DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1301

Figure 1.— Index map showing location of Moore County, N.C. Shaded area is the part of the gold-pyrophyllite belt that was sampled.

Figure 2.— Sample locality map. Sample localities at gold mines are shown in figures 5-12.

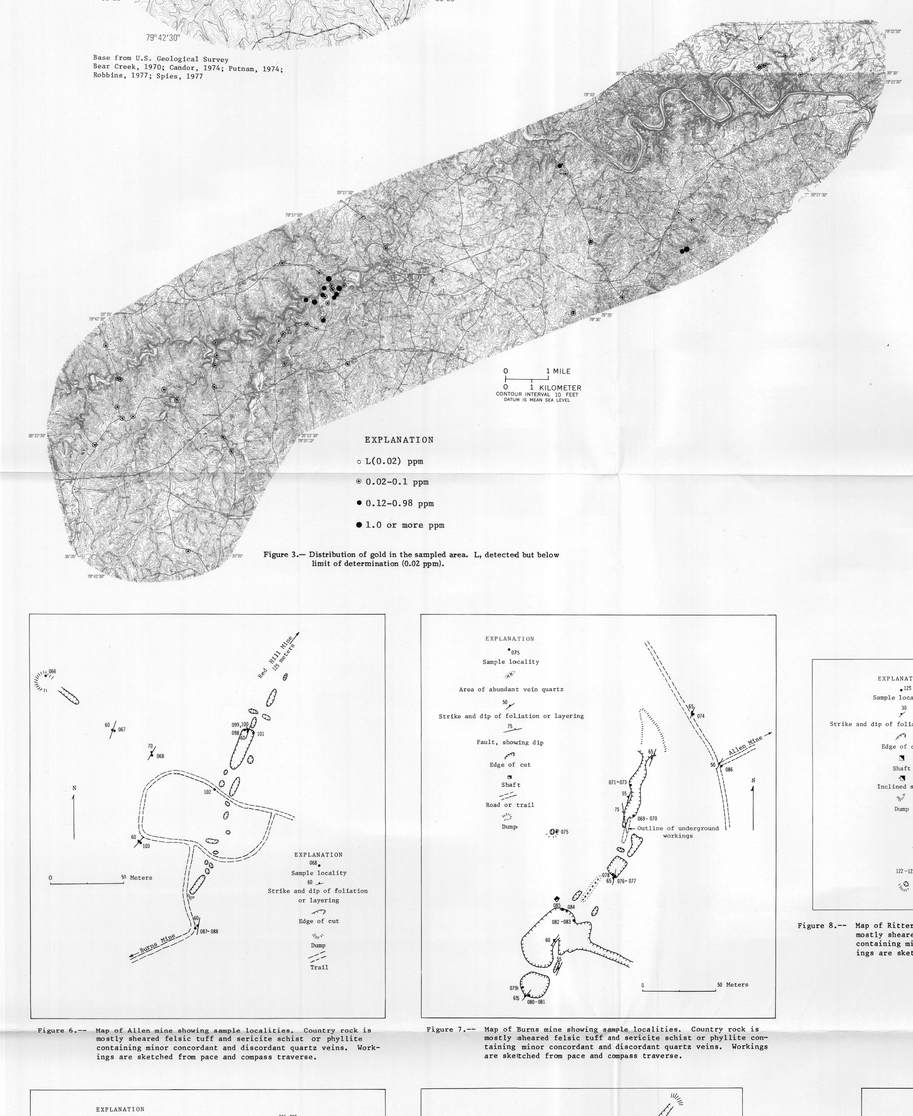

Figure 3.— Distribution of gold in the sampled area. L, detected but below limit of determination (0.02 ppm).

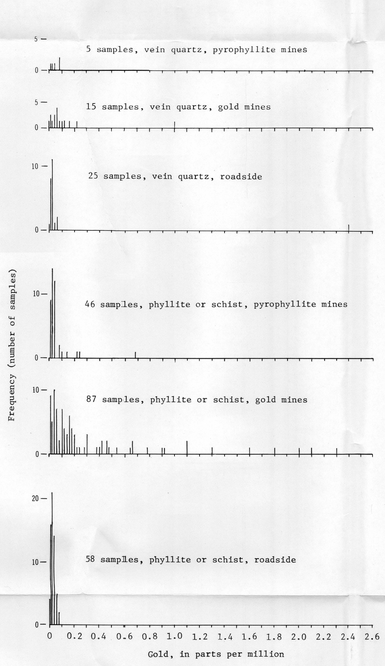

Figure 4.—Frequency distribution of gold in roadside, gold-mine, and pyrophyllite-mine samples. (Samples reported as N(0.02), not detected, are plotted as 0; those reported as L(0.02), detected but below limit of determination, are plotted as 0.01.)

