft in plan, a shaft 40 ft to the southeast, and a small prospect pit 125 ft southeast of the shaft. Decomposed pegmatite is exposed in the northwest corner of the first pit. The body is at least 3 ft thick and probably strikes northeast and dips moderately southeast. A 1-ft central quartz pod is fringed by concentrations of coarsely crystalline muscovite. From the

shaft, which is 25 ft deep, a drift extends west at a depth of 15 ft and another drift extends south at the bottom. These workings are now inaccessible. The small prospect pit exposes a pegmatite that is at least several feet thick and consists of medium-grained quartz and kaolinized feldspar, with very abundant small mica books and minor crystals of black tourmaline. The mica is light brown, flat, and free splitting and contains many cracks. The books are too small to yield sheet or punch material.

The mica from the main pegmatite body occurs in books as large as 5 by 6 in. The chief defects are cracks, flattened inclusions of tourmaline, and clay staining. "A" structure and ruling are subordinate. The books are light brown, with narrow green borders. Several tons of mine-run material has been mined and stockpiled, but most is scrap.

PAT AYERS NO. 2 PROSPECT

The Pat Ayers No. 2 prospect is 200 ft southeast of the Pat Ayers No. 1 (location 37, pl. 43). From northwest to southeast the workings include a 12-ft shaft, a 16-ft shaft, and an old slumped pit. In a short drift that extends northwest from the 12-ft shaft the pegmatite body strikes N. 60° W., dips 77° SW., and is 3 ft thick. It is quartz-rich, with a discontinuous core of massive quartz and abundant small books of mica. From the 16-ft shaft short drifts extend southeast and northwest. In these the pegmatite is 3½ ft thick and contains very abundant small flakes of muscovite. Many fragments of pale-green beryl as much as 1½ in. long occur on the dumps. Some are of gem quality. No pegmatite is exposed in the slumped pit 50 ft southeast of the second shaft.

Mica occurs in the deposit as books 3 by 4 in. or smaller. Most are less than 2 in. in diameter. The mineral is flat, very hard, and free splitting. Cracks and tied structure are the chief defects. Some of the books are light to medium brown with narrow, pale-green rims, and others are pale brownish to yellowish olive. Few would yield sheet or punch material.

PAT AYERS NO. 3 PROSPECT

The Pat Ayers No. 3 prospect (location 38, pl. 43), 150 ft southeast of the southernmost pit of the No. 2 prospect, includes three small, partly backfilled pits. The north pit exposes a 6-ft pegmatite that strikes N. 25° W. and probably dips west-southwest. It contains a 1-ft central quartz rib. Mica occurs in books as large as 4 by 4 in. Flattened tourmaline crystals, "A" and herringbone structures, and cracks are serious defects. The mineral is light brown to brownish olive and is almost entirely of scrap grade. The middle pit is 12 ft in diameter and 7 ft deep and was filled with water at the time of the examination. Small books of mica and crystals of black tourmaline are abundant on the dumps. About 90 ft southeast of these pits are several small workings that have been filled. The dumps contain abundant small mica books of scrap grade.

PAT AYERS NO. 4 PROSPECT

The Pat Ayers No. 4 prospect (location 39, pl. 43), is 150 ft east of the road and a third of a mile south of the Ayers house. A trench 10 ft long, 3½ ft wide, and 3 ft deep exposes a pegmatite body that strikes N. 12° E. and dips 80° E. It ranges in thickness from 6 in. to 2 ft and contains a central mica-rich zone that is flanked by a quartzose wall zone with minor kaolinized feldspar and crystals of black tourmaline. About 500 lb of mica is stockpiled at the trench.

The central zone contains 60 to 70 percent mica in large rosettes of books, which may have been formed by replacement along a fracture in previously crystallized pegmatite. Nearly all the books are marked by wedge, herringbone, and "A" structures. Most of them also are cracked and warped. This mica is light brown, and a few black specks occur near the green margins of some books. The wall zone contains a few scattered books as much as 1½ in. in diameter. They are light brown with pale-green rims and in general are flat, hard, and free splitting. This material is markedly different from the mica of the central zone, but the books are too small to yield sheet or punch stock.

An unusually large amount of mica has been obtained, and further prospecting to determine the limits of the central mica body seems desirable. If it is large, the possibilities for scrap-mica operations should be very good.

A second trench, 45 ft southeast of the first, is 25 ft long, 6 ft wide, and 4 ft deep. The dumps contain a few scattered flakes of badly weathered mica as much as 1½ in. in diameter, as well as blocks of massive white quartz 3 ft long. Evidently these were taken from a second pegmatite body.

PAT AYERS NO. 5 PROSPECT

The Pat Ayers No. 5 prospect (location 40, pl. 43), which lies 100 ft north of a small creek and 125 ft east of the road, is about half a mile south of the Ayers farmhouse. The workings consist of an open-cut, a 12-ft shaft sunk in the center of its northwest end, and a series of shallow pits about 25 ft to the northwest. Along the northeast wall of the open-cut, which is 90 ft long, 20 ft wide, and 15 ft deep, are several very irregular quartzose pegmatite bodies. They are 3½ ft in maximum thickness, and in places they split into

numerous small stringers. Only a little mica is present. A 4- to 8-ft pegmatite body exposed in the northwest corner of the cut is also very irregular in shape. Its general strike appears to be east, with low southerly dips. Many offshoots are present. The rock is a medium-grained aggregate of quartz, kaolinized feldspar, and muscovite, with small parallel quartz plates that give its exposures a streaky appearance.

Only a few 6-in. stringers of pegmatite were encountered in the shallow shaft. The pegmatite body in the pits northwest of the open-cut strikes N. 60° W. and dips south-southwest at a low angle. It probably is a part of the body exposed in the northwest corner of the cut. It is 6 ft thick, with a 2-ft zone of medium-grained quartz-feldspar pegmatite near the hanging wall. The surrounding rock consists chiefly of granular quartz, small mica books, and a little kaolinized feldspar.

The book mica, generally associated with small quartz pods, is badly cracked, heavily clay-stained, warped, and locally marked by a faint "A" structure. Books as large as 3 by 4 in. were noted, but the material is scrap. A pale-brown variety contains narrow green cross bands and a few black specks, and a bright yellowish-green variety is free from specks.

PAT AYERS NO. 6 PROSPECT

Three old slumped pits are 40 ft west of the county road and 150 ft north of the creek (location 41, pl. 43). The east opening is 40 ft long, 12 ft wide, and 6 ft deep. A deeply weathered pegmatite body at least 6 ft thick is exposed in its north face. No exposures are preserved in the small central pit, but its dump contains several 3-ft quartz blocks with fringing mica books 6 by 10 in. in size. The third pit, 30 ft to the northwest, is 15 ft long, 6 ft wide, and 3 ft deep. No exposures are present, but quartz blocks with 8-in. books of mica are present on the dumps.

The pegmatite body appears to strike northwest and is at least 6 ft thick. It contains a well-defined quartz core and a wall zone of kaolinized feldspar and granular quartz. The core-margin mica is medium brown. All observed books contained "A" material of scrap grade only.

PINETUCKY NO. 1 MINE

The Pinetucky No. 1 mine, which is in Randolph County in the SE¼NE¼ sec. 12, T. 18 S., R. 10 E. (location 42, pl. 43), is a quarter of a mile northwest of the Pinetuckey-Micaville road and about a third of a mile due north of the old Pinetucky gold mine. The property owners are Mrs. E. W. York and Mrs. Margaret Verge, or Route 1, Heflin. The deposit is reported to be one of the oldest mica mines in Alabama and probably was first operated about 1870. The last period of operation extended from 1917 until 1922. All the workings are partly caved.

The workings comprise two shafts, a pit, a partly accessible 120-ft crosscut that connected with the northwest shaft, and inaccessible drifts and stopes. The northwest shaft, 25 ft deep, is collared in mica schist whose foliation strikes N. 45° E. and dips 10° SE., but this shaft intersected pegmatite at depth. Exposed on the walls of the crosscut are many small, irregular bodies of aplite, which strike N. 25° to 80° E. and dip 15° to 40° ESE. to S. They range in thickness from 6 to 10 in. and are associated with quartzose pegmatite masses of similar size. A small fault, which strikes N. 38° E. and dips 64° NW., offsets a small aplite body 100 ft from the portal. The second shaft, 50 ft southeast of the other, is collared in schist and appears to be caved at a depth of about 45 ft. Dump material indicates that a medium-grained feldspar-quartz pegmatite with small muscovite books was intersected at depth. Weathered pegmatitic debris is present on dumps from a slumped pit 40 ft northeast of the crosscut portal.

The main pegmatite body probably strikes about N. 40° E. and dips southeast at a low angle. Evidently a central core of massive quartz occurs in its northeastern part. The southeast shaft appears to be on another pegmatite. The dumps from the northwest shaft contain badly weathered books of mica as much as 7 in. in diameter. The mineral is light brown and is cracked but generally flat. Mica from the southeast shaft occurs in books as large as 4 by 6 in. Scattered black specks, reeves, and subordinate "A" structure are present. About 300 lb of scrap is stockpiled near the collar of the shaft.

PINETUCKY NO. 2 MINE

The Pinetucky No. 2 mine, which is about 0.1 mile northwest of the Pinetucky No. 1, is on the north side of the access road in the SE¼NE¼ sec. 12, T. 18 S., R. 10 E. (location 43, pl. 43). It probably was opened prior to 1890 by Sam Wallace, one of the early mica miners in the area. The workings, nearly all of which are caved, consist of four pits and cuts along a line that extends northeast for a distance of about 225 ft.

The southwest cut is 25 ft in diameter. The bottom of a newer pit in its floor is 11 ft beneath the surface. No pegmatite is exposed, but the dumps contain 1½-ft blocks of massive white quartz. Books of weathered mica lie against the margins of these blocks. The second pit, which is 100 ft to the northeast, is 10 by 5 ft in plan and now only a foot deep. Pegmatite is not exposed, but the dump contains blocks of massive white

quartz. The dump from another shallow opening 40 ft northeast of the second pit also contains blocks of quartz, as well as half-inch crystals of black tourmaline. On the north side of the road is a pit 25 by 11 ft in plan and 9 ft deep. From its eastern end an incline (now caved) was driven eastward for about 30 ft at an angle of 30°. Only mica schist is exposed. Its foliation strikes N. 20° E. and dips 22° ESE.

Mica is abundant in the old dumps, but generally the books are small and weathered. It seems likely that they occur along the margins of a thin quartz core. "A" structure is common, but black specks are rare. Cracks and faint ruling were noted. The books are light brown, and light-green borders occur in those not marked by "A" structure.

WALLACE NO. 2 MINE

The Wallace No. 2 mine (location 44, pl. 43) is in the NE¼SE¼ sec. 12, T. 18 S., R. 10 E., Randolph County, about 0.2 mile northwest of the Pinetuckey-Micaville road and several hundred feet north of the old Pinetucky gold mine. In November and December 1944, a total of 19 lb of trimmed punch and sheet mica was obtained by the owners, Mrs. E. W. York and Mrs. Margaret Verge, of Route 1, Heflin. The northern group of workings, which has been inactive during recent years, consists of an 11-ft shaft and three shallow pits to the south. The pegmatite body, which strikes due east and dips gently south, is exposed in the upper half of the shaft. It is a medium-grained aggregate of quartz, kaolinized feldspar, and muscovite. The mica occurs in books as large as 3 by 4 in., and one cluster of books is 1 ft long and 6 in. wide. The mineral is light brown and badly cracked and warped. Some of the books are tied, and others contain a faint "A" structure. No pegmatite is exposed in the three shallow pits to the south, but quartz blocks as much as a foot long occur in the dumps.

The recent mining has been confined to a large open-cut in the southern group of workings. This opening is 60 ft long, as much as 23 ft wide, and 15 ft in maximum depth. Three short down-dip stopes have been sunk along its south side. The pegmatite body, which is well exposed, strikes N. 38° E., dips 21° SE., and ranges in thickness from about 3 ft to nearly 7 ft. It pinches and swells along both the strike and the dip but in general thins down dip. It is well zoned, with the following sequence exposed on the north wall of the cut:

	Ft.	In.
Massive white quartz	1	0
Fine-grained aggregate of kaolinized feldspar and small muscovite flakes	1	6
Massive white quartz	1	0
Abundant small mica flakes in massive quartz (burr rock)		4
Septum of mica schist	2	0
Pegmatite rich in coarsely crystalline muscovite		6
Fine-grained aggregate of kaolinized feldspar and small muscovite flakes		10
Massive white quartz	1	0

The three quartz pods narrow down dip, and two of them pinch out in the workings. The septum of mica schist also pinches out in the stopes, and the richest concentrations of mica occur along the margins of the remaining quartz mass. In the southwestern stope this quartz mass pinches out, and the streaky appearance of the pegmatite is due to small inclusions of schist. No coarsely crystalline mica is exposed in this part of the deposit. The keel of the largest quartz mass plunges about 5° due south. East of the open-cut are four old pits, the largest of which is 7 ft deep. No pegmatite is exposed, and only a few small flakes of weathered mica were seen on the dumps.

Mica books as large as 4 by 6 in. were noted in the open-cut. Their color is light to medium brown, with greenish-brown bands parallel to a local "A" structure. A few scattered black mineral specks are present in such bands. The mica is fractured and buckled, and much is heavily stained by clay and limonite. The proportion of scrap is high. Although the mica is locally abundant, the pegmatite body appears to be pinching down dip.

YORK AND VERGE PROSPECT

The York and Verge prospect, which is in the NW¼SE¼ sec. 12, T. 18 S., R. 10 E., Randolph County (location 45, pl. 43), is claimed by Mrs. E. W. York and Mrs. Margaret Verge, of Route 1, Heflin. Three old slumped pits are 50 ft north of the road that extends between the Pinetuckey-Micaville road and the Pinetuckey schoolhouse. The eastern pit, which is 12 by 5 ft in plan and 2½ ft in present depth, was sunk in medium-grained quartz-feldspar-muscovite pegmatite. The mica is small, light brown, cracked, and badly weathered.

The middle pit is 11 ft in diameter and 6 ft deep. Only mica schist occurs on the dump. The dump from the slightly larger western pit contains blocks of pegmatite similar in composition to those described. Small, badly weathered and cracked books of light-brown mica were noted. The pegmatite body, which appears to strike due east, probably is not more than 2 ft thick. The mica does not appear to be abundant.

CREWS MINE

The Crews mine is in a field on the top of a low ridge in the SE¼NE¼ sec. 14, T. 18 S., R. 10 E.,

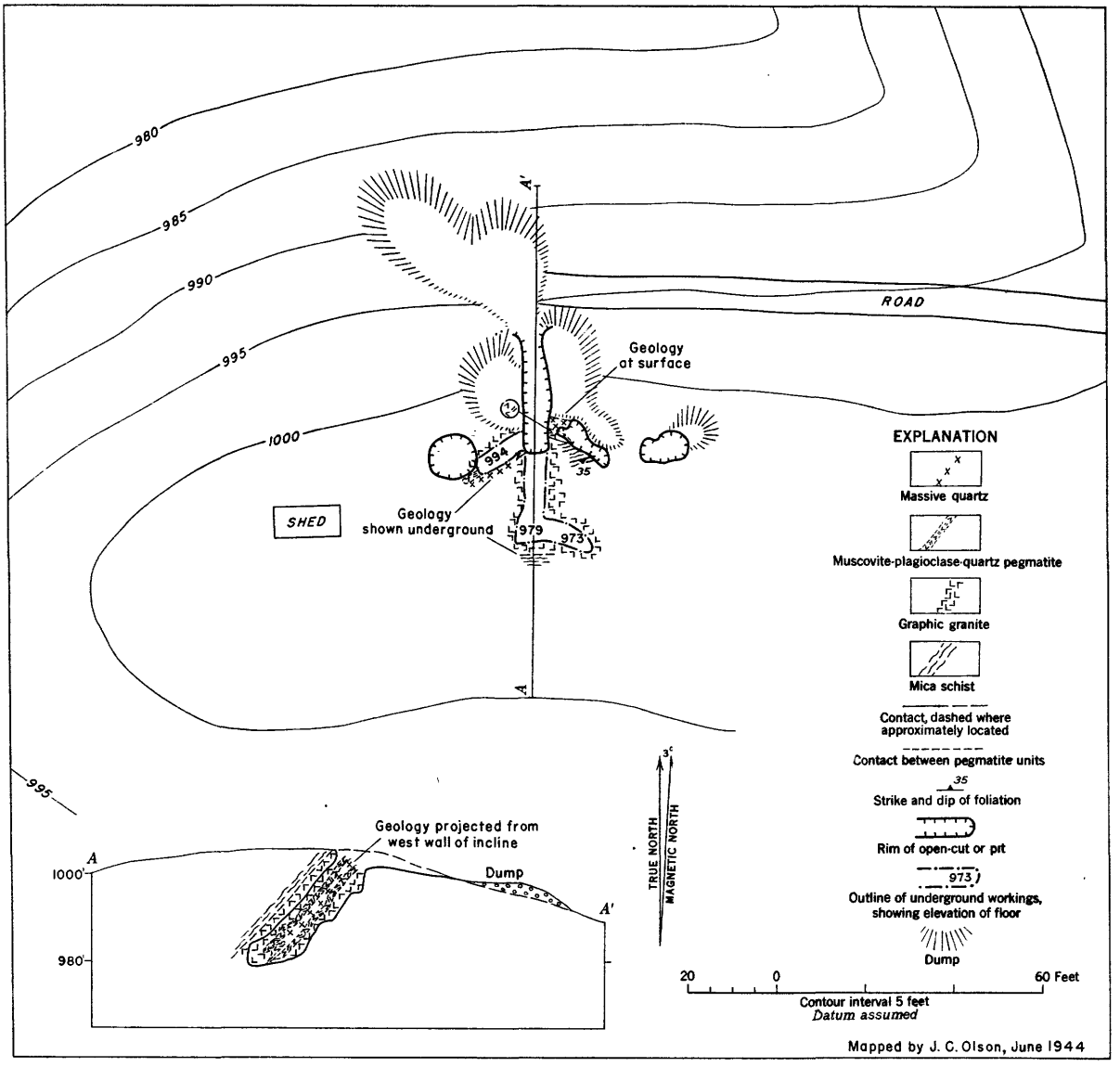

FIGURE 159.—Map, plan, and section of the Crews mine, Randolph County, Ala.