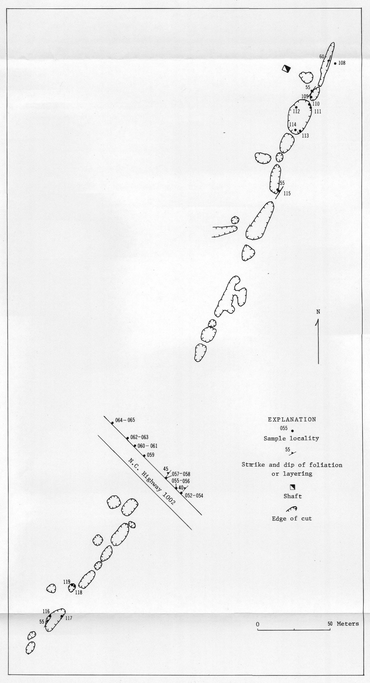

Figure 5.— Map of Cagle mine showing sample localities. Country rock is mostly sheared felsic tuff and sericite schist or phyllite containing minor concordant and discordant quartz veins. Workings are sketched from pace and compass traverse.

Figure 6.— Map of Allen mine showing sample localities. Country rock is mostly sheared felsic tuff and sericite schist or phyllite containing minor concordant and discordant quartz veins. Workings are sketched from pace and compass traverse.

Figure 7.— Map of Burns mine showing sample localities. Country rock is mostly sheared felsic tuff and sericite schist or phyllite containing minor concordant and discordant quartz veins. Workings are sketched from pace and compass traverse.

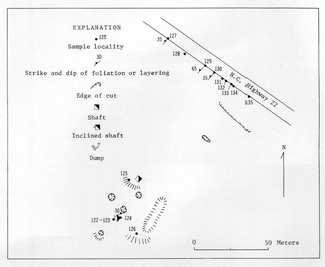

Figure 8.— Map of Ritter mine showing sample localities. Country rock is mostly sheared felsic tuff and sericite schist or phyllite containing minor concordant and discordant quartz veins. Workings are sketched from pace and compass traverse.

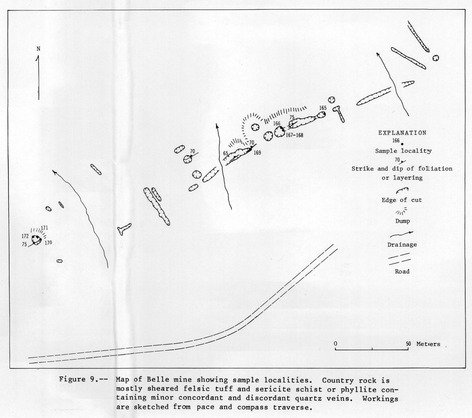

Figure 9.— Map of Belle mine showing sample localities. Country rock is mostly sheared felsic tuff and sericite schist or phyllite containing minor concordant and discordant quartz veins. Workings are sketched from pace and compass traverse.

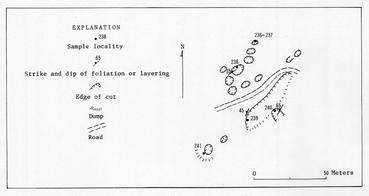

Figure 10.— Map of Brown mine showing sample localities. Country rock is mostly sheared felsic tuff and sericite schist or phyllite containing minor concordant and discordant quartz veins. Workings are sketched from pace and compass traverse.

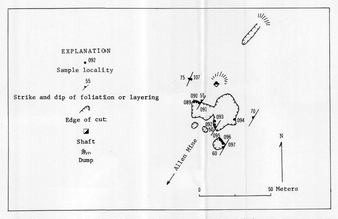

Figure 11.— Map of Red Hill mine showing sample localities. Country rock is mostly sheared felsic tuff and sericite schist or phyllite containing minor concordant and discordant quartz veins. Workings are sketched from pace and compass traverse.

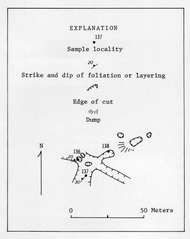

Figure 12.— Map of Cotton mine showing sample localities. Country rock is mostly sheared felsic tuff and sericite schist or phyllite containing minor concordant and discordant quartz veins. Workings are sketched from pace and compass traverse.