Randolph County (location 46, pl. 43). The deposit was worked for a short time in 1943 by the Childs Mining Co. The mine consists of three pits, an incline driven 35 ft down the 45° dip of the pegmatite body, a short drift that extends west from a point near the top of the incline, and a second drift that extends east from the incline bottom (fig. 159).

The country rock is mica schist whose foliation strikes N. 75° E. and dips 35° S. The average strike of the pegmatite body is nearly due west, but at the west end of the workings it curves to the west-southwest. The dike is about 10 ft in average thickness where exposed in the incline and contains a quartz core 1 to 3 ft thick. This quartz pinches out at the bottom of the incline and at the west end of the shallow drift; thus the core may plunge southeast. The wall zone consists chiefly of kaolinized feldspar in graphic intergrowth with quartz. Muscovite is confined to a 1-ft intermediate zone adjacent to the massive quartz and is very abundant both above and below the core. The concentrations are richest where the quartz is thickest, and only a few scattered clusters of small books occur where no massive quartz is present, as in the heading of the lower drift.

Nearly all the mica is marked by "A," wedge, or herringbone structures. Books as large as 10 by 12 in. were observed. Clear light-brown sheets can be trimmed from the "A" books, but the proportion of scrap material in the mine-run mica is very high. About 8 tons of scrap is stockpiled at the mine. Whether the abundance of the mica would offset its generally poor quality in future operations is open to

serious question. Much mica could be obtained rather easily by mining out the concentrations exposed in the walls of the incline. A drift to the east from a point halfway down the incline might well be a satisfactory means of further exploring the mica-rich zone.

ARTEMUS MORRISON (LANDERS AND AYERS) MINE

The Artemus Morrison mine is 200 ft west of the Pinetuckey-Milner road in the SW¼NE¼ sec. 24, T. 18 S., R. 10 E., Randolph County (location 47, pl. 43). In 1944 Morrison sank a 7-ft pit at the south end of an old open-cut 60 ft long, 10 ft wide, and 7 ft deep. The pegmatite body, which strikes N. 75° E. and dips 30° SSE., is sill-like and at least 9 ft thick. The hanging wall is not exposed. A rudely defined quartz core, about 7 in. thick, is supplanted down dip by an intermediate zone of coarse, blocky feldspar (probably perthite) in masses as much as 7 in. in diameter. Along the margins of the core and intermediate zone is another intermediate zone that is rich in coarse muscovite and is more strongly developed on the footwall side of the body. The wall zone is a fine- to medium-grained aggregate of quartz, feldspar, and small muscovite foils.

The mica, nearly all of which is broad "A" or herringbone material, contains many inclusions of biotite and quartz. Black mineral specks also are common and are arranged in bands parallel to reeves and to crystal outlines. The books are heavily stained by clay and limonite. Their color ranges from light to medium brown and brownish olive, with borders of pale yellowish olive. In some of the darker books, light-brown bands are parallel to reeves and normal to crystal faces. In general the books are large, with a maximum diameter of at least 7 in. The average diameter is 3 in.

J. P. HOLMES PROSPECTS

The J. P. Holmes prospects, in the SW¼NE¼ sec. 25, T. 18 S., R. 10 E., Randolph County (location 48, pl. 43), are about 1,000 ft west of the Pinetuckey-Milner road. They were worked by J. P. Holmes for a short time early in 1944, but no mica was sold. Six small pits have been sunk on four bodies of pegmatite along a line that trends N. 65° W.

The No. 1 prospect pit, the northwesternmost of the group, is in a pegmatite body that strikes N. 68° E., dips 65° SSE., and is at least 2 ft thick. Its hanging-wall contact is not exposed. A streaky structure is due to a subparallel arrangement of quartz pods, some of which are a foot long and 4 in. thick. The remainder of the pegmatite is composed of kaolinized feldspar, minor quantities of granular quartz, and small flakes and books of muscovite. The mica is rather abundant and is closely associated with the quartz pods. The books are flat and hard but badly cracked and marred by small inclusions of quartz and minute dark-brown needlelike inclusions. The books are medium brown with narrow green rims.

The No. 2 prospect, which is 80 ft southeast of the No. 1, consists of three pits 2 or 3 ft deep and 3 to 4 ft wide. The pegmatite body is not exposed, but dump material indicates that it is similar to that already described. Crystals of black tourmaline as much as 1 in. long also are present. Mica is rather abundant and appears to be of good quality. The books, which are light brown with irregular pale-green margins, are flat and hard. Most are small. Cracks and quartz inclusions are the chief defects.

At the No. 3 prospect, 50 ft southeast of the No. 2, a third, sill-like pegmatite body strikes N. 75° E., dips 70° SSE., and is 2 ft thick. It is a medium-grained feldspar-quartz intergrowth, with minor black tourmaline and books of muscovite as large as 4 by 5 in. The mica, which is flat, hard and cracked, is light to medium brown. Narrow, pale-green borders contain scattered minute black specks.

The No. 4 prospect, which is 80 ft southeast of the No. 3, consists of a shallow pit 8 by 4 ft in plan. In it a 2-ft pegmatite body strikes N. 32° E. and dips 50° ESE. The pegmatite is quartzose and rich in small books of flat, hard mica. The chief defects are cracks and ruling. Color zoning is present.

JONES NO. 1 (STOCKDALE, BELL AND KILGORE, C. H. BOYD NO. 1) MINE

The Jones No. 1 mine is about 300 ft west of the Pinetuckey-Milner road in the NW¼NW¼ sec. 30, T. 18 S., R. 11 E., Randolph County (location 49, pl. 43). It was owned and intermittently operated by C. H. Boyd from 1919 to 1944. H. H. Jones purchased the mineral rights in July 1944 and worked the mine for 3 months. The main opening is a narrow cut 25 ft long and 18 ft deep at the face. Two small caved pits that lie several hundred feet to the northeast appear to have been sunk in a second pegmatite body no longer exposed.

The main pegmatite, which is unweathered, is reported to have been opened by means of a 15-ft shaft that probably was mined away in the cut. It strikes N. 35° E., dips 57° SE., and is 2½ ft thick. Books of muscovite are concentrated around the edges of small, platy bodies of massive quartz. The remainder of the pegmatite consists of feldspar, a part of which is gray perthitic microcline, and minor quartz. Crystals of black tourmaline, small pink garnets, and granular masses of bright-blue apatite are abundant.

The mica books, some of which are as much as 4 in. in diameter, are light brown with narrow yellowish-green borders. A few contain dark-brown, needlelike inclusions. The mica is hard and rather flat but badly cracked. Though not very abundant, it is of good quality, and the mine-run material yields nearly 12 percent trimmed sheet and punch. The ratio of punch to sheet is about 10:1.

JONES PROSPECTS

The Jones prospects are half a mile southeast of the Jones No. 1 mine in the NW¼SW¼ sec. 30, T. 18 S., R. 11 E., Randolph County (location 50, pl. 43). They are half a mile due east of the residence of C. H. Boyd, who prospected the deposit during the period 1920–44. H. H. Jones purchased the mineral rights in July 1944 and operated until December of the same year. The workings, which are 200 ft west of an abandoned farmhouse and on the north side of the farm road, are in a belt that trends N. 60° W.

At the northwest is the Jones No. 1 prospect, which consists of a scraper pit 10 by 12 ft in plan and 4 ft deep. A 1-ft pegmatite sill strikes N. 70° E. and dips 52° SSE. It consists of partly kaolinized feldspar and quartz, with small books of muscovite and scattered crystals of black tourmaline. Mica is not abundant, and most of the books are small. Cracks and ruling are the chief defects. The books are color-zoned, with brown centers and narrow, yellowish-green rims.

The Jones No. 2 prospect, 50 ft southeast of the No. 1, consists of a 20-ft inclined shaft in biotite-muscovite schist with a thin pegmatite sill that strikes N. 48° E. and dips 47° SE. The pegmatite is a medium-grained aggregate of quartz, feldspar, muscovite, and black tourmaline. The mica occurs as hard, flat books 2 in. or less in diameter. It is not abundant, and the books are stained by limonite and badly cracked. They are typically color-zoned. In a small pit 60 ft northeast of the shaft the pegmatite body is more quartzose and the mica is somewhat more abundant. Ruling and cracks are its chief defects.

The Jones No. 3 prospect is 100 ft southeast of the No. 2. A 23-ft inclined shaft exposes a 1½- to 3½-ft pegmatite sill that strikes N. 54° E. and dips 40° SE. The country rock is a silvery, garnetiferous muscovite-biotite schist. The pegmatite contains small quartz plates and numerous thin inclusions of schist. Most of the mica, which is sparsely concentrated around the plates and inclusions, is 2 in. or less in diameter. The books are hard and flat but cracked. The mineral is typically color-zoned.

None of the prospects offers much promise as a source of sheet mica, owing chiefly to the sparseness and general small size of the books. The ratio of punch to sheet material generally is greater than 20:1. The quality of the mica is good. The mine-run material yields about 9 percent punch and small-sheet mica.

HOLMES PROSPECT

The Holmes prospect is about three-quarters of a mile northwest of Rice Mill in the SE¼NW¼ sec. 6, T. 19 S., R. 11 E., Randolph County (location 53, pl. 43). The largest pit is on the northeast side of a hill about 200 ft above the valley floor. The deposit was opened during World War I by C. L. Holmes. No recent mining has been done. The workings comprise a crosscutting trench that trends north and is 45 ft long, 8ft wide, and 12 ft deep; an incline (now caved) that was sunk down the dip of the pegmatite body near the south end of the trench; and drifts that extend east and west from the incline. The pegmatite, which strikes N. 80° E. and appears to dip steeply northwest, is roughly conformable with the foliation of the enclosing mica schist. On the west wall of the cut it ranges in thickness from 6 to 12 in. and is composed of fine-grained kaolinized feldspar and muscovite. On the east wall, where it is 2½ ft thick, it consists of a similar intergrowth with a few scattered quartz pods as much as a foot long and 4 in. thick. Pegmatite float, including some blocks of massive white quartz as much as 1½ ft long, is present for a distance of about 120 ft west from the cut.

Badly weathered books of mica, some as much as 5 in. in diameter, are abundant in the old dumps. Their color is light to medium brown. The chief defects are warping and cracks, with subordinate ruling and tied structure. Inclusions of quartz and intergrowths of biotite also are present. Some of the biotite occurs as sheets 2 in. in diameter.

J. J. NEW NO. 1 MINE

Six mines and prospects have been worked on land owned by J. J. New in sec. 27, T. 18 S., R. 10 E., Randolph County. Most of the work was done by Sproul Colburn from August to October 1944. The mines also were worked by Luther Johnson in October and November 1943. The J. J. New No. 1 mine, the largest, is beyond the crest of the hill south of the New farmhouse and 1,500 ft from the county road in the NW¼SE¼ sec. 27 (location 54, pl. 43). In an open-cut 25 ft long, 10 ft wide, and 15 ft deep, as well as in a short stope that was driven from its eastern corner, a pegmatite sill strikes N. 75° E. and dips 50° SSE. in muscovite-garnet schist. A platy structure is due to parallel quartz pods and thin layers of included schist. The remainder of the pegmatite is a medium-grained

quartz-feldspar-muscovite aggregate with abundant black tourmaline. Sixty feet northeast of the cut and on the east side of the access road is a small pit that was sunk in the same sill.

The mica is hard and flat and would be of exceptional quality were it not for abundant cracks. Books as much as 6 in. in diameter were found in a 200-lb stockpile on the dumps. Some are tied and contain quartz and tourmaline inclusions, and others contain tiny scattered black specks. The books are light brown, and most have very narrow green margins. The mica appears to be abundant, and the mine-run material yields a relatively high percentage of trimmed punch and sheet, but the ratio of punch to sheet is very high.

J. J. NEW NO. 2 MINE

The J. J. New No. 2 mine is on the top of a low hill 1,000 ft N. 75° W. of the New residence in the NE¼SW¼ sec. 27 (location 55, pl. 43). A cut 18 ft long, 7 ft wide, and 8 ft deep exposes a pegmatite body that strikes N. 44° E. and dips 38° SE. Numerous thin schist inclusions, which cause a characteristic streakiness, are set in a medium-grained aggregate of feldspar, quartz, muscovite, and black tourmaline. Some tourmaline occurs as a fine-grained subgraphic intergrowth with quartz, and some as crystals 6 in. long and 3 in. wide. These are coated with fine-grained muscovite and are transected by thin veinlets of quartz. Well-faced crystals of dark-brown garnet as much as 1½ in. in diameter also are present.

Most of the book mica occurs in the more quartzose parts of the pegmatite. The books are brown with yellowish-green borders. They are flat and hard but severely cracked. A subordinate type of brownish-olive mica is soft, ruled, and marred by black mineral specks and abundant small inclusions of tourmaline. Most of the brown mica books are small, and the olive-colored mica is chiefly of scrap grade.

J. J. NEW NO. 3 MINE

The J. J. New No. 3 mine, which is midway between the No. 1 mine and the New residence, lies in the NW¼SE¼ sec. 27 (location 56, pl. 43), near the top of a low hill on the west side of the access road. The workings consist of an open-cut 40 ft long, 10 ft wide, and 11 ft deep and a 25-ft shaft 25 ft to the southeast. A 4-ft pegmatite series that is exposed in the northeast face of the open-cut strikes N. 75° E. and dips 42° SSE. Within it are 15 subparallel layers of pegmatite and coarse muscovite schist that range in thickness from 1 to 8 in. The pegmatite is a medium-grained intergrowth of quartz, feldspar, and muscovite. Tourmaline is abundant as crystals 1½ in. or less in diameter. From the shaft, which intersects the pegmatite zone about 20 ft from the surface, a short drift was driven to the northeast.

The dumps contain abundant mica of two varieties. Light-brown books, some as much as 5 in. across, are flat, hard, and free splitting. Cracks and tied structure are the chief defects. A brownish-olive mica is much softer and contains minute tourmaline inclusions and a few small black mineral specks.

J. J. NEW NO. 4 PROSPECT

The J. J. New No. 4 prospect is on both sides of the access road 160 ft northeast of the No. 3 mine (location 57, pl. 43). The workings consist of three small pits. Pit 1, on the east side of the road, exposes a 10-in. pegmatite body that strikes N. 75° E. and dips 47° SSE. It consists of kaolinized feldspar and granular quartz with scattered books of muscovite and is characteristically streaky. Most of the mica books are small, but some as much as 6 in. in diameter were observed. They are medium brown, with light green borders. Many are tied and ruled, and most are badly cracked. Nearly all would yield scrap material only.

An 8-in. pegmatite is exposed in pit 2, which is on the west side of the road. Its trend is parallel to that of the pegmatite in pit 1, and the micas in the two bodies are very similar. The pegmatite in pit 3, which is north of pit 2, strikes N. 82° E., dips 44° S., and ranges in thickness from 1½ to 3 ft. It consists of kaolinized feldspar and thin quartzose disks. Small books of mica are associated with the quartz but are not abundant. Ruling, cracks, and quartz inclusions are the chief defects. The mineral is medium brown, and no color zoning is present.

J. J. NEW NO. 5 AND NO. 6 PROSPECTS

The J. J. New No. 5 prospect is in the SW¼NE¼ sec. 27 (location 58, pl. 86), and the No. 6 is in the SE¼NW¼ sec. 27 (location 59, pl. 43). The No. 5 is on the north side of the county road 0.1 mile northwest of the New residence, and the No. 6 is on the south side of the road about 500 ft to the west. At the No. 5 a pit 8 by 3 ft in section and 7 ft deep exposes a pegmatite body that strikes N. 58° E., dips 75° SSE., and ranges in thickness from 1 to 1½ ft. A platy structure is formed by subparallel quartz pods and associated coarsely crystalline muscovite. Kaolinized feldspar and crystals of tourmaline and garnet also occur. Books of mica 6 in. wide are on the dumps. The mineral is light brown, and many of the smaller books contain pale green rims. The books are flat, free splitting, and generally of good quality. Cracks are the only major defect. The total amount of mica in the deposit appears to be small.

The pit at the No. 6 prospect is 10 ft long, 4 ft wide, and 6 ft deep. The pegmatite contacts are not exposed, but the characteristic platy structure is present. Accessory minerals are tourmaline in 1-in. crystals and biotite in 1½-in. flakes. Blocks of massive white quartz as much as 2 ft long are present in the road cut near the pit. Books of mica 4 in. or less in diameter are associated with the quartz pods in the pit. Much of the material is soft, buckled, and cracked. Ruling and inclusions of biotite and tourmaline are other defects. The mica is medium brown, and many of the smaller books contain thin green borders. Little but scrap material is present.

PEARCE LENLESS NO. 1 PROSPECT

The Pearce Lenless No. 1 prospect is in the NE¼ NE¼ sec. 28, T. 18 S., R. 10 E., Randolph County (location 60, pl. 43). Lenless is reported to own the mineral rights. The old pit, which was reopened in 1944, is at the edge of a cornfield about 500 ft southwest of the road between Corinth Church and Foster Bridge. It is 12 ft in diameter and 9 ft deep and exposes a pegmatite sill that strikes N. 63° E. and dips 62° SSE. A 4- to 8-in. quartz core is surrounded by a somewhat thicker wall zone of kaolinized feldspar, minor granular quartz, and scattered crystals of black tourmaline.

Mica is concentrated along the walls and around the quartz core. The largest observed book was 4 by 5 in., and 3- by 4-in. books are common. Most of the mica is hard, flat, and free splitting. Cracks and clay staining are its chief defects. A few quartz inclusions and some very small cross books of mica are present. In general the material appears to be of good quality, and it is sufficiently large and abundant to justify further development of the deposit.

PEARCE LENLESS NO. 2, NO. 3, AND NO. 4 PROSPECTS

A group of three small prospects that were worked in 1944 by Pearce Lenless is a few hundred feet west of the Corinth Church-Foster Bridge county road and just north of the road to the Marion Vickers farm in the NE¼SW¼, sec. 28, T. 18 S., R. 10 E., Randolph County (location 61, pl. 43). Most of the pits, which are in a cornfield, have been partly refilled by plowing. The northernmost, or No. 2, prospect pit is 24 ft long, 11 ft wide, and 6 ft deep. In it a 2-ft pegmatite sill strikes N. 46° E. and dips 55° SE. The pegmatite is a uniform quartz-rich aggregate with scattered books of mica, abundant garnet crystals near the contacts with the schist, and a few crystals of black tourmaline as much as an inch long. Two types of mica are present in the dumps. Most of the smaller books are medium brown, hard, flat, and free-splitting. Other, generally larger books are brownish olive and are soft, warped, and cracked.

The No. 3 prospect is 300 ft S. 15° W. of the No. 2. No pegmatite is exposed in the pit, but the scattered dumps contain blocks of an unusual mica-rich rock. It consists chiefly of tightly interlocking, randomly oriented flakes and small books of muscovite, and it closely resembles the rock mined at the Clein scrap-mica deposit. This mica aggregate appears to have been formed through recrystallization of mica schist near the pegmatite contact. Dump material indicates that the pegmatite body is at least 3 ft thick and contains small, subparallel quartz pods. Mica books as much as 3 in. in diameter also are present. They are flat, hard, and relatively free-splitting. Their color is light to medium brown. Most are badly cracked, and others contain inclusions of biotite. This deposit might well be further prospected to determine the thickness and extent of the scrap-mica rock.

At the No. 4 prospect, 200 ft west of the No. 2, a small pit exposes a pegmatite sill that strikes N. 60° E., dips 46° SSE., and is 8 to 12 in. thick. It is a uniform, medium-grained aggregate of quartz, feldspar, and abundant muscovite. Most of the mica books are very small, but a few as much as 2 in. in diameter are present. The mineral is light to medium brown, hard, and flat. Cracks and a few cross books of mica are the chief defects. All the observed material was scrap.

VICKERS NO. 1 MINE

The Vickers mines and prospects are in sec. 28, T. 18 S., R. 10 E., Randolph County on land owned by Marion Vickers, of Route 1, Wedowee. The mines were worked in 1943 and 1944 by Vickers and C. R. Evans. The No. 1 mine, which is in the NE¼SW¼ sec. 28 (location 62, pl. 43), consits of two open-cuts near the top of the south slope of a low hill several hundred yards southwest of the Vickers residence. In the southwestern cut, which is 12 ft deep, 6 ft wide, and about 40 ft long, two parallel bodies strike N. 70° E., dip 38° SSE., and are separated by 2 ft of mica schist. The lower pegmatite, which is 1 to 2 ft thick, is a medium-grained feldspar-quartz aggregate with a streaky structure formed by small, subparallel quartz disks. Crystals of black tourmaline are scattered through the rock. The upper body, which is similar, is 2 ft thick. Both pegmatites are also exposed in the northeastern pit, which is 10 ft deep, 5 ft wide, and about 25 ft long.

Rich concentrations of mica are associated with the quartz pods and the hanging-wall contacts of both pegmatites. Vickers states that books as much as 16 in. in diameter, one of which weighed 40 lb, have been

obtained. Six-inch books are present in the dumps. The mica is light brown to cinnamon brown, with bright yellowish-green rims. It is flat and free splitting and contains very little ruling or clay staining. Cracks are the chief defect, but the general quality is good.

VICKERS NO. 2 PROSPECT

The Vickers No. 2 prospect (location 63, pl. 43), 100 ft west of the No. 1 mine, includes three old, partly caved pits. The southwest pit is 20 ft long, 5 ft wide, and 4 ft deep. No pegmatite is exposed, but in the dump are mica books as much as 6 in. in diameter. Thirty-five feet N. 60° E. of this pit the dump from a small prospect hole contains sheets of mica as much as 5 in. across. A third pit, 35 ft farther northeast, exposes a pegmatite body that strikes N. 60° E., dips 33° SSE., and is 1½ ft thick. A platy structure is similar to that in the pegmatites at the No. 1 mine.

In general the mica is very similar to that in the No. 1 deposit. The color is light brown to cinnamon brown, and narrow, pale-green borders are present. Cracks are the chief defect, but most of the books are hard, flat, and free splitting. The general quality of the mica is good.

VICKERS NO. 3 (MOSE BALL) PROSPECT

The Vickers No. 3 prospect (location 64, pl. 43) is 300 ft east of the Tallapoosa River and about three-quarters of a mile west of the Vickers residence in the NW¼SW¼ sec. 28. It was worked by Mose Ball in 1944. A hillside open-cut 20 ft long, 5 ft wide, and 13 ft deep exposes a body of pegmatite that strikes N. 53° E. and dips 48° SE. It is 2 ft in average thickness and consists of small parallel quartz pods in an aggregate of medium-grained feldspar and granular quartz with crystals of black tourmaline. Mica is associated with the pods, but the concentrations are not rich. The books, which generally are small, are light brown to cinnamon brown, with narrow, pale-green rims. Quartz inclusions and cracks are the chief defects. The mineral is flat, hard, and free splitting.

VICKERS NO. 4 MINE

The Vickers No. 4 mine, in the SE¼NW¼ sec. 28, T. 18 S., R. 10 E. (location 65, pl. 43), is 900 ft north of the No. 2 mine and on the opposite side of a small branch. It is the largest of the four mines and prospects on the Vickers land and was worked during the summer and fall of 1943 by C. R. Evans. An incline driven 35 ft deep down the dip of the pegmatite body was widened at the bottom into a stope 10 ft long.

The pegmatite is a sill that strikes N. 60° E. and dips 48° SSE. It ranges in thickness from 8 in. near the top of the incline to 5 ft at the face in the bottom. A conspicuous streaky structure is caused by the subparallel orientation of thin schist inclusions and small quartz-rich pods. Several of the inclusions are as much as 10 in. thick and 2 ft long. In the working face the sill splits into two arms separated by 6 in. of schist. The lower arm is 1½ ft, the upper 3 ft thick. Most of the pegmatite is a medium- to coarse-grained mixture of feldspar (kaolinized), quartz, muscovite, and black tourmaline. Tourmaline is unusually abundant in crystals as much as 3 in. in diameter.

About 500 lb of scrap mica is piled near the collar of the incline. The diameter of the books is 2 in. or less. Their color is light brown to cinnamon brown, and narrow, pale-green borders are present. The quality is fair. Most of the material is hard, flat, and free splitting but marred by cracks and quartz inclusions. Vickers reports that moderate quantities of sheet and punch mica have been produced. Although no rich concentrations were observed in the faces, possibilities for further production appear to be good.

UNNAMED PROSPECT

A prospect pit, dug on the north side of the county road between Foster Bridge and Corinth Church in the SE¼SE½ sec. 28, T. 18 S., R. 10 E., Randolph County (location 66, pl. 43), exposes a 1-ft pegmatite body that strikes N. 38° E. and dips steeply southeast. The pegmatite is a medium-grained intergrowth of kaolinized feldspar, quartz, and small muscovite. Mica books as much as 2½ in. in diameter are present on the dumps. The mineral is medium brown, with narrow, bright yellowish-green borders. It is hard, generally flat, and free splitting but is marred by numerous cracks. The mica does not appear to be sufficiently abundant to warrant further prospecting.

KITCHEN PROSPECT

The Kitchen prospect is on the south side of a dirt road 1½ miles west-southwest of Milner. It is in the SE¼NE¼ sec. 34, T. 18 S., R. 10 E., Randolph County (location 67, pl. 43), on property owned by W. G. Kitchen. During the period April-October 1944 Kitchen worked in two pits 30 ft apart. A 29-ft incline was sunk from the southern pit down the dip of a poorly exposed pegmatite body that probably is several feet thick. It strikes northeast and dips 30° SE. The mica is not abundant, and most of the books are small and contain a high proportion of scrap material.

FOSTER MINE

The Foster mine is in the SW¼NE¼ sec. 4, T. 19 S., R. 10 E., Randolph County (location 68, pl. 43), about a quarter of a mile west of the Tallapoosa River. It is owned by T. C. Foster and lies within 200 ft of the Foster house. The deposit was prospected by the Great Southern Mica Co. about 1918 and was worked intermittently by Foster during 1943. In January 1944 it was leased to M. L. Clein, of Atlanta, Ga., who operated the mine until March 1944. The workings consist of an open-cut 70 ft long, 8 ft wide, and 5 to 10 ft deep and two small pits that lie to the rear of the Foster house. An inclined shaft was sunk to a reported depth of 60 ft from the center of the open-cut, and a short drift was extended to the south at the 30-ft level.

The pegmatite, a sill in garnetiferous muscovite schist, strikes N. 45° E. and dips 55° SE. It ranges in thickness from 1 to 2½ ft in the open-cut and is reported to have thickened to 4 ft in the shaft. Only two small quartz veinlets are exposed at the side of the road along the trend of the body 50 ft north of the cut. The pegmatite in the cut consists chiefly of massive quartz with a little perthite around its margins. No mica is exposed. Books of light-brown mica with pale-green borders are scattered throughout the dump material, but none more than 2 in. across was seen. The mica is flat and hard, but much is tied.

In one of the smaller pits a second body of pegmatite strikes N. 35° E. and dips 50° SE. It is 6 ft thick in one wall of the pit but narrows to 1 ft in the other wall. It is a medium-grained intergrowth of quartz, feldspar, small garnet crystals, and scattered small books of muscovite. The other pit contains only a 4-ft exposure of massive quartz, but a few small books of muscovite occur in the dump material.

About half a mile southwest of the Foster prospect and 350 ft east of the county road is a large outcrop of massive white quartz. It is 6 to 8 ft wide, trends N. 20° E., and can be traced for about 400 ft. No prospecting has been done.

JAKE RICE MINE

The Jake Rice mine is in the NW¼SW¼ sec. 9, T. 19 S., R. 10 E., Randolph County (location 69, pl. 43). It is owned by Jake Rice and was operated during the fall of 1943 by the Bob Lee Mining Co., of Atlanta, Ga. A series of pits forms a line that trends N. 20° E. for a distance of 125 ft. Two bodies of pegmatite have been worked. Pegmatite is exposed in the southwest pit, and the dumps contain blocks of quartz 2 ft in diameter. Another small pit, 60 ft to the northeast, exposes a pegmatite body that strikes N. 42° E., dips 60° SE., and probably is the same as that mined in the first pit. It is at least 4 ft thick and contains small, parallel pods of quartz as much as 6 in. long. Kaolinized feldspar and granular quartz with scattered mica books constitute the remainder of the rock.

Mica occurs as books 6 in. or less in diameter. It is light brown, and the sheets are marked by narrow, pale-green borders. Cracks, warping, and clay staining are the chief defects, and some of the books also contain minute black spots, which are concentrated in the light-green rims. Herringbone and tied structures are subordinate.

The second pegmatite body, which is exposed in a third pit that is 15 by 11 ft in plan, strikes N. 65° E. and dips 25° SSE. It is 1½ ft thick at the northeast side of the pit but pinches out on the southwest side. It consists chiefly of kaolinized feldspar with minor granular quartz and is conformable with the muscovite schist. About 200 lb of mica is stockpiled near the pit. It is generally flat, and the average size of the books is large, but many books are soft and reeved. Others contain herringbone structure and garnet inclusions, and most are cracked and tied. The percentage of recoverable sheet and punch mica in the mine-run is very low.

Relatively large quantities of mica probably were recovered during past operations, especially in the second pegmatite body, whose exposed thickness does not exceed 1½ ft. It appears likely that very rich concentrations of mica are present locally, and that the pits were abandoned after two such concentrations were mined out. The pegmatites appear to be irregular and discontinuous.

RANDOLPH MICA CO. PROSPECT

Numerous old workings of the Randolph Mica Co. are reported to be present in sec. 27, T. 19 S., R. 10 E., Randolph County (location 72, pl. 43), but only two were found. Both probably were worked by Douglas Smith, of Wedowee, and Dallas Smith, of Opelika, who represented the company, but the deposits have lain idle since June 1914. An old, badly slumped pit on the east side of a logging road about half a mile east of the Tallapoosa River is in the SE¼NW¼ sec. 27 about a third of a mile southwest of the Randolph Mica Co. mine. The dumps contain blocks of quartz with imprints of mica books as much as 3 in. in diameter. Somewhat larger books of badly weathered, light-brown mica also are present. Ruling and cracks are the chief defects; "A" and wedge structures are subordinate. The mica appears to have been rather abundant.

RANDOLPH MICA CO. (DOUGLAS SMITH) MINE

The workings of the Randolph Mica Co. mine are about 50 ft west of an old timber road in the SW¼NE¼ sec. 27, T. 19 S., R. 10 E., Randolph County (location 73, pl. 43). They were last operated in 1914. The deposit is unusual in that the rock is completely fresh and unweathered and pegmatite crops out along the slope of the hill below the road. The workings consist of an open-cut 75 ft long, 20 ft wide, and 30 ft deep at the northeast face and two small pits to the northwest. The cut exposes a pegmatite body that strikes N. 35° E. It is 12 ft thick at the base of the northeast face but pinches out about 18 ft above the floor. The southeastern contact is nearly vertical, but the northwestern contact dips 63° NW. The body appears to be cigar-shaped, with a crest that probably plunges southwest at a low angle. Contacts with the enclosing biotite schist are ragged in detail, but in general the pegmatite is conformable with the country-rock foliation.

From points near the crest of the body a bulbous quartz mass 3 to 4 ft thick tapers downward and pinches out 4½ ft above the floor. Films of an unidentified silvery sulfide mineral occur along fractures in this quartz. The wall zone is a coarse-grained intergrowth of plagioclase, quartz, muscovite, and biotite. Much of the plagioclase has been sericitized. Only a few small, well-faced books of mica are exposed in the sides of the cut, and the mineral is not abundant in the dumps. Concentrations of book mica occur along the southeast wall. The books tend to be thick but narrow. The mica is hard, flat, and generally free splitting. Its chief structural defect is ruling. Some of the mica is tied and contains minute black specks. Its color ranges from light brown to brownish olive, and many of the books have yellowish-olive to green rims.

A second body of pegmatite is exposed in a pit 75 ft northwest of the open-cut. This opening is 20 ft long, 10 ft wide, and 12 ft deep at the face. The pegmatite body, whose contacts are not exposed, is at least 10 ft thick and consists of relatively fine-grained quartz, feldspar, and small muscovite foils. A few quartz pods are as much as 4 in. long. This pegmatite also crops out on the slope above the pit. It is probably 15 ft thick and in general trends parallel with the body exposed in the main open-cut. Very little mica was observed.

CLEIN SCRAP-MICA DEPOSIT

The Clein scrap-mica deposit is 0.1 mile east of the Randolph County-Clay County line in the SW¼NW¼ sec. 6, T. 19 S., R. 10 E. (location 74, pl. 43). The property, on which 12 small prospect pits had been dug in an area 50 ft wide and 250 ft long, was purchased by M. L. Clein, of Atlanta, Ga., in the summer of 1944. Clein constructed a scrap-mica recovery plant and mined the ore by power shovel. The main cut, which trends northeast, is 100 ft long, 25 ft wide, and 15 ft deep at the face. A second, smaller cut was dug 90 ft to the northeast. The mica-bearing material was dumped into a small jawcrusher and passed through a trommel screen, and the concentrates were taken by belt to a storage chute. It is reported that a carload of scrap mica was shipped.

The cuts expose a body of aplite that strikes northeast and in general dips moderately northwest. It is cigar-shaped, with a crest that plunges 10° WSW. This mass, which is 15 ft in maximum thickness, has been explored over a strike length of nearly 200 ft and a vertical distance of about 20 ft. Its keel is well exposed in the northeast pit. The aplite is uniformly fine grained and consists of kaolinized feldspar and quartz in about equal quantities.

The foliation of the enclosing mica schist strikes N. 60° to 80° E. and dips 20° to 40° SSE. to S. The aplite body, which cuts across this foliation, is surrounded by a thick sheath of mica-rich rock that appears to have been formed by reaction between the aplite and the schist (fig. 160). This sheath, which ranges in thickness from a few inches to more than 5 ft, consists of light-gray muscovite in interlocking flakes 0.02 to 0.5 in. in diameter. Mica constitutes 60 to 90 percent of the rock, quartz and decomposed feld-

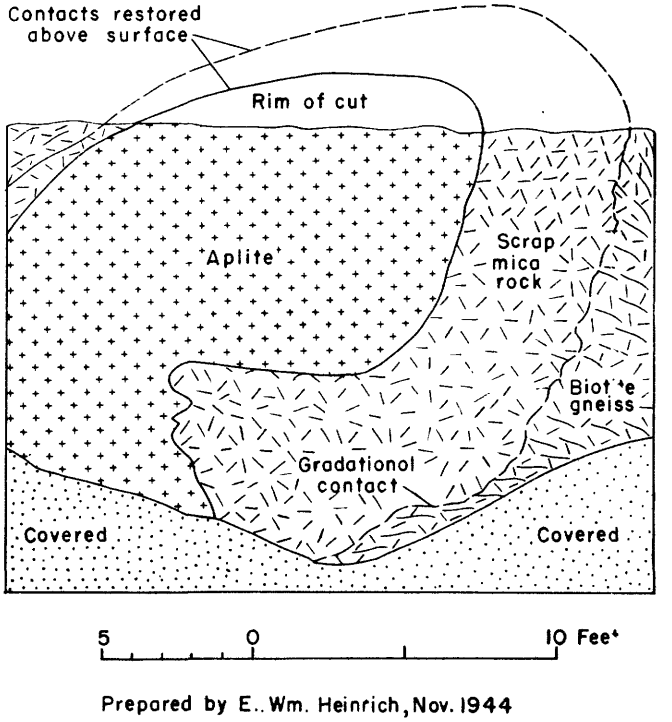

FIGURE 160.—Section along face of open-cut, Clein scrap-mica deposit, Randolph County, Ala.

spar the remainder. The aggregate is relatively loosely bonded, owing to the kaolinization of the feldspar, and hence is easily crushed. The contact between altered and unaltered schist is gradational, and the relict foliation of the schist is preserved in the scrap mica rock. A large tonnage of scrap mica remains to be mined.

A few small pods of medium-grained feldspar-quartz-muscovite pegmatite are associated with the aplite at the northeast end of the deposit. The mica is brownish olive, with medium-brown borders. Cracks are the chief structural defect. The books are generally small and not particularly abundant.

S. M. SMITH PROSPECTS

The S. M. Smith prospects are in Clay County, near the Randolph County line, in the NE¼SE¼ sec. 1, T. 19 S., R. 9 E. (location 75, pl. 43). They lie about a third of a mile southwest of the Clein scrap-mica deposit. The property is owned by S. M. Smith, who dug several shallow pits and a 15-ft incline (now inaccessible) in 1943 and 1944. The pegmatite body, which appears to strike northeast and dip moderately southeast, is reported to be 16 in. in maximum thickness. Most of it is an aggregate of kaolinized feldspar, quartz, and small muscovite. A few blocks of massive white quartz occur on the dumps. The mica is medium- to dark-brown and brownish-olive "A" material that contains scattered black mineral specks. The proportion of scrap is very high.