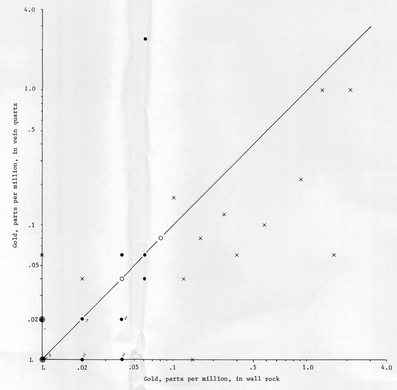

Figure 13.— Scatter diagram comparing gold content in paired samples of vein quartz and enclosing wall rock from gold mines (×), pyrophyllite mines (○), and roadside (●). Numerals indicate number of pairs falling on the same point. L, detected but below limit of determination, plotted as 0.01.

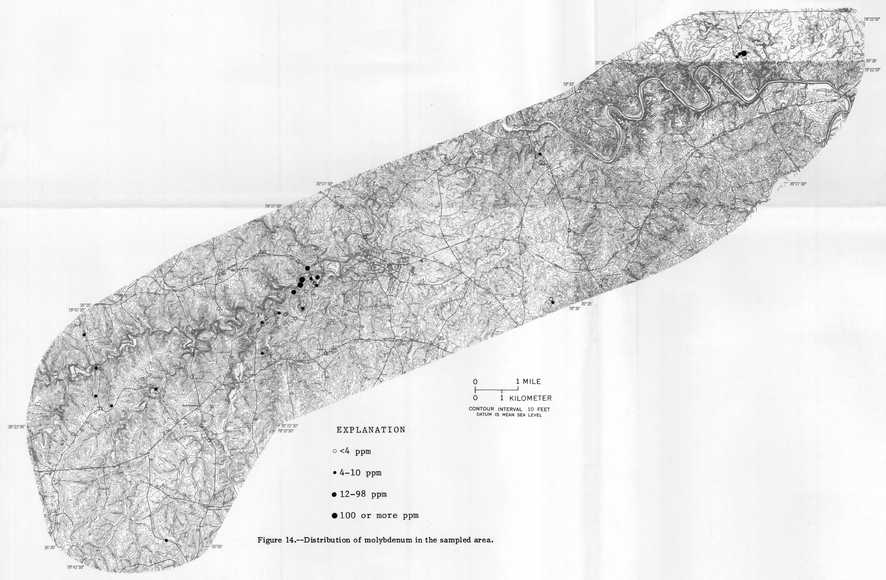

Figure 14.—Distribution of molybdenum in the sampled area.

Abstract

Traces of gold and molybdenum are widely disseminated in an area approximately 35 km long and 10 km wide in northwestern Moore County, N.C. At least 2540 oz. of gold were recovered from 16 or more mines and prospects between 1880 and 1910. One hundred and ninety rock samples out of 244 collected from old gold mines, pyrophyllite deposits and along roads contain gold in quantities ranging from 0.02 to 2.4 parts per million. In addition, 43 samples out of the 244 taken contain molybdenum in amounts ranging from 4 to 500 parts per million.

Introduction

A geochemical reconnaissance of some gold mines in the gold-pyrophyllite belt of northwestern Moore County, N.C. (fig. 1), suggests that the rocks and saprolite of the area contain small but anomalous quantities of gold (figs. 2 and 3). Out of 244 rock samples collected in an area 35 km long and 10 km wide, 190 contain gold in amounts ranging from 0.02 to 2.40 parts per million (ppm), and 48 contain gold in amounts that are detectable but below the limit of determination, which is 0.02 ppm (figs. 3 and 4; table 1). The median concentration of gold in all samples is 0.04 ppm; only 12 samples, 5 percent, contain 0.9 or more ppm. The median concentrations of gold in various types of samples are given in table 2. The highest concentration of gold in the samples analyzed, 2.40 ppm (sample no. 193), is from a composite of three quartz veins, 1 to 2 cm thick, exposed in a roadcut about 0.4 km from the nearest known gold mine. All other samples containing more than 0.1 ppm gold came from a gold mine or pyrophyllite deposit (table 1).

Geology

The geology of the gold-pyrophyllite belt in Moore County is described by Conley (1962,p. 2-8). The gold deposits are in a volcanic sequence of felsic crystal tuff, felsic lithic-crystal tuff, rhyolite, argillite, and mafic crystal tuff, all metamorphosed to sericite phyllite, mica schist, and slate. Veins and stringers of quartz are locally abundant. Commonly these are concordant with the foliation or layering of the country rock; about a third of the veins are definitely discordant to layering or foliation. Conley and Bain (1965, p. 122) correlated these rocks with the Uwharrie Formation of Proterozoic Z and (or) Cambrian age. Foliation and layering, which are roughly parallel, strike northeast and dip northwest. Major structures are overturned to the southeast (Conley, 1962, p. 7).