OTHER MINES AND PROSPECTS

The information in the following reports on deposits in the Pinetuckey area was obtained from Alabama Geological Survey Bulletin 24, by G. H. Clark:

Consolidated Mica Co. mine.—Two pegmatites in the NW¼NE¼ sec. 6, T. 18 S., R. 10 E., Randolph County (location 7, pl. 43), were worked prior to 1920. They strike northeast and contain mica near their hanging walls. The west pegmatite, which is at least 8 ft thick, was opened by means of a shaft. The east body, which contains a core of massive quartz, was not worked.

Consolidated Mica Co. prospect.—A small amount of "A" mica was obtained during World War I from two pits in the SE¼NW¼ sec. 6, T. 18 S., R. 10 E., Randolph County (location 8, pl. 43). At least two pegmatites trend northeast.

Bagley prospect.—Five pits were sunk prior to 1920 in a lot in the SW¼NW¼ sec. 6, T. 18 S., R. 10 E., Randolph County (location 9, pl. 43). A little "A" mica was taken from the 8 ft pit in the northwest corner of this lot.

Alexandria mine.—Several open-cuts southwest of the Bagley prospect (location 10, pl. 43) were worked under the direction of Professor Bain, of the University of Minnesota, during World War I. The mica, which occurs along a thick quartz core, is of good quality and includes both flat and "A" books. The country rock is mica schist.

McAdoo mine.—A shaft and a tunnel were excavated prior to 1920 in the NW¼NW¼ sec. 6, T. 18 S., R. 10 E., Randolph County (location 11, pl. 43).

The information in three additional reports on deposits in the Pinetuckey area was obtained from U. S. Geological Survey Bulletin 740, by D. B. Sterrett:

Great Southern Mica Co. mines.—Two open-cuts and three shafts were opened during the period 1906–8 on the property 3¾ miles S. 25° E. of Pinetuckey in sec. 32, T. 18 S., R. 11 E., Randolph County (locations 51 and 52, pl. 43). A pegmatite sill that strikes N. 30° E. and dips 70° ESE. is reported to have been worked to a depth of 100 ft. It is 1½ to 8 ft thick and consists of perthite, quartz, muscovite, blue-green apatite, pink garnet, and black tourmaline. The mica is clear, light brown, free splitting, and of very good quality.

A 30-ft vertical shaft and a 30° incline were sunk about 1906 in a deposit 3 miles S. 28° E. of Pinetuckey. The pegmatite contains perthite, quartz, muscovite, biotite, and pyrite. The mica books are light brown, clear, and small.

McInnish prospects.—A 6-ft pegmatite body that strikes northeast was prospected on the McInnish property west of the Tallapoosa River and 4.7 miles S. 29° W. of Milner (location 71, pl. 43). A second northeastward-trending pegmatite is exposed in a pit on the river bank to the southeast. Seven-inch sheets of mica are said to have been obtained during operations prior to World War I, but only small mica books are present on the dumps.

J. B. Motes prospects.—Several openings are 50 yd east and 300 yd west of the Motes house, which is west of the Tallapoosa River and 3 miles N. 37° W. of Milner (location 70, pl. 43). In the eastern openings, a 15-ft shaft and a small pit, the pegmatite is 4 ft thick. A 14-lb mica book more than 6 in. thick is reported, but most of the mica books obtained were much smaller. At the western prospect dumps from a 6-ft pit contain small mica books and large crystals of black tourmaline. The mica from both prospects is clear, light brown, and free splitting. The country rock is a kyanitic (?) mica gneiss whose foliation strikes northeast and dips southeast.

CLAY COUNTY. PYRITON AREA

J. J. SMITH PROSPECT

The J. J. Smith prospect is about half a mile northwest of State highway 9 and 3 miles north of Delta in

the NW¼SW¼ sec. 3, T. 18 S., R. 9 E. (location 76, pl. 43). A pit 200 ft north of the abandoned Smith farmhouse was worked from September to December 1943 by the Bob Lee Mining Co. It is 18 ft long, 7 ft wide, and 14 ft deep and exposes a pegmatite sill that strikes N. 52° E., dips 68° SE., and is 4½ ft thick. Three-inch plates of quartz, which form a pronounced streaky structure, are fringed with coarsely crystalline muscovite. The remainder of the pegmatite consists of kaolinized feldspar and granular quartz. Quartz veinlets that contain abundant crystals of black tourmaline cut across the main mass of pegmatite.

Mica occurs as medium- to dark-brown books 5 in. or less in diameter. Some of the smaller books have thin greenish borders. The mineral generally is flat, free splitting, and hard, but fractures, ruling, and tied structure are common. A little "A" structure and some intergrown biotite are present.

DELTA MINE

One of the oldest mines in Clay County is the Delta, which is about three-quarters of a mile south of the Clay County-Cleburne County line in the SE¼SE¼ sec. 4, T. 18 S., R. 9 E. (location 77, pl. 43). It was operated by T. C. Russell, of Alexander City, probably during World War I, but has lain idle for many years. The present owner is not known. The mine workings are extensive, but the main incline, which is reported to be 100 ft long, is caved and inaccessible. The cut from which the incline was sunk is 100 ft long, 30 ft wide, and 30 ft deep at the face. Eighty feet southwest of the cut is a 25-ft incline that gives access to a stope 12 ft long and 10 ft wide. A small pit about 30 ft S. 65° E. of this incline is in country rock.

The pegmatite in the open-cut is a sill that strikes N. 42° E. and dips 40° to 60° SE. It is 3½ ft thick on the southwest wall but narrows toward the northeast, pinching out on the northeast wall 8 ft below the rim of the cut. It contains a 1½-in. biotite-rich selvage, many thin, parallel quartz plates, and a matrix of medium-grained kaolinized feldspar and quartz with small mica books and crystals of black tourmaline. Concentrations of mica occur near the walls of the sill, especially along its hanging wall.

In the 25-ft incline the pegmatite strikes N. 46° E., dips 52° SE., and is 6½ ft thick. The streaky quartz-plate structure is very strongly developed and is further emphasized by concentrations of coarsely crystalline muscovite around the plates. Along the hanging wall is a 3- to 18-in. zone of homogeneous, medium-grained feldspar-quartz pegmatite with small flakes of muscovite and scattered crystals of black tourmaline. Books of medium-brown mica are abundant, both in the exposures and in the old dumps. Some are as much as 6 in. in diameter. Ruling and fractures are the chief defects, with subordinate tied structure and biotite intergrowths. Narrow ribbons are common.

The size of the dumps indicates that a considerable amount of pegmatite has been mined, and large quantities of mica may well have been recovered. Clark (1921, p. 93) states that about 12 tons of mine-run mica was in the bins at the time of his examination and adds that the mine was shut down because the operators were unable to work below water level. The mica exposed in the 25-ft incline does not appear to be of very good quality.

J. J. SMITH NO. 2 PROSPECT

The J. J. Smith No. 2 prospect, which is on the Smith property in the NW¼NW¼, sec. 10, T. 18 S., R. 9 E. (location 78, pl. 43), is at the south side of an access road about a quarter of a mile west of Alabama Highway 9. A pit 17 ft long, 7 ft wide, and 14 ft deep was dug by the Bob Lee Mining Co., of Atlanta, Ga., in 1943. The pegmatite body strikes N. 16° W., dips 58° W., and thickens downward from 2 to 11 feet. Its shape is that of an inverted wedge, and its narrow crest, which is exposed on the east wall of the pit, appears to plunge southward at a low angle. In general the body is conformable with the foliation of the enclosing mica schist.

The pegmatite is zoned from hanging wall to footwall as follows:

	Ft.	*In.*
Selvage of recrystallized schist rich in small flakes of muscovite (border zone)	0	1
Medium-grained intergrowth of kaolinized feldspar and quartz (wall zone)	1	0
Massive white quartz (core)		3–12
Reworked schist, consisting chiefly of abundant small muscovite flakes		1
Kaolinized feldspar with minor granular quartz (wall zone marginal to inclusion)	2	0
Small quartz pods and crystals of blocky kaolinized feldspar, which may be perthite (discontinuous intermediate zone)	1–2	0
Medium-grained aggregate of kaolinized feldspar and minor quartz, in which thin disks of quartz are surrounded by coarsely crystalline muscovite (wall zone)	4	0

The mica books are medium brown to brownish olive, and some contain narrow, pale-greenish borders. The mineral is hard and flat, with inclusions of tourmaline, intergrowths of biotite, and a few scattered black specks. Ruling and cracks are common defects. Although books as large as 3 by 3 in. were observed, the mica does not appear to be sufficiently abundant to warrant further development of the deposit.

SMITH NO. 1 MINE AND NO. 1 PROSPECT

The Smith No. 1 mine is 2.6 miles N. 38° W. of Delta in the SE¼SE¼ sec. 8, T. 18 S., R. 9 E. (locations 79 and 80, pl. 43). According to local reports, the deposit was first worked by the Indians for beryl. More recently it was worked by the Bob Lee Mining Co. of Atlanta, Ga., and then sold to the American Mica Co., of Birmingham, which operated it from July 1943 to May 1944. The mine was abandoned after collapse of the underground workings, and attempts to reopen it in July 1944 were unsuccessful. Late in 1944 the deposit was leased to the McLaney brothers, but no work was done. Four diamond-drill holes were put down on the property by the U. S. Bureau of Mines during the winter of 1944, but both the pegmatite and country rock are so thoroughly decomposed that very little core was recovered, even from a hole that reached a depth of 120 ft.

The underground workings, which are not accessible, are reported to consist of an incline 95 ft long, several drifts on both sides of this incline, an adit leading to the incline from the northeast, and a 46-ft shaft that did not intersect the pegmatite body (pl. 46). The only rock exposure is beneath the overhanging lip of the cut that leads into the caved adit, where a 1-ft quartz vein occurs in a fine-grained, thinly foliated quartz-hornblende gneiss. Both the vein and the gneissic structure strike N. 35° E. and dip 60° SE.

The pegmatite mass is reported to be as much as 12 ft thick and to contain a central quartz mass, as well as smaller quartz ribs near both walls. The strike of the body appears to be N. 35° to 45° E. and the dip 35° to 60° SE. Most of the mica is said to occur beneath the central quartz mass. The dump material contains blocks of massive white quartz, blocks of a kaolinized feldspar-quartz pegmatite, and a few masses of kaolinized feldspar. Small blades of bright-blue kyanite in feldspar, partly faced garnet crystals as much as an inch in diameter, small books of muscovite, and a few sheets of biotite also are present. Kyanite occurs as clusters of long white to blue crystals in float at the southeast end of the area. Crystals of pale-green beryl as much as 6 in. long are said to have been recovered during the mining, but none were found in the dumps.

The mica is medium brown to light brownish olive. Most of the medium-brown books are bordered by narrow, light-green rims. Some of the books are as much as 8 in. in diameter, but the average size is 3 or 4 in. Many are cracked and warped, and some are tied. "A" structure and reeves are minor defects. The mica concentrations are reported to have been relatively rich, but the extreme decomposition of both pegmatite and country rock would necessitate unusually heavy and costly timbering in any future operation.

A prospect that was worked by the American Mica Co. is 650 ft N. 70° E. of the main Smith No. 1 cut. The workings consist of two small, closely spaced pits. The pegmatite body strikes N. 50° E., dips 60° SE., and is at least 8 ft thick. Only the hanging-wall contact is exposed. Subparallel platy quartz bodies are enclosed by an aggregate of kaolinized feldspar, granular quartz, muscovite, and biotite. Black tourmaline is a common accessory mineral. Mica occurs in pale brownish-olive books as large as 4 by 6 in. It is cracked, warped, and soft and contains inclusions of biotite. Much is heavily stained by limonite, and nearly all is of scrap grade.

BUNN-JONES AND JONES-BUNN PROSPECTS

The Bunn-Jones and Jones-Bunn prospects are at the south side of the county road between Dempsy and Alabama Highway 9 in the NE¼SE¼ sec. 17, T. 18 S., R. 9 E. (locations 81 and 82, pl. 43). The land is owned by Woodie Bunn, who did the first prospecting. In 1944 the deposits were worked intermittently by H. H. Jones. At the Bunn-Jones prospect, which is 75 ft south of the county road, an irregular inclined shaft 35 ft deep and a 15-ft drift that was driven northeast from its bottom expose a thin pegmatite sill. It strikes N. 48° E., dips 65° SE., and ranges in thickness from 4 in. at the surface to 2 ft in the drift. In the drift it consists chiefly of kaolinized feldspar with minor granular quartz, but at the shaft collar it is more quartzose. The dumps contain blocks of massive white quartz as much as 4 ft long. Evidently a discontinuous quartz core was present in the part of the deposit that is mined out.

Very little mica is exposed in the workings. The dumps contain books as much as 4 in. in diameter, and flakes of an inch or less are very abundant. All the mica is badly weathered and clay-stained. Cracks, ruling, and warping are the chief structural defects; and "A" structure is subordinate. The color is light brownish olive to medium brown, and the general quality is poor.

The Jones-Bunn prospect, 300 ft northwest of the Bunn-Jones shaft, consists of a narrow open-cut 55 ft long and 11 ft in maximum depth. In it two parallel bodies of pegmatite that strike N. 60° E. and dip 42°SSE. are separated by 15 in. of schist. The lower body is 5½ ft thick. The upper one, which is 1 ft thick, may be an offshoot. On the northeast side of the cut the main body splits into two arms that are separated by 2 ft of schist. The pegmatites consist of kaolinized feldspar, quartz, and scattered books of mus-

covite. A characteristic platy structure is present, and mica books are clustered around the quartz masses.

The mica is abundant but of rather poor quality. It is light to medium brown and is heavily fractured and clay-stained. Ruling is a minor defect. Some of the books are 6 in. in diameter. Sheets of biotite as much as 2 in. long are present. The dumps also contain blocks of a fine-grained tourmaline-quartz rock, in which the tourmaline occurs as radiating crystals as much as three-quarters of an inch long and a quarter of an inch in diameter.

J. W. HUNTER PROSPECT

The J. W. Hunter prospect is in the NW¼SW¼ sec. 17, T. 18 S., R. 9 E. (location 83, pl. 43). The pit, which is 25 ft long, 12 ft wide, and 10 ft deep, lies 0.1 mile south of the road that connects Dempsy with State Highway 9. The deposit was prospected at the end of World War I, but no recent work has been done. The hard and unweathered pegmatite body is a sill that strikes N. 85° E. and dips 38° S. It ranges in thickness from 4 to 5 ft and is clearly zoned. The following hanging wall-to-footwall sequence was noted:

	Ft.	In.
Selvage of muscovite books as much as an inch across; cleavage directions generally are normal to contact (border zone)	0	3–4
Uniformly fine grained intergrowth of quartz, feldspar, and quarter-inch scales of muscovite (wall zone)	1–1½	0
Clusters of mica books as much as 2 ft long and 10 in. thick; individual books generally are small (intermediate zone)		6–10
Massive white quartz (core)		1–3
Uniformly fine grained aggregate of quartz, feldspar, and quarter-inch scales of mica (wall zone)	⅛–2½	0

The lowest unit thins toward the northeast, and the pegmatite body probably plunges southeast at a low angle. Mica occurs as light-brown books 3 by 4 in. or smaller. The chief defects are ruling, cracks, and tourmaline inclusions. A little "A" structure also is present.

J. W. SMITH MINE

The J. W. Smith mine, which is in the SE¼NW¼ sec. 24, T. 18 S., R. 8 E. (location 84, pl. 43), lies about a quarter of a mile south of the Delta-Dempsy county road and several hundred feet north of a dirt access road. It probably was opened at the end of World War I; it has not been operated recently. The workings consist of several pits and trenches along a line that trends N. 80° E. A highly weathered pegmatite is exposed in the northwest face of the west trench, which is 30 ft long, 12 ft wide, and 5 ft deep. Blocks of massive quartz that contain molds of mica books as much as 10 in. in diameter occur on the dump. A small pit (now slumped) was sunk 10 ft to the east-northeast in the same pegmatite. Fifty feet farther on is a pit 16 ft long, 12 ft wide, and 10 ft deep, but no pegmatite is exposed. A shaft, reported to have been 27 ft deep, is 45 ft south of the trench. Evidently it was sunk in an effort to intersect down-dip parts of the pegmatite body, but only decomposed schist is in the dump.

The pegmatite body probably strikes N. 80° E. and dips moderately to steeply south. It is at least 4 ft thick and appears to contain a discontinuous quartz core along which mica books are concentrated. The remainder of the pegmatite is a medium-grained intergrowth of highly kaolinized feldspar and granular quartz. Weathered books of light-brown mica as much as 6 in. in diameter occur in the dumps. Many of them contain "A," herringbone, and wedge structures. Ruling is locally severe; cracks are subordinate. The quality of the mica is rather poor.

M. AND G. MINE

The M. and G. mine is 8 airline miles north-northeast of Ashland in the NE¼NW¼ sec. 15, T. 19 S., R. 8 E. (location 87, pl. 43). It can be reached from that town via Flatrock over 11.8 miles of dirt road. The workings are on the northwest slope of Shinbone Ridge about 75 ft below its crest. The mine is owned and operated by the Globe Mica Co., of Birmingham, of which John Ziesman is president. It is the principal mica mine in the State, both in size of underground workings and in total amount of mica produced.

The deposit was opened by the M. and G. Mica Co., of Chicago, before World War I, when pits and trenches were dug in the pegmatite body along a strike distance of about a mile. Later two 150-ft inclines were sunk about 80 ft apart and connecting drifts were driven at two levels. In 1914 the mine was leased to the Producers Mica Co., of Chicago, which operated it for several months. The total mine-run mica recovered prior to 1915 is reported to have been about 80 tons. During a 2-day period near the end of the operation 2,100 lb of mica was removed from a particularly rich concentration in the lower drift about 150 ft from the incline portal. The mine was closed in 1914 because of disputes among the several owners, and it remained idle until February 1943, when the Globe Mica Co. began operations. Work was continued until November 1944. In March 1945 the deposit was leased by Bob Lee, of Atlanta, Ga. The main opening, a large, irregular down-dip stope, is 160 ft and 205 ft in maximum width and length, respectively (pl. 47). Its lowest part is 125 ft below the portal. Only a few small rock pillars have been left as support in the mined-

out part of the deposit, but in general the workings are in good condition and reopening of the mine would require little effort other than pumping. Most of the lateral faces are still accessible.

The pegmatite body is a sill that strikes in general N. 40° E. and dips 10° to 52° SE. The average dip increases progressively with depth, but minor variations in attitude are common. These are shown on the underground map (pl. 47) by means of contour lines on the hanging wall of the body. It ranges in thickness from 6 in. to 6½ ft, with an average of nearly 3 ft. Locally small pegmatites occur above and below the main sill and in general are parallel with it. The country rock is a hard, dark-gray, fine-grained quartz-muscovite-biotite gneiss that contains a little feldspar. Pyrite, garnet, and apatite occur near contacts with pegmatite.

The pegmatite is a rather homogeneous aggregate of medium-grained perthite, plagiclase, quartz, and muscovite, with smaller quantities of biotite, garnet, pyrite, and apatite. Books of mica are scattered throughout the main sill, but most of the larger books and the richest concentration occur near the footwall contact. Perthite and plagioclase appear to be present in about equal proportions. The potash feldspar is pale greenish gray to white, and individual masses generally are less than 4 in. in diameter. Most of the quartz is gray and glassy. No large pods of massive quartz were encountered during the mining. At the 1,050-ft level in the northeast corner of the stope, where the pegmatite is 5 ft thick, most of the book mica is concentrated near the footwall contact. Adjacent, relatively barren parts of the deposit contain many small mica flakes that are oriented parallel with the contacts. Near the footwall is a series of thinly interlayered stringers of gneiss and pegmatite.

In general the book mica is of excellent quality. It is hard and very flat, and the number of cracks per book is low. Faint rippling and biotite intergrowths are minor defects. Small, scattered dark-brown specks are present but are not common. The mica is medium brown to deep cinnamon brown, and narrow, pale-greenish borders occur in some of the books. Books as much as 14 in. in diameter have been mined, and many were more than 6 in. across. In May 1943 four large books taken from the bottom of the stope amounted to about 60 lb. Between March 1943 and December 25, 1944, a total of 4,259 lb of trimmed punch and sheet mica was obtained. The trimmed punch included in this total represents 3,156 lb of untrimmed punch estimated to yield 20 percent trimmed punch.

Although the mine has been abandoned, the unmined pegmatite still is one of the best deposits of sheet mica in Alabama. Moderate quantities of mica were recovered throughout the entire course of operations and from nearly all parts of the mine. Abundant mica, some of it in books as much as 6 in. in diameter, was observed in several of the faces along the northeast side of the stope of the abandoned mine. Very rich local concentrations undoubtedly have been encountered and worked out, but there is no reason to believe that the limits of mica-bearing pegmatite have been reached.

MARY LOU PROSPECT

The Mary Lou prospect is 80 ft northeast of the main portal of the M. and G. mine (location 87, pls. 43, 47). It was first worked for 3 months in 1917 by Lonzo Hurst, who drove a 30-ft incline along a pegmatite body that strikes northeast and dips 30° to 40° SE. It ranges in thickness from 3 to 6 ft and is similar in mineralogy and texture to the main M. and G. pegmatite. Mica, however, is less abundant. The incline was reopened in 1944 by Leroy O'Berry and Lorenzo Wright, but no mica was produced.

BAINS PROSPECT

The Bains prospect pit is on the east side of the M. and G. access road in the NE¼NW¼ sec. 15, T. 19 S., R. 8 E. (location 88, pl. 43). It is on land owned by the Globe Mica Co. 0.2 mile southeast of the M. and G. mine and was dug by R. L. Bains late in 1943. In the upper part of the pit, which probably is more than 10 ft deep, a 1-ft pegmatite sill strikes N. 5° E. and dips 42° E. in a biotite schist. Large blocks of pegmatite on the dump suggest that the sill thickens with depth. The dump also contains 6-in. masses of blocky perthite that are transected by thin quartz veinlets. Most of the pegmatite, however, appears to be a medium-grained aggregate of kaolinized feldspar, granular quartz, and scattered muscovite flakes.

The mica occurs in clay-stained books as large as 2 by 3 in. It splits freely and generally is flat and hard. Cracks and warping are minor defects. The centers of the books are medium brown, and the borders are a pale yellowish to brownish olive. The mica is not abundant.

M. AND G. NO. 2 MINE

The M. and G. No. 2 mine, which is in the SE¼NW¼ sec. 15, T. 19 S., R. 8 E. (location 89, pl. 43), lies on the east side of the M. and G. access road a quarter of a mile southeast of the M. and G. mine. It is reported to be on land owned by the Globe Mica Co. and it was operated by that organization in August 1944. During this period an old cut and a 36-ft shaft were cleaned out. The cut is 50 ft long, 9 ft wide, and 18 ft deep

at the face. A short drift was run northeast from the bottom of the shaft.

The pegmatite body, which is well exposed on the northeast wall of the open-cut, strikes N. 34° E. and dips 70° ESE. It ranges in thickness from 6 in. to 3 ft, and a discontinuous core of blocky perthite is present in its thickest part. Minor concentrations of coarsely crystalline muscovite occur along the country-rock contacts. The remainder of the pegmatite consists of medium-grained kaolinized feldspar and granular quartz. The mica is flat and hard but is badly cracked and clay-stained. The color ranges from light to medium brown, and many of the books are color-banded. Some light-brown to brownish-olive bands contain scattered black specks. About 3.5 percent of the mine-run mica is recoverable as trimmed sheet and punch material.

FOUR PITS PROSPECT

The Four Pits prospect is 400 ft southeast of the Lett farmhouse and the M. and G. access road in the center SW¼ sec. 15, T. 19 S., R. 8 E. (location 90, pl. 43). It is on both sides of an old farm road on land owned by the Globe Mica Co. Four long-abandoned openings can be identified from northeast to southwest, as follows:

1. A pit 10 ft in diameter and 6 ft deep; no exposures.
2. An irregular open-cut 40 by 20 ft in plan and 15 ft deep, with two entries; no exposures.
3. A shaft 13 ft in diameter and 21 ft deep, with an irregular stope to the northeast; only mica schist exposed.
4. A pit 12 ft in diameter and 8 ft deep. This appears to be the most recent of the workings.

A pegmatite sill exposed in the southwestern pit may be the same as that mined in the more extensive northeastern workings. It strikes N. 42° E., dips 50° SE., and ranges in thickness from 3 in. to 2½ ft. The pegmatite is a medium-grained aggregate of kaolinized feldspar, small flakes and books of muscovite, and minor gray, granular quartz. Mica occurs in scattered flat books as much as 3 in. in diameter. It is weathered, heavily clay-stained, and cracked and contains inclusions of biotite. The color is medium brown.

LETT NO. 1 AND NO. 2 PROSPECTS

The Lett No. 1 and No. 2 prospects were dug in 1943 by Henry Lett, the property owner. The No. 1 is in a cottonfield 800 ft southwest of the Lett residence, and the No. 2 lies 100 ft southwest of the No. 1. Both are in the SW¼SW¼ sec. 15, T. 19 S., R. 8 E. (location 91, pl. 43). No pegmatite is exposed in the small No. 1 pit, but the dumps contain quartz blocks a foot long. These are fringed with books of mica as much as 1½ in. in diameter. The mica is medium to dark-brown and is cracked, warped, and marred by quartz inclusions. It is not abundant.

In the No. 2 pit, which is 6 ft deep, two parallel pegmatite sills are separated by a foot of biotite schist. They strike N. 45° E., dip 41° SE., and range in thickness from 3 to 5 in. Both are medium-grained aggregates of kaolinized feldspar and minor quartz. Narrow selvages that are rich in half-inch muscovite flakes mark the contacts with country rock. Books of mica as much as 4 in. in diameter are on the dumps. They are light-brown and heavily clay-stained. Cracks and warping are the chief defects. No mica of sheet or punch size was noted.

LETT NO. 3 PROSPECT

The Lett No. 3 prospect is a quarter of a mile northeast of the Henry Lett residence on the southeast side of the M. and G. access road. It is in the SW¼NW¼ sec. 15, T. 19 S., R. 8 E. (location 92, pl. 43). It is owned by the Globe Mica Co. and was worked by Lett in 1943, when a drift was extended 7 ft from the bottom of a trench 10 ft long, 5 ft wide, and 10 ft deep. The pegmatite is a sill that strikes N. 62° E. and dips 70° to 85° SSE. It is 1 to 2 ft thick and consists of quartz pods as much as 1 ft long and 4 in. thick in a medium-grained matrix of quartz and feldspar. The pods are conformable with the walls of the sill and give the rock a streaked appearance. A 2-in. selvage of coarse recrystallized mica schist occurs along the hanging-wall contact. Mica books 2 in. or less in diameter are concentrated along the margins of the quartz pods. The mica is light brown, with light-brownish to yellowish-olive bands parallel to reeves. It is somewhat warped and cracked.

McNAMARA (EUREKA) MINE

The McNamara mine is half a mile west-southwest of the M. and G. mine and 7½ airline miles N. 13° E. of Lineville in the N½ sec. 16, T. 19 S., R. 8 E. (location 93, pl. 43). It is owned by a Mrs. Freeman, of Talladega, and was worked by the Eureka Mica Co., of Birmingham, probably during World War I. The workings, which are now caved, include several pits and cuts, four inclines, and a shaft that connected with one of the inclines. This shaft is reported to have been 110 ft deep. Drifts were driven from the two main inclines at the 60-ft, 70-ft, 100-ft, and 110-ft levels, and the workings at the 100-ft level were connected with the main shaft, a 130-ft vertical hole that lay immediately to the south.

The main pegmatite body is not exposed, but is reported to strike N. 40° E. and dip 45° SE. In the north opening the foliation of the mica schist country rock strikes N. 8° E. and dips 72° E., and the pegmatite body probably cuts across it. As judged from dump material, it contains a discontinuous quartz core flanked by feldspar-rich pegmatite. The mica on the dumps is light-brownish olive and occurs in books as much as 4 in. in diameter. Much is warped and cracked. According to Clark (1921, p. 90), a total of 50 tons of mine-run mica was recovered in operations by the Eureka Mica Co. One crystal is said to have weighed 200 lb. The size of the trimmed material ranged from circle punch to sheets 6 by 8 in., and 10 percent of the material sold ranged from 3 by 3 to 6 by 8 in. The deposit would be difficult to reopen, owing to the imperfectly known distribution of the old workings.

On the opposite side of a ravine are a 25-ft inclined shaft and a short drift. The pegmatite body exposed in these workings strikes N. 75° E. and dips 51° SSE. It is 1½ ft thick and consists chiefly of massive quartz. The remainder is kaolinized feldspar; no mica is exposed.

ROBINSON PROSPECT

The Robinson prospect lies on the southeast side of the Ashland-Flatrock road on the outskirts of Flatrock and is in the NW¼NE¼ sec. 29, T. 19 S., R. 8 E. (location 95, pl. 43). It is the property of the Robinson heirs and has not been worked for several years. John Boyd and Blake Robinson are said to have sunk many pits and several shafts. Extensive underground workings are also reported, but all are now inaccessible.

These workings appear to have explored at least two pegmatite sills that strike N. 15° to 35° E. and dip about 55° ESE. The dump from the southern shaft contains 6-in. blocks of massive quartz, much kaolinized feldspar, and sheets of biotite 2 in. across. No muscovite was noted. The pegmatite in the north pit is zoned from footwall to hanging wall, as follows:

	Ft.	In.
Kaolinized feldspar and minor quartz	0	10
Septum of mica schist	0	4
Medium-grained feldspar and granular quartz	1	6
Massive quartz core	1	6
Septum of mica schist		6
Chiefly kaolinized feldspar	1	0

Most of the mica appears to be concentrated along the margins of the quartz ribs. Books as much as 4 in. across are present. The mica is warped, cracked, ruled, and clay stained. The color is medium brown.

GOPHER MINE

The Gopher mine is in the SW¼SW¼ sec. 29, T. 19 S., R. 8 E. (location 96, pl. 43), on the property of Alvin J. Shirey. It was operated by Bob Lee early in 1944. The workings consist of a 20-ft shaft, a 20-ft drift that extends from it to the south, a cut 60 ft northwest of the shaft, a 12-ft shaft 150 ft northwest of the cut, and a small prospect pit 60 ft northwest of the 12-ft shaft. Several inclines were driven from the cut but were later filled. An irregular pegmatite body is exposed in the 20-ft shaft, the drift, and the open-cut. In the underground workings it trends N. 65° W., with an average dip of 50° NNE. It ranges in thickness from 2 in. to 3 ft and is enclosed by mica schist whose foliation is highly contorted. Mica books occur along a series of pods near the center of the deposit, and the wall zone consists chiefly of kaolinized feldspar.

The pegmatite body is as much as 9½ ft thick, where exposed in the open-cut, and contains numerous thin layers of recrystallized schist, as well as several quartz pods. Small books of mica occur along the footwall sides of the pods. The footwall contact strikes N. 32° E. and dips 60° ESE., and the hanging-wall contact strikes N. 15° W. and dips 49° E. Books of medium-brown mica as much as 4 in. in diameter were noted on the dumps. Cracks and ruling are the chief defects. Some of the books that occur along the margins of the larger quartz pods are brownish olive and very soft. In general the concentration of mica in the pegmatite is low and the quality is poor.

Several 1- to 6-in. stringers of pegmatite are exposed in the 12-ft shaft, where they strike N. 60° E. and dip 85° SSE. Ribbons of mica 3 in. long and 2 in. wide occur sparsely in the dumps. The northwest pit, which is 10 ft long, 6 ft wide, and 6 ft deep, exposes a similar series of pegmatite stringers, some of which are as much as 8 in. thick. Mica occurs in 3- by 4-in. books but is not very abundant.

CICERO SMITH PROSPECT

The Cicero Smith prospect is on the southwest side of the Ashland-Pyriton road in the NW¼SE¼ sec. 6, T. 20 S., R. 8 E. (location 97, pl. 43). The property is owned by Smith and was worked by Bob Lee and M. L. Clein for short periods in 1943 and 1944. A small, shallow pit exposes a 2-ft pegmatite body that strikes N. 60° E. and dips 28° SSE. It is a medium-grained intergrowth of quartz and feldspar, with a poorly developed platy structure formed by narrow, parallel quartz pods. A zone of coarsely crystalline muscovite is present along the hanging wall of the deposit. Many of the books are large, with a maximum observed diameter of 8 in. The color is light brown. The mica is hard and flat, but severe ruling and throughgoing fractures would prevent the recovery of much sheet and punch material.

In a 16-ft pit to the east is a pegmatite body that strikes N. 55° E., dips 55° SE., and is 3 ft thick. It is similar to the western body in texture and composition. Mica-rich zones occur along both contacts. In general the mica is similar to that already described.

HODGE MINE AND PROSPECT

The Hodge mine and prospect are about a quarter of a mile due south of the Hurst mine in the NW¼NW¼ sec. 1, T. 20 S., R. 7 E. (location 98, pl. 43). The workings are several hundred ft west of an abandoned farmhouse on the Hurst access road. The mine was operated intermittently by C. Hodge and Pete Lett during the period August 1943–November 1944. A prospect pit 5 ft in diameter and 13 ft deep was dug in a 1- to 4-in. pegmatite sill that strikes N. 20° E. and dips 50° E. It is composed of medium-grained quartz and feldspar, with books of mica 2½ in. or less in diameter. The mica, which is brownish olive, is badly warped and cracked and contains minute black specks and quartz inclusions. Almost all is of scrap grade.

The mine, which is 100 ft west of the prospect pit, consists of a 34-ft shaft, an open-cut, and short drifts that were run from the bottom of the shaft to intersect a partly refilled down-dip incline from the open-cut. The cut has been completely filled, but the shaft exposes a cigar-shaped pegmatite body whose crest plunges 45° S. 45° E. It is 10 ft in maximum thickness, strikes northwest, and is vertical. It consists of medium-grained kaolinized feldspar and minor quartz. The central part of the body is somewhat richer in quartz, but no typical quartz rib is present. A few crystals of black tourmaline in quartz were noted on the dumps.

Most of the mica was obtained from wall-zone material that was mined in short drifts. It is dark brown and generally hard. Cracks, warping, and quartz inclusions are the major defects. Many of the books are more than 2½ in. in diameter, and their quality is fairly good. Nearly 6 percent trimmed mica was obtained from run-of-mine books. The pegmatite thins to the southeast and may pinch out a short distance beyond the shaft.

HURST MINE

The Hurst mine, which is in the NW¼SW¼ sec. 36, T. 19 S., R. 7 E. (location 99, pl. 43), is on the northwest side of a dirt access road. It is owned by a Mrs. McElroy, of Ashland. In 1926 Joseph R. Cook, of Birmingham, sank an 83-ft shaft under or near the present road. The next deepest working is the 60-ft main shaft, from which a crosscut was driven 16 ft into the footwall on the 1,099-ft level and drifts were run for 19 ft on the 1,123-ft level and for 30 ft on the 1,096-ft level. Late in 1943 the mine was leased to M. L. Clein, of Atlanta, Ga., who operated it until August 15, 1944, when a large part of the unsupported wall of the main open-cut collapsed.

The main shaft is near the southwest end of a series of workings that trends N. 35°. E. and is 600 ft long (pl. 48). Most of these workings, which include pits, short inclines, and shallow shafts, are less than 40 ft deep. Clein drove a drift from the main shaft on the 1,105-ft level and sank two inclines, one for 25 ft at the southwest end of the workings and the other for 40 ft at the northeast end. Another series of openings, known as the west workings, is 250 ft southwest of the main workings and across a small creek. In the summer of 1944 the U. S. Bureau of Mines explored the deposit by means of five diamond-drill holes (pl. 48).

Two pegmatite bodies are exposed, one in each group of workings. The northeastern body is in mica schist whose foliation strikes N. 30° to 55° E. and dips 45° to 75° ESE. to SE. The schist, which is interlayered with dark-green hornblende-garnet gneiss, contains much introduced igneous material near the pegmatite contacts. The foliation of the schist around the cross-cutting southwestern body strikes N. 60° E. and dips steeply south-southeast.

The northeastern pegmatite has been explored over a strike length of 600 ft and to a depth of 160 ft. It strikes N. 30° E., dips 25° to 65° ESE., and ranges in thickness from 5 to 25 ft. It appears to be an irregular lens, with minor variations in thickness along both the strike and dip. Marked irregularities in the contacts are due in part to abundant septa of country rock. Pegmatite persists to the greatest depths in the vicinity of section C–C′ (pl. 48), and to the northeast and southwest it appears to be bottomed at progressively shallower levels.

Most of the pegmatite consists of kaolinized feldspar with fine-grained muscovite. In the main workings are parallel quartz pods as much as 2 ft thick. The largest quartz mass is exposed in the incline at the south end of the main workings, where a streakiness in the pegmatite is due to many thin, parallel quartz plates. Abundant muscovite occurs around these plates. Other thin streaks of mica appear to grade into septa of schist and may represent recrystallized wall rock. Accessory minerals are garnet, biotite, sericite, and a little pyrite and graphite.

The southwestern pegmatite strikes N. 34° E. and dips 11° ESE. It is 8 ft in maximum thickness and in general appears to be more regular in structure than the northeastern mass. Most contacts with the schist are sharp. The zones include a 3-ft core of massive white quartz, an intermediate zone of mica-rich

rock along the hanging-wall side of the core, and a wall zone of medium-grained quartz-feldspar-muscovite pegmatite.

Mica is abundant in the main pegmatite. The largest books, some of which are 8 in. or more in diameter, occur near and around the quartz masses and the smaller quartz pods. The distribution of the workings suggests that the footwall half of the body may be somewhat richer in mica than the other half. The books are cinnamon brown to brownish olive with the more reddish material commonly rimmed by light-greenish borders. In general, the mica is hard and flat. Cracks and warping are the chief defects, with subordinate "A" structure and tiny inclusions of biotite. The quality is good, and the yield of trimmed punch and sheet material from the mine-run books is 9 percent. All of the mica from the western pegmatite contains "A" structure. It is light brown, hard and flat, and free from specks. Books as much as 5 in. across lie along the hanging wall of the quartz mass with their cleavage faces parallel to the contact.

The future of the deposit as a source of sheet mica seems promising, despite the irregular distribution of books in the main pegmatite. The old workings are extensive and deep, especially near the northeast end; hence future operations might be directed toward the southwest end of the body. Adequate timbering to prevent collapse of workings in kaolinized pegmatite will be necessary.

SHIREY PROSPECTS

The Shirey group of prospects is in the NE¼NW¼ sec. 35, T. 19 S., R. 7 E. (location 100, pl. 43), on land owned by a Mr. Shirey. They were last worked by Bob Lee, of Atlanta, Ga., in 1943 and 1944. The Shirey No. 1 prospect is on the southwest side of the road between Ashland and Erin and about a quarter of a mile south of the Gibson mine. A small pit exposes a pegmatite body that strikes N. 15° E., dips about 20° E., and is 5½ ft thick. It consists almost entirely of massive white quartz, through which are scattered mica books as much as 3 in. in diameter. The mica is brownish olive to deep brown and is flat, hard, and free splitting. Most of the books are an inch or less in diameter. They are not particularly abundant.

The Shirey No. 2 prospect is a group of workings about 100 ft southwest of the No. 1. The main opening is a cut 25 by 18 ft in plan and 12 ft deep, from which a 15-ft incline has been driven to the east. The pegmatite body, which is 6 ft thick, strikes N. 25° E. and dips 50° ESE. A 2-ft quartz core is present. Where it pinches out with depth, well-developed core-margin mica concentrations coalesce to form a thin central mica zone. The wall zone consists chiefly of kaolinized feldspar with minor granular quartz. Twenty feet north of the open-cut is a bulldozer trench 70 ft long, 12 ft wide, and 4 ft deep. No pegmatite is exposed. No exposures are furnished by a shallow slumped pit 50 ft northeast of the bulldozer cut, but the dump contains abundant small muscovite flakes, as well as small flakes and sheets of biotite.

Mica is very abundant in the pegmatite exposed in the incline, and some of the books are rather large. The color ranges from medium brown to light brownish olive. Most of the books are marked by "A" and wedge structures. Ruling, black specks, and inclusions of flattened garnets are other defects. Many of the books are cracked and wavy. About half a ton of poor-quality mine-run mica is piled near the pit. The deposit offers some possibilities for the production of scrap mica.

The Shirey No. 3 prospect is in a cut on the southwest side of the road a quarter of a mile southeast of Nos. 1 and 2. A drift 9 ft long has been driven into the bank. The pegmatite body, which is 1 to 2½ ft thick, strikes N. 30° E. and dips 52° ESE. It is a uniformly fine grained mixture of kaolinized feldspar, minor quartz, and abundant small foils of muscovite. A few books of dark-brown mica as much as an inch in diameter were seen on the dumps. They are hard and flat and contain small inclusions of quartz.

About 175 ft north of the road and 200 ft north of the No. 1 prospect is the No. 4. A short down-dip stope that was sunk from the bottom of a small pit exposes a quartzose pegmatite as much as a foot thick. It appears to strike about N. 25° W. and probably dips east-northeast. A few books of medium-brown mica as much as an inch in diameter were noted on the dumps.

GIBSON MINE

The Gibson mine is a quarter of a mile southwest of the Bob Lee No. 1 mine at the junction of the Bob Lee access road and the county road between Ashland and Erin. It lies on the top of a ridge between Gold Mines Branch and Buzzard Creek in the central part of the SW¼ sec. 26, T. 19 S., R. 7 E. (location 101, pl. 43). Mica was first found at this locality in 1900, and a short time later D. F. Gibson, of Birmingham, sank several small pits to a depth of about 15 ft and obtained about 10 tons of mine-run mica. The deposit, which is owned by a Mr. Stevens, of Chattanooga, Tenn., has not been worked during recent years.

The main workings comprise two small pits and a caved eastward drift at least 15 ft long. In 1943 the U. S. Bureau of Mines explored the deposit by means of an angle-dozer trench that trends N. 35° W. It lies

immediately northeast of the smaller pit and is 100 ft long, 12 ft wide, and 8 ft deep. Four thin stringers of pegmatite are exposed. They strike N. 37° E., dip 15° to 62° SE., and are quartz-rich. Books of bright-green mica as much as 3½ in. across are present. Some of these are marked by "A" structure. The main pegmatite body is not exposed. The dump from the northeast pit contains 1-ft blocks of massive white quartz that are fringed by 3-in. books of light-brown mica. These books are soft, weathered, and cracked but generally flat.

BOB LEE NO. 1 MINE

The Bob Lee No. 1 mine, which is on property owned by a Mr. Stevens, of Chattanooga, Tenn., is in the NE¼SW¼ sec. 26, T. 19 S., R. 7 E. (location 102, pl. 43). It is 2½ miles southeast of Erin station on the Atlanta, Birmingham, and Coast Railroad. The workings (fig. 161) consist of a down-dip stope 50 ft long and 30 ft deep (now caved); three old shafts, two of which are known to have connecting underground workings; and a small open-cut with two appended caved inclines (not shown on map). The stope was excavated by the Bob Lee Mining Co., of Atlanta, Ga., during the period May 1943–February 1944. Extension of this opening revealed the presence of old caved workings that formerly were entered through the vertical shaft to the south and through the incline to the north. A 45° incline later was driven by Lee from a point southeast of the stope. It is reported to be 75 ft long and to have intersected the main pegmatite body, but it is now inaccessible.

In the summer of 1943, after an electrical resistivity survey was completed by the U. S. Bureau of Mines, three large angledozer cuts were made and two exploratory holes were drilled. Only thin stringers of pegmatite are exposed in the angledozer cuts, and no pegmatite was encountered in diamond-drill hole 2. Diamond-drill hole 1, however, intersected the pegmatite body at a point about 55 ft beneath the surface.

The pegmatite, a lenslike sill in mica schist, strikes N. 18° E. and dips 50° E. It ranges in thickness from 15 in. to 9 ft. A few feet above the hanging wall are several smaller sill-like lenses that pinch out along their strike within the limits of the stope. They are aggregates of medium-grained quartz, kaolinized plagioclase, and muscovite. In the main body a discontinuous core of massive white quartz lenses is flanked by kaolinized plagioclase and muscovite.

Mica is abundant in the feldspathic wall zone and locally constitutes as much as 10 percent of the rock. The richest concentrations appear to occur along the margins of the quartz pods. Some of the books are as large as 5 by 7 in. Many are heavily stained by clay and limonite, and much of the near-surface material is soft and crumbly. The mica is light yellowish olive, with brown borders. Some is wavy and ruled and contains "A" structure, but cracks are the chief defect. Although the deposit is rich in mica, it has been mined out to a depth of about 30 ft for nearly its entire strike length.

BOB LEE NO. 2 MINE

The Bob Lee No. 2 mine is on the top of a low rise a quarter of a mile northwest of the Bob Lee No. 1 in the S½NW¼ sec. 26, T. 19 S., R. 7 E. (location 103, pl. 43). It was first operated about 1900 by J. C. Grindstaff, of Asheville, N. C., and was worked by the Bob Lee Mining Co., of Atlanta, Ga., during the summer and fall of 1943. Grindstaff is said to have obtained 18-in. mica sheets that were used as windows in automobile curtains. The deposit is owned by a Mr. Stevens, of Chattanooga, Tenn. The workings include an open-cut 40 ft wide, 50 ft long, and 20 ft deep at the face; three inclines that extend southeast from the bottom of the cut (two have been backfilled); and a 55-ft shaft southeast of the cut. The shaft is reported to connect with one of the inclines.

The pegmatite body strikes N. 30° E., dips 30° to 55° ESE., and is conformable with the foliation of the enclosing biotite gneiss and schist. It ranges in thickness from 1 to 8 ft. In the floor of the cut it is 6 ft thick and contains a 3½-ft quartz mass near the footwall contact. A few inches of quartz-muscovite pegmatite (burr rock) separates the massive quartz from the schist. The remainder of the pegmatite is a medium- to coarse-grained intergrowth of quartz, kaolinized feldspar, and muscovite. A concentration of coarsely crystalline muscovite occurs along the hanging-wall side of the quartz mass. The mica, which does not appear to be abundant, occurs as warped and badly fractured books as much as 4 by 5 in. in size. Some are tied, and others contain inclusions of garnet and quartz that are especially numerous along the margins. Much of the mica is badly ruled, specked, and stained by clay and limonite. The color is light to medium brown and brownish olive.

HUDSON MINE

The Hudson mine, which was worked in 1943 by the American Mica Co., of Birmingham, is about 0.2 mile northwest of the Bob Lee No. 2 mine in the SW¼NW¼ sec. 26, T. 19 S., R. 7 E. (location 103, pl. 43). The workings include an incline about 75 ft long, short drifts at several levels, and two small prospect pits. A series of thin pegmatite lenses is exposed along the walls of the incline. Individual bodies range in thickness from 2 in. to 2 ft, and the maximum thickness of the series is

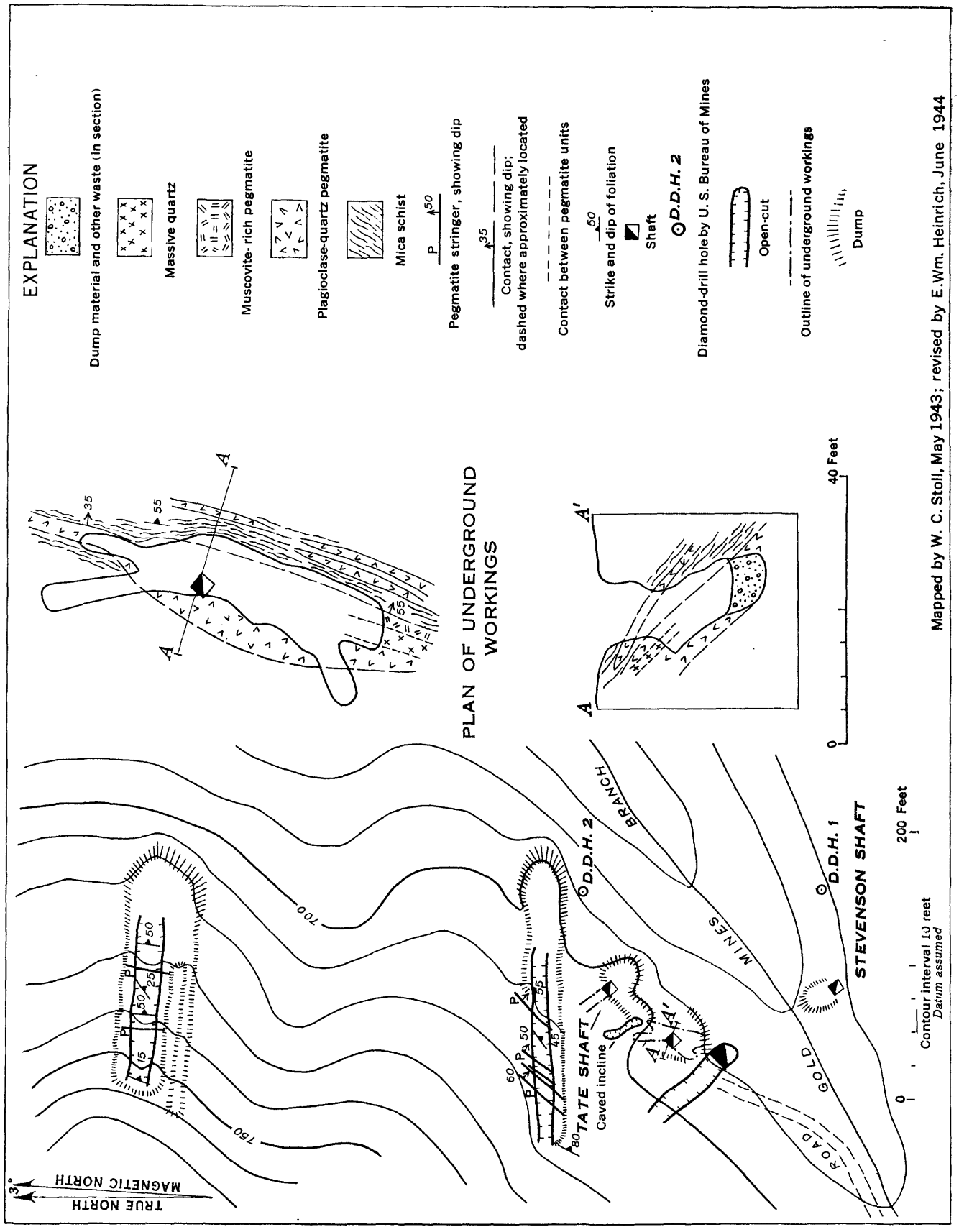

FIGURE 161.—Geologic map, plan, and section of the Bob Lee No. 1 mine, Clay County, Ala.

about 5 ft. It strikes N. 15° E. and dips 25° E. The bodies are medium-grained aggregates of quartz, feldspar, and muscovite. Biotite occurs on the dump as 1- to 2-in. flakes.

A small pegmatite sill that is 1 in. to 3 ft thick is exposed in the pit near the portal of the incline. It strikes N. 10° E., dips 35° E., and fingers out toward the northeast. It is a medium-grained intergrowth of quartz, kaolinized feldspar, and scattered mica books. In a trench 80 ft to the north is a pegmatite body that strikes N. 15° E., dips 19° E., and ranges in thickness from 1½ to 2 ft. It consists of medium- to coarse-grained quartz, feldspar, muscovite, and biotite.

The mica books from the pegmatites in the incline are 4 in. or less in diameter. The mineral is medium brown, and some of the books have narrow, light-greenish borders. Cracks, warping, and tied structure are the chief defects; inclusions of quartz and intergrowths of biotite are less common. Most of the books are small and of scrap grade. Mica from the northern trench occurs sparsely as books 3 in. or less in diameter. It is cracked, ruled, and soft.

BOB MITCHELL PROSPECT

The Bob Mitchell prospect is near the top of a northeast-southwest ridge about a quarter of a mile northeast of the Pitts No. 1 mine in the NW¼SE¼ sec. 1, T. 20 S., R. 6 E. (location 106, pl. 43). The property is owned by Bob Mitchell, who prospected the deposit in 1944. A small pit exposes a highly weathered pegmatite that strikes about N. 20° E. and in general dips steeply. It probably is at least 10 ft thick. Outcrops and float boulders of massive white quartz are present for a distance of 100 ft to the south and southwest. The country rock, which crops out 30 ft north of the pit, is a nodular chlorite-pyroxene schist whose foliation strikes N. 75° W. and dips 77° SSW. The pegmatite body probably cuts across this structure.

The pit appears to have been sunk in a hanging-wall zone of medium-grained quartz and feldspar near a quartz core. Most of the mica probably occurs against the quartz. The dark brownish-olive books are 3 in. or less in diameter and contain strong "A" structure. They are warped, cracked, and tied. The material is almost wholly of scrap grade.

About a third of a mile north of the Bob Mitchell prospect and 150 ft northwest of the road to the Bob Mitchell house is an old trench 65 ft long and 10 ft deep. It trends across the foliation of the biotite schist country rock, which strikes N. 38° E. and dips 80° SE. Only a few thin, conformable pegmatite stringers are exposed, and very little pegmatite occurs on the dumps.

PITTS NO. 1 (WEATHERS) MINE

The Pitts No. 1 mine is in the SW¼SE¼ sec. 1, T. 20 S., R. 6 E. (location 107, pl. 43). It lies about half a mile east of the Talladega County-Clay County line and about the same distance south of Alabama Highway 48. The mine is an old one and may have been opened after the Civil War during a period of widespread prospecting for copper. It was reopened in the fall of 1943 by J. F. Pitts, who sank a shaft from a point at the center of the floor of an old open-cut that trends N. 55° E. and is 100 ft long, 50 ft wide, and 35 ft deep. This shaft is said to be 40 ft deep and to have given access to drifts that were run to the southwest. The positions of the older underground workings are not known.

No pegmatite is exposed in the cut. The country rock is a dark-green, thickly foliated hornblende gneiss that weathers to bright pistachio green. Its foliation strikes N. 15° W. and dips 65° E. One-inch veinlets of quartz—and probably the pegmatite itself—transect this structure. Pegmatitic material on the dump consists of a medium- to coarse-grained aggregate of cream-colored perthite, granular quartz, abundant biotite, and scattered flakes and books of muscovite, as well as a few 2-ft blocks of massive white quartz. Books of light-brown mica as large as 3 by 4 in. are present but are not very abundant. They are flat but are marred by cracks and ruling.

No pegmatite is exposed in a small pit 60 ft southwest of the south end of the dump, but many small flakes and books of mica are present in the dump.

PITTS NO. 2 MINE

The Pitts No. 2 mine (location 108, pl. 43) is about 0.1 mile northwest of the Pitts No. 1. It was operated by J. F. Pitts from February to April 1944. The workings consist of a 25-ft incline that opens into a stope 15 ft long and 12 ft wide.

The pegmatite is a sill that strikes N. 32° E. and dips 65° ESE. Near the top of the incline it is 8 in. to 4 ft thick and consists chiefly of massive white quartz, with 2 to 3 in. of feldspathic material along the hanging wall. The massive quartz on the northwest side of the incline continues to the bottom, where the pegmatite fingers out into feldspar-rich stringers. On the southeast wall of the incline the quartz core pinches out 10 ft from the bottom, and its keel plunges 40° N. 63° E.

Very little mica is exposed in the workings. The dumps, however, are rich in blocks of massive white quartz with fringes of dark brownish-olive book mica. No books more than 2 in. in diameter were noted. The

mica is badly ruled and fractured and generally is warped. It does not appear to be very abundant.

OTHER MINES AND PROSPECTS

The information in the following four descriptions was obtained from Alabama Geological Survey Bulletin 24, by G. H. Clark:

Dye prospect.—Several small prospect pits were dug prior to 1920 on the property of W. D. Dye in the S½SW¼ sec. 2, T. 19 S., R. 8 E. (location 85, pl. 43). The pegmatite body strikes N. 30° E. and dips 80° ESE.

Brown prospect.—A little mica was obtained at the close of World War I from a few small pits on the property of J. W. Brown in the NE¼NW¼ sec. 10, T. 19 S., R. 8 E. (location 86, pl. 43).

May mine.—Two shafts were sunk in a pegmatite sill half a mile southeast of Pyriton in the E½SW¼ sec. 20, T. 19 S., R. 8 E. (location 94, pl. 43) by J. Warren May, of Quenelda, before 1914. The sill, which is 1 to 3 ft thick, strikes N. 45° E., dips 60° SE., and contains inclusions of gneiss as much as 1 ft thick. The mica is brown and is clear, flat, and free splitting. Six-by-eight-inch crystals have been reported.

Haralson mine.—Flat brown mica of good quality was obtained from workings opened about 1920 by Miss Nellie Haralson, west of Sardis Church in sec 33, T. 19 S., R. 7 E. (location 105, pl. 43). Sheets as large as 3 by 4 in. are reported.

CLAY COUNTY. LINEVILLE AREA

GRIFFIN MINE

The Griffin mine is in the NW¼NE¼ sec. 34, T. 19 S., R. 9 E. (location 109, pl. 43). The workings are in a cottonfield near the top of a low hill south of Fox Creek. The mineral rights are owned by Herbert Griffin, and the deposit was worked from August to October 1944 by Leroy B. O'Berry and Lorenzo Wright. A pit 18 ft long, 6 ft wide, and 13 ft deep exposes a pegmatite sill that strikes N. 65° W. and dips 52° to 65° SSW. The dip steepens downward. The pegmatite is 1 to 1½ ft thick on the north wall of the cut but is reported to have reached a maximum of about 5 ft near the center of the cut. It is a medium-grained intergrowth of quartz and feldspar, with subordinate muscovite and tourmaline. Subparallel quartz plates impart a markedly streaky appearance. A 3-ft mass of quartz is reported to have been mined out near the central part of the pit. Contacts with the country-rock schist are irregular, and at least one crosscutting pegmatite stringer is exposed.

Two varieties of mica are present. Medium-brown books with light-green borders occur along the margins of smaller quartz plates. Some are as much as 4 in. in diameter. The mica is hard and flat but severely cracked. Ruling, quartz inclusions, and tied structure are other defects. Somewhat larger, pale-yellowish to brownish-olive "A" books occur along the sides of the central quartz mass. They contain scattered black specks and are warped, cracked, and soft. The entire mine-run output from the deposit yields 4 percent trimmed punch and sheet material. Very little mica is exposed in the faces of the pit, and most that remains in the stockpiles and on the dumps is of poor quality. Although a rich concentration was encountered around the central quartz pod, only scattered smaller books were obtained from the margins of the smaller quartz plates.

BARFIELD MINE AND PROSPECT

The Barfield mine, which is about 1¾ airline miles northeast of Lineville in the N½ sec. 5, T. 20 S., R. 9 E. (location 105, pl. 43), is on the west side of the county road half a mile north of Alabama Highway 48. The property is owned by J. M. Horn, of Lineville, and was worked during 1943 by Luther Johnson for the Atwater Mining Co., a subsidiary of the Asheville Mica Co., of Biltmore, N. C. The main workings include a small pit, a shaft and underground workings that have collapsed to form a depression 40 ft south of the pit, and another shaft a few feet east of the depression.

The pegmatite body strikes due north and dips 70° to 85° E. It is 3½ ft thick and consists of medium-grained quartz, kaolinized feldspar, and muscovite. The mica is unusually abundant in flakes an inch or less in diameter, but books as large as 3 by 4 in. were noted on the dumps. The mineral, which is medium brown, is warped and cracked. Forty feet east of the main workings a small pit appears to have been sunk in a second northward-trending pegmatite body. The dumps contain 3-ft quartz blocks that are bordered with 5-in. mica books. Nearly all the mica contains "A" structure, and some is wedged as well. The deposit may have some value, however, as a source of scrap mica.

There is a small prospect pit a few feet south of the county road about a third of a mile northwest of the Barfield mine (location 111, pl. 43). The dump contains books of light-brown mica as much as 3 in. in diameter. Though flat, they are soft and cracked and contain quartz inclusions.

GIBBS LUBRICATING CO. PROSPECT

A prospect of the Gibbs Lubricating Co. is 2 miles S. 15° E. of Lineville in the SE¼ sec. 18, T. 20 S., R. 9 E. (location 112, pl. 43), along the line between the properties of J. E. Moore and S. M. Cotney. Two 20-ft shafts were sunk about 35 ft apart in a pegmatite

described by Sterrett (1923, p. 43) as a mass with an irregular east-and-west strike and nearly vertical dip. It contains an irregular core with a core-margin mica zone. The mica is chiefly wedge-A material, but some is clear and flat. The color is brown to brownish olive.

COOSA COUNTY: ROCKFORD AREA

POND MINE

The Pond mine is in the SW¼NE¼ sec. 15, T. 22 N., R. 18 E. (location 1, fig. 145). The property is owned by a Mrs. McElroy, of Talladega. The deposit was first worked in 1920 by A. H. Pond, of Rockford, who sank two shafts, one 10 ft deep and the other 50 ft deep. Later they were connected by an irregular down-dip stope. The mine was operated by Cowan and Salmond, of Birmingham, in 1940, and by A. W. Worthy, Jr., of Alexander City, during the period July–September 1943. The principal accessible workings are two small stopes that are inclined down the dip of the pegmatite body to a depth of about 20 ft. A drift is said to have been run in pegmatite from the bottom of the 50-ft shaft, but both shafts are now caved. The deposit has been traced for 150 ft N. 50° E. from the main workings by means of three pits.

The pegmatite is a sill in mica schist whose foliation strikes N. 40° E. and dips 55° SE. It is 4 ft thick in the main workings, ranges from 2 to 4 ft in the pits northeast of these workings, and is only 1 ft thick at the southeast end of the stopes. The pegmatite is a coarse-grained intergrowth of kaolinized feldspar and quartz, with subordinate muscovite, garnet, and tourmaline. A 3- to 6-in. quartz rib is exposed in the inclined stope. Garnet is abundant, especially near the middle of the pegmatite. Tourmaline is common in thin greisen border zones that consist of quartz, a little feldspar, and numerous small flakes of muscovite. The footwall greisen is 6 in. to 1 ft thick, and that along the hanging wall is 3 in. thick.

The mica, which is most abundant in the hanging-wall portion of the deposit, is clear and light brown, but much of it is clay-stained. Most is badly warped and cracked, and "A" structure is locally developed. The pegmatite is relatively persistent, both along the strike and down the dip, and the quantity of exposed mica is large. The quality, however, is rather poor.

OTHER MINES AND PROSPECTS

The information in the following six descriptions was obtained from Alabama Geological Survey Bulletin 24, by G. H. Clark.

Thomas prospect.—A small open-cut and a short tunnel were excavated in 1912 on the John H. Thomas property, 1 mile north of Hissop (location 2, fig. 145). The pegmatite, which is in biotite gneiss, contains kaolinized plagioclase, quartz, perthite, and mica. Yellow-green to blue-green beryl is said to be associated with massive quartz. Most of the mica is marked by "A" and herringbone structures.

Cowart No. 1 mine.—Much "A" mica was obtained in 1920 by W. C. Fletcher from a pegmatite on the J. C. Cowart property in the center NW¼ sec. 22, T. 22 N., R. 18 E. (location 3, fig. 145). A narrow stope extends down the dip of the deposit for 30 ft from the base of a 15-ft shaft.

Hatchet Vein mine.—A 30-ft shaft was sunk by W. C. Fletcher about 1920 in a pegmatite in the SW¼NE¼ sec. 21, T. 22 N., R. 18 E. (location 4, fig. 145). The property is owned by J. C. Cowart. A drift was run 10 ft from the bottom of the shaft in medium-grained kaolinized feldspar-quartz-mica pegmatite. Four hundred pounds of small, wavy, brown mica was recovered.

Cowart No. 2 mine.—A little mica was obtained from a deposit on the property of J. C. Cowart in the SW¼NW¼ sec. 22, T. 22 N., R. 18 E. (location 5, fig. 145). W. C. Fletcher sank a 35-ft shaft about 1920 and from it drove a 30-ft drift to the east. The pegmatite is rich in kaolinized feldspar.

E. E. Brown prospect.—A pegmatite that contains a little mica in small books wes encountered near the bottom of a 35-ft shaft sunk by W. C. Fletcher from a point 50 yd west of the Rockford road in the SW¼-SW¼ sec. 11, T. 22 N., R. 18 E. (location 6, fig. 145).

Ivey mine.—Dr. P. B. Ivey and G. W. McWade, of Birmingham, obtained about 25 tons of mine-run mica in 1889 from an open cut and a 25-ft shaft in the northeast corner of the NW¼NE¼ sec. 15, T. 22 N., R. 16 E. J. E. Burleson worked the deposit under lease in 1912 or 1915, and in 1920 the Coosa County Mica Co. drove an 80-ft incline and obtained 45 tons of mine-run mica. In 1921 the mine was operated by the owner, the Scott Investment Co., of Montgomery. An incline was driven 40 ft with a slope of 45°, the Ivey shaft was deepened, and an 80-ft drift was run west from the new bottom of the shaft. Several pegmatite sills 6 in. to 2½ ft thick strike N. 70° E. and dip 60° to 65° SSE. in mica schist. They consist of medium-grained quartz, kaolinized feldspar, muscovite, and biotite. Most of the book muscovite is associated with small quartz pods. Although much of it is "A" mica, 4-by-6 in. sheets have been obtained.

TALLAPOOSA COUNTY, DADEVILLE AREA

HOWARD MINE

The Howard mine, which is in the SE¼NW¼ sec. 8, T. 22 N., R. 24 E., lies 500 ft north of the Dadeville-

Dudleyville road and 800 ft northeast of a cemetery (location 1, fig. 146). It is owned by John Howard and was operated from August to November 1944 by B. E. Kidd. The main opening is an L-shaped dragline cut, each arm of which is 40 ft long. At the junction of the arms is a stope that slopes southward for 28 ft. The pegmatite, a sill that strikes N. 45° E. and dips 22° SE., is 5½ ft thick. The country rock is mica schist.

A persistent and well-defined 8- to 10-in. zone of muscovite-rich feldspar-quartz pegmatite occurs along the hanging wall of the sill. The mica, which in places constitutes 20 percent of the rock, occurs in books about 7 in. in maximum diameter. These tend to be oriented with their cleavage faces normal to the contact. The remainder of the deposit is composed of kaolinized feldspar with abundant sericite and minor quartz. About 1,500 lb of brownish-olive scrap mica is piled near the cut. Most is heavily clay-stained and badly cracked, and some is warped and contains quartz inclusions. One- to two-inch ribbons are common. The proportion of trimmed punch and sheet material obtained from the mine-run mica during recent operations is nearly 4 percent.

A short trench 50 ft southwest of the cut exposes what appears to be the same body of pegmatite. Six-inch books of mica are on the dump. They are badly clay-stained but appear to be somewhat flatter than those taken from the cut. A trench has been excavated in another pegmatite body 250 ft south of the cut. Small blocks of massive quartz and many mica books are present in the dump. A few sheets are 8 in. in diameter, but most are less than 2 in. The mica generally is flat but is marred by cracks and ruling. Its color is brownish olive.

The rich mica zone in the main pegmatite is persistent down the dip, but its continuity along the strike remains to be tested. The deposit appears to be well suited to a low-cost, large-tonnage mining operation by power-shovel methods. The pegmatite dips very gently, so that relatively little overburden need be handled. It is within 500 ft of a good graveled road. Possibilities for the production of scrap mica with sheet material as a byproduct are good.

EASTERWOOD MINE

The Easterwood mine is at the south side of the Dadeville-Dudleyville road in the SE¼NW¼ sec. 8, T. 22 N., R. 24 E. (location 2, fig. 146). It is an old mine and was last worked by W. R. Hamby about 1920. According to Clark (1921, pp. 54–55) the old workings consisted of six shafts, five south of the road and one north of it. Drifting and stoping were done from the south shafts, and at the time of Clark's examination the north shaft had been sunk to a depth of 20 ft, with recovery of about 4,000 lb of mine-run mica. The openings, which are now caved and slumped, are in a belt that trends N. 15° E. and is 200 ft long. From south to north there are:

1. Six slumped pits, the largest 10 ft in diameter and 8 ft deep; no exposures.
2. An open-cut 35 ft to the northeast; 25 ft long and 10 ft deep.
3. Shaft 1, collared in schist; 18 ft deep, with a crosscut (?) to the northwest.
4. Shaft 2, which is 35 ft southeast of shaft 1; completely filled with brush and debris.
5. Shaft 3, which is 15 ft south of shaft 2; depth, 7 ft; may have been sunk along the contact of the pegmatite body.
6. Shaft 4, which is 25 ft northeast of shaft 2; depth, 20 ft; crosscut (?) to the northwest.
7. Two caved pits, 50 ft northeast of shaft 4.

Pegmatite appears in the face of the open-cut (2). No contacts are exposed, but a 4-in. central quartz rib strikes N. 35° W. and is vertical. The flanking material is rich in kaolinized feldspar and half-inch flakes of muscovite. The mica is especially abundant along the quartz, where it forms pods of tightly interlocking, randomly oriented crystals. The quartz rib probably is the thin southwest part of a large mass that appears as a 10-by-50 ft outcrop between shaft 4 and the two northeast pits. The distribution of the workings suggests that the pegmatite body strikes N. 15° E. and dips moderately east. It may be about 15 ft in maximum thickness.

The dumps contain sheets of weathered mica as large as 3 by 5 in. Ruling is the chief defect, but cracks are abundant. Most of the mica is flat and free splitting, with only a few quartz inclusions. The books are brownish olive, and some contain narrow, light-green borders.

ABERNATHY PROSPECTS

The Abernathy prospects are in a field on the north side of the Dadeville-Dudleyville road in the SE¼NE¼ sec. 7, T. 22 N., R. 24 E. (location 3, fig 145). Several pits were dug and a shaft was sunk in 1921 by the mineral owner, the Coosa Mica Co., with recovery of about 2 tons of mine-run mica. The deposit was worked under lease by W. R. Hamby in 1940 and by W. F. Williamson in September and October 1944. No pegmatite is exposed in the north prospect trench, but 50 lb of mica is piled nearby. The books, which are 3 in. or less in diameter, are cracked, ruled, and badly weathered. The color is brownish olive. Fine black specks are common. The dump also contains a little kaolin.

Three closely spaced pits are about 150 ft south of the trench. The west opening exposes a pegmatite body

that strikes N. 60° W., dips 46° NNE., and is at least 3 ft thick. Only the hanging-wall contact is exposed. The pegmatite is quartzose and contains abundant muscovite and minor kaolinized feldspar. The yellowish to brownish-olive mica books are as much as 4 in. across and are badly crumpled and cracked. From the central pit a short stope extends to the south and down the dip in pegmatite. The east opening, however, did not intersect pegmatite. Mica float, in sheets as much as 8 in. in diameter, is abundant in the field to the southeast, and this area seems worthy of prospecting.

KIDD MINE

The Kidd mine is in the NE¼SW¼ sec. 7, T. 22 N., R. 24 E. (location 4, fig. 146). The deposit is owned by G. C. Berry, of Easton, and was worked by B. E. Kidd, of Auburn, from December 1940 to December 1941 and from April 1944 to November 28, 1944. The mine was opened by Grant Lowe, probably before World War I. Nearly 22 tons of mine-run mica is said to have been obtained during the first Kidd operation.

Two main groups of workings are present. The more recent, northwestern group comprises a large open-cut and appended underground workings (pl. 49). A 50-ft shaft that was sunk near the northwest corner of the cut was connected with short drifts and crosscuts from the cut. These are caved and inaccessible. Kidd also dug several small cuts and pits. The old Lowe, or southeastern, workings include seven partly caved shafts and six small cuts and trenches. During the fall of 1944 the U. S. Bureau of Mines explored the property by means of four diamond-drill holes and four long scraper trenches (pl. 49).

The country rock is a garnetiferous muscovite schist that has been intricately folded and faulted. No general trend of the foliation could be determined. Seventeen pegmatite bodies, which range in thickness from about 1 to 22 ft, are exposed on the property. Some cut across the foliation of the schist, others are conformable with it, and still others are in part concordant and in part discordant. In general they are extremely irregular in shape, size, and structure, and they commonly pinch and swell within short distances. Septa and large inclusions of schist are abundant in most of the larger bodies, and small apophyses and isolated stringers of pegmatite are common in the schist. This is in marked contrast to the nearby Mica Hill area, where a single, very large and regular pegmatite body is present.

The main pegmatite was mined in the Kidd open-cut and associated underground workings. It has been exposed for 180 ft along the strike and is 22 ft in maximum thickness. It cuts across the foliation of the schist and is extremely irregular in shape and structure. In the main cut it trends N. 25° W. and dips moderately west-southwest, but to the south it trends S. 22° W., dips moderately west-northwest, and thins appreciably. Thus it is arcuate in plan. The next most persistent pegmatite body is exposed in the small pits west and southwest of the open-cut. Its strike length is at least 215 ft, and it is as much as 8 ft thick. The general trend is N. 15° W., the dip moderately west. The pegmatites mined in the Lowe workings are not exposed, but at least three bodies probably were worked. All the pegmatites exposed are medium- to coarse-grained aggregates of kaolinized feldspar and granular quartz, with scattered concentrations of coarsely crystalline muscovite. Massive quartz was encountered in diamond-drill hole K–3. Accessory minerals are biotite, red-violet garnet, light-green sericite, and pyrite. Small mica concentrations occur locally along contacts with inclusions and the schist walls. Several large and rich concentrations are reported to have been encountered in the Kidd open-cut, but little mica is now exposed in any of the workings. The books, which are about 3 by 4 in. in average size, are flat and rather hard. Trimmed sheets as large as 4 by 6 in. are reported to have been sold. Ruling is common, and some "A" structure also is present, but throughgoing cracks are the chief defect. The color ranges from light to medium brown, but some of the books contain fuzzy, greenish-brown mottling and light reddish-brown specks. About 4 percent trimmed punch and sheet mica was obtained from the mine-run material during the Kidd operations.

Although Kidd obtained a large amount of mica during his first year of mining, very little was obtained during the second period. The deposit has been thoroughly prospected, and, despite the numerous pegmatite bodies on the property, very few exposures contain promising concentrations of mica books.

MICA HILL MINE

The Mica Hill mine is in the SW¼SW¼ sec. 7, T. 22 N., R. 24 E. (location 5, fig. 146). The workings are on the flanks of a prominent rounded knob that is one of the highest points in the southeastern Piedmont of Alabama. It is held up by the resistant quartz core of the pegmatite body. The mine probably was first worked by Columbus Ware and Nelson Ware, and in 1918 and 1919 it was operated by the Coosa County Mining Co. of Wetumpka. Little mining was done during World War II, but some mica was obtained by reworking dump material.

According to Clark (1921, pp. 45–52), the operations of the Coosa County Mining Co. yielded 150 tons of

mine-run mica, from which 5,800 lb of trimmed sheet and 60,000 lb of scrap were sold. Clark also states that the average proportion of mine-run mica in the pegmatite mined was 9 percent and that the mine-run mica yielded 3 to 4 percent trimmed sheet material, very little of which was in pieces larger than 3 by 3 in. It is reported that 50 to 80 tons of scrap mica also was obtained from the "hard mica vein" at the north end of the deposit.

The workings, which are in an area 550 ft long and 200 ft wide, are peripheral to the large quartz core of the pegmatite mass, which is elongated N. 30° W. (pl. 50). Seven shafts, ranging in depth from 13 to 60 ft, and thirteen shallow trenches and cuts are along the southwest side of the body. Six shallow shafts have been sunk at the south end of the deposit. Four inclines on its northeast side are known from southeast to northwest as the Smith, Hand, main, and north inclines. Nine shallow trenches also were sunk in this part of the deposit. The inclines are connected with the shafts on the southwest side by a series of stopes, cross-cuts, and drifts (pl. 50), all of which are now inaccessible. The only accessible underground working is a gently sloping 100-ft incline that extends from the north end of the quartz mass along the keel of the pegmatite body.

The country rock is a poorly exposed, highly weathered mica schist. The pegmatite body, which is oval in plan and V-shaped in section, probably tends toward conformity with the country-rock foliation. Its axial plane strikes N. 30° W. and dips rather steeply west-southwest (fig. 162). The dip of the hanging wall is 60° to 70°, and that of the footwall about 45°. The body is 370 ft long, with a maximum thickness of 75 ft at the surface and a maximum vertical dimension of about 75 ft. The keel is well exposed in the north incline, where is plunges 6° S.25°E. The crest of the body is not exposed but probably plunges gently in the same direction.

The pegmatite is clearly zoned. From margin to core the units are as follows:

	Ft.	In.
Border zone consisting of fine-grained muscovite and granular gray quartz	0	2–3
Mica-bearing wall zone, ranging in thickness from 1 to 4 ft along the southwest side of the body (Big vein) and from 8 in. to 2½ ft along the northeast side (Punch vein). It consists chiefly of coarsely crystalline muscovite and varying quantities of kaolinized feldspar. From the exposures in the drift along the keel it appears that the zone pinches out with depth and is not continuous along the keel of the body	½–4	0
Intermediate zone consisting chiefly of fine-grained kaolinized feldspar (plagioclase?) and quartz, with small aggregates of muscovite flakes. The ratio of feldspar to quartz is approximately 3 : 2. The rock also contains some crystals of blocky feldspar (perthite?) as much as a foot across, 6-in. pods of gray quartz, small patches of intergrown quartz and muscovite (burr rock), and masses of graphic granite as much as 3 ft across. This zone is poorly exposed except in the northern drift	5–20	0
Massive quartz core, 245 ft long at the surface, where it forms a conspicuous outcrop. It plunges southeast at a low angle	70 (max.)	0

Mica is abundant, generally as yellowish-green to light brownish-olive books less than 8 in. in diameter. It is flat, hard, and crack-free and splits well. Nearly all the sheets contain small "peppery" black spots and some are reeved. The size of the workings indicates that a considerable amount of mining has been done. Much electric mica must have been produced. On the basis of Clark's descriptions, most of the deposit must be worked out, with the possible exception of some ground near its south end. Future exploration might well be directed toward this part of the deposit, in part to determine the extent of the old workings and in part to determine the down-plunge extent of the pegmatite body.

At the northwest end of the deposit is a series of shallow trenches on what Clark termed the "hard mica vein." The series trends N. 70° W., but the pegmatite is not exposed. The dumps contain 2-ft blocks of tightly interlocking, randomly oriented mica flakes that are ½ to 2 in. in diameter. These flakes constitute 75 to 90 percent of the rock, the remainder of which is chiefly kaolinized feldspar. This deposit does not appear to be connected with the main Mica Hill pegmatite. It may have some possibilities as a source of scrap mica.

BERRY MINE

The Berry mine is in the S½SW¼ sec. 12, T. 22 N., R. 23 E. (location 6, fig. 146), and is on the east side of the Dadeville-Dudleyville road. The mine is an old one that has not been operated since 1920, when it was the property of the Coosa County Mica Co. The workings, which are inaccessible, extend along a southeast-northwest line for a distance of 125 ft as follows:

1. An open-cut, 30 by 18 ft in plan and 10 ft deep, that appears to lead to caved workings to the northeast. Only decomposed schist is exposed.
2. Three shallow, slumped pits.
3. A 40-ft shaft, collared in schist, which intersects the pegmatite body with depth.

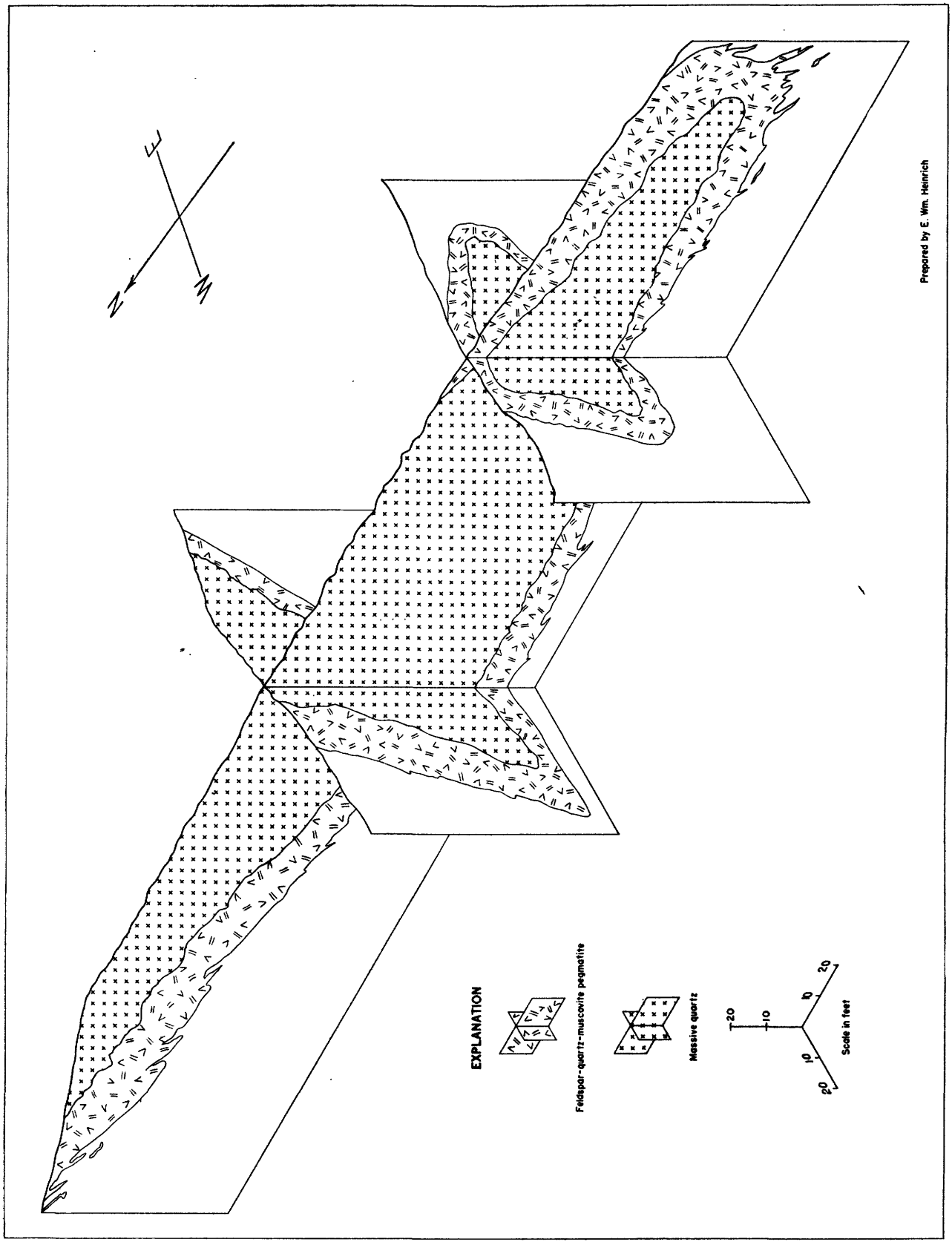

FIGURE 162.—Isometric fence diagram of the Mica Hill pegmatite body, Tallapoosa County, Ala.

4. A slumped pit, 5 ft deep.
5. A caved pit, 28 by 15 ft in plan and 7 ft deep.

Float mica and small quartz fragments are scattered over the field northwest of the road, The distribution of workings suggests that the pegmatite body strikes northwest and dips steeply (?) southwest. The pegmatite on the dump is a medium-grained aggregate of feldspar, quartz, and mica, with pods of a mica-quartz intergrowth (burr rock). The mica, which is abundant as sheets 3 in. or less in diameter, is deep yellowish olive and contains heavy black iron specks that are concentrated near the centers of the sheets. Few books are entirely clear. The mica also is ruled and somewhat cracked but in general is flat and hard.

COLLUM (McCRAY) MINE

The Collum mine is in the SW¼SE¼ sec. 24, T. 22 N., R. 23 E. (location 7, fig. 146). It is 0.2 mile north of the abandoned Collum house. The deposit was worked by Collum for several weeks early in 1945. Two shafts and seven shallow pits have been sunk in a pegmatite sill over a strike length of 160 ft and to a maximum depth of 17 ft (fig. 163). The sill strikes N. 40° W., dips 45° to 65° NE., and is 8 ft thick in the vicinity of the main workings. Its southeastern part contains a core of massive white quartz that is about 5 ft thick and may be as much as 50 ft long. Between the core and the footwall contact with the gneiss are a thin border zone of mica-rich pegmatite and a 2-ft wall zone of kaolinized feldspathic pegmatite. Where no quartz core is present, large mica books are scattered throughout a coarse-grained quartz-feldspar rock.

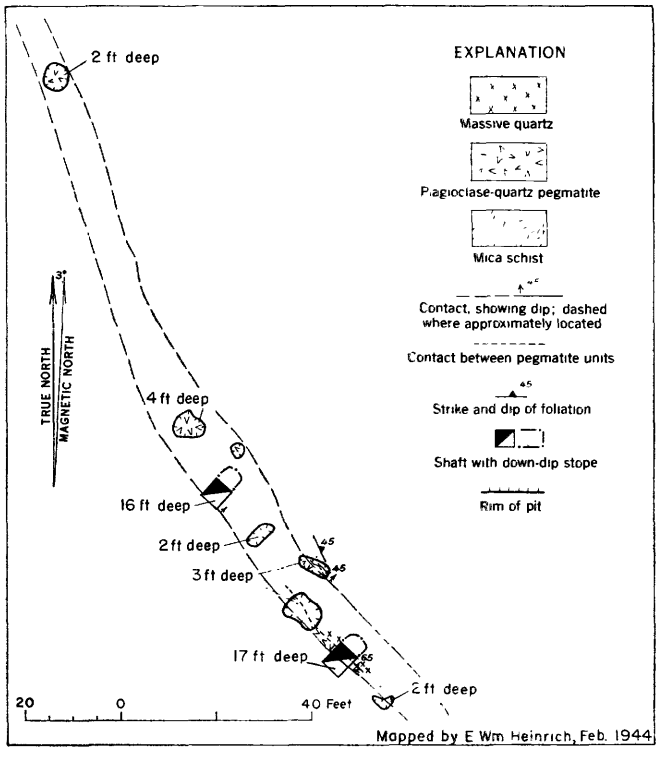

FIGURE 163.—Sketch map of the Collum mine. Tallapoosa County, Ala.

Mica appears to be very abundant and generally is large, hard, flat, and free splitting. The books are dark yellowish olive to cinnamon brown, with a darker-green mottling. A few quartz inclusions and some faint "A" structure are present, and scattered dark specks also were noted. The deposit appears to offer excellent possibilities for the production of electric mica.

COLLUM "QUARTZ BLOW-OUT" DEPOSIT

The Collum "quartz blow-out" deposit is 450 ft S. 60° W. of the Collum mine in the SE¼SE¼ sec. 24, T. 22 N., R. 23 E. (location 8, fig. 146). A low rise is capped by a large quartz outcrop 200 ft long and 40 ft wide at its south end. It trends N. 15° W. and thins to the north. About 300 lb of weathered mica is piled near six old shallow pits. The pegmatite body appears to consist almost wholly of massive quartz. No bordering zones of feldspathic pegmatite are present. Muscovite, accompanied by minor quantities of kaolinized plagioclase, occurs in crosscutting veins within the quartz. These are short and irregular and apparently were formed by the filling of a series of postcrystallization fractures.

The mica is yellowish green to dark yellowish olive and is badly stained by limonite. It contains heavy dark-green spots arranged in a latticelike pattern whose elements are parallel to crystal outlines. Books as much as 8 in. across are present, and their average size is large. Many small flakes occur with the larger masses. The books contain minor "A" structure and ruling but generally are flat. Cracks are the chief defect.

The difficulty of digging in massive quartz has discouraged prospecting.

DOC HEARD PROSPECT

The Doc Heard prospect, which is outside the Dadeville area proper, is 4.8 miles N. 15° E. of Camp Hill in the NW¼NE¼ sec. 27, T. 22 N., R. 24 E. (location 9, fig. 146). It is in a field 100 ft south of a dirt road. W. S. Williams worked the deposit for a short time in 1944. The principal openings are three shafts, only one of which is now accessible. Short drifts were extended to the northeast and southwest, and a short incline was sunk to the southeast. The pegmatite body, which ranges in thickness from 4 to 18 in., strikes northeast and dips moderately southeast. It is an aggregate of kaolinized feldspar, minor quartz, scattered books of muscovite, and a few crystals of garnet

and black tourmaline. The mica is flat, hard, and free splitting and occurs as books 2 in. or less in diameter. The color is light yellowish olive. A few books contain scattered black specks.

OTHER MINES AND PROSPECTS

Carleton (Buttston) mine.—Several shallow pits and cuts have been dug in a 150-by-200-ft area in the SE¼ sec. 22, T. 23 N., R. 24 E. (location 10, fig. 146). These workings, which lie between two branches of County Line Creek a quarter of a mile south of the Tallapoosa River, expose several irregular pegmatite bodies and some massive quartz. One hundred seventy-five tons of "A" mica was obtained in 1920. Very little sheet mica was recovered. Information on the mine was obtained from Alabama Geological Survey Bulletin 24, by G. H. Clark.

Saunders prospect.—Also according to Clark, a little greenish mica was obtained before 1920 from a small pit 200 yd west of a road in the NW¼ sec. 3, T. 22 N., R. 24 E. (location 10, fig. 146).

Thomas mine.—A small mine was worked in 1920 on the C. W. Thomas property 6 miles southwest of Dadeville. The mica is very light brown, and trimmed sheets as large as 4 by 6 in. are said to have been obtained (Clark, 1921).

Louis Taylor prospect.—An 18-ft shaft and a short appended eastward drift were opened before World War I on the Louis Taylor property 7 miles N. 40° E. of Dadeville. The country rock is kyanitic (?) mica gneiss. The pegmatite contains abundant small books of brown to brownish-olive mica, most of which is lightly specked. Information about the Louis Taylor prospect was obtained from U. S. Geological Survey Bulletin 740, by D. B. Sterrett.

CHILTON COUNTY

Maddox mine.—A mica deposit in the SW¼ sec. 23, T. 22 N., R. 15 E. (location 1, fig. 144), was worked in 1943 and 1944, chiefly for scrap. The mica is wedge-A type, according to the reports of the Colonial Mica Corporation.

LEE COUNTY

T. H. Clower prospect.—A long trench and three small prospect pits were dug about 1914 on the T. H. Clower property 2½ miles north of Opelika (location 2, fig. 144). According to Sterrett (1923, pp. 45–46), the country rock is a fine-grained biotite gneiss with interbedded coarse mica schist. The foliation strikes north and dips gently west. A 5-ft thickness of medium-grained quartz-feldspar pegmatite with clusters of small mica crystals is exposed in the west end of the trench. At the east end of the trench a 7-ft pegmatite sill that pinches out to the south and plunges beneath the biotite gneiss to the north contains a discontinuous quartz core as much as 2 ft thick. Large perthite and mica crystals also are present. A third pegmatite body crops out south of the prospect pits. The mine-run mica might yield 10 percent punch and sheet mica. It is slightly cloudy and hence would be suitable for low-grade electric uses only.

Yarborough-Smith-Neighbor prospect.—A small prospect pit was opened in 1914 about 2½ miles N. 10° E. of Auburn by F. L. Yarborough and Dallas Smith, of Opelika, and R. Neighbor, of Auburn. A lens-shaped mass of pegmatite 6 in. to several ft thick is conformable with coarse biotite schist whose foliation strikes N. 45° W. and dips 35° NE (Sterrett, 1923, p. 46). Intergrowths of quartz and small books of mica (burr rock) are present, but coarse book mica also is abundant. Some 6- by 8-in. sheets were recovered. The mica, though free splitting, is cloudy (possibly owing to air staining) and somewhat brittle. A second prospect a quarter of a mile to the northwest yields similar mica.

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