Gold is present as disseminated native gold in quartz veins and country rock and also is associated with pyrite and other sulfides. Concentrations of gold in sheared felsic tuff and in thin seams of vein quartz were rich enough to encourage small-scale mining in the middle and late 19th century. Thick quartz veins, which are abundant in the area, generally contain little or no gold. Trace amounts of gold in the pyrophyllite deposits became concentrated enough during weathering and erosion to form small placer deposits that were prospected before the discovery of the pyrophyllite.

Gold deposits

The gold mines and ore bodies have been described by Kerr and Hanna (1893), Beeker (1895), Nitze and Hanna (1896, p. 54-56), Nitze and Wilkens (1897, p. 56-57), Bryson (1936, p. 67-68), Conley (1962, p. 24-27), and Carpenter (1976, p. 89-97). The mines are mostly overgrown; open cuts are caving and underground workings are caved or flooded. Sketch maps, prepared to show sample localities, suggest that most of the deposits are in narrow zones 50 to 500 m long and 10 to 30 m wide (figs. 5-12).

Total production of gold from any one mine or from Moore County as a whole is unknown but probably is only a few thousand ounces. According to the Annual Reports of the Director of the Bureau of the Mint, 1880-1909, and to records of the North Carolina Geological Survey (Pratt and Berry, 1911, p. 18), the documented production of gold is 2540 oz., which was sold for about $52,560.

Sampling and Analyses

A total of 244 rock samples was collected during reconnaissance in May 1968 (fig. 2). Samples classified as roadside (table 2) are from roadcuts at least 100 m from a known gold mine. Gold mine and pyrophyllite mine samples are from the workings or the dumps, or from exposures within 100 m of the workings or the trend of the mineralized zone. Some samples are fresh rock from cuts or mine dumps but most are partly weathered rock or saprolite.

All samples were analyzed semiquantitatively for 30 elements by the U.S. Geological Survey, Denver, Colo., using a six-step, direct-current-arc, optical-emission spectrographic method. In addition, each sample was analyzed for copper, gold, lead, and zinc by means of atomic absorption methods and for molybdenum by means of colorimetric methods. The analytical results are summarized in table 2; the complete analytical results and sample descriptions are given in Lesure and others, 1981.

Mine samples

All but one sample of those collected in old mine workings contain at least a trace of gold. The weighted average concentration of gold in samples from each mine, calculated by adding the products of the thickness of each sample multiplied by the gold content and dividing the sum by the total thickness of rock sampled, ranges from a high of 0.62 ppm gold for the Burns mine to a low of 0.01 ppm for the pyrophyllite(?) prospect (table 3). The weighted average concentration of gold in samples from the Standard pyrophyllite mine is the same as the weighted average for the Allen and Brown gold mines. According to Stuckey (1928, p. 53) the Standard pyrophyllite deposit was discovered in 1888 during gold mining operations on the property.

Paired samples—vein quartz and wall rock

Where possible, paired samples of vein quartz and adjacent wall rock were collected for analysis. Comparison of the gold content in the vein quartz with that in the adjacent wall rock (fig. 13) suggests that gold is as abundant or slightly more abundant in wall rock as in quartz veins. Only nine quartz veins out of 41 sampled contain more gold than the adjacent wall rock; 16 sample pairs contain gold in equal proportion, and 16 pairs have more gold in the wall rock. Most of the gold mine samples (10 out of 13) have more gold in the wall-rock sample than in the quartz vein sample. In part, this may be a result of residual enrichment in wall rock brought about by weathering and formation of saprolite (Lesure, 1971, p. 183).

Distribution of molybdenum

Forty-three samples contain molybdenum in amounts ranging from 4 to 500 ppm (table 1; fig. 14). Fifteen of these samples are from roadcuts, 11 are from pyrophyllite mines and the rest are from gold mines. The greatest amount of molybdenum, 500 ppm, is in sample no. 157, which was taken from a zone of yellow- and green-stained pyritic sericite schist about 8 m long and 0.3 to 0.6 m thick in the Womble pyrophyllite mine.

In general, molybdenum appears to correlate with gold; only one sample (no. 213) containing molybdenum has no detectable gold. The samples with the most molybdenum, however, generally do not have the largest gold concentrations.

Discussion

Geochemical sampling in northwestern Moore County was part of a country-wide study of heavy-metal deposits. One objective was to search for large-volume, lower-grade gold deposits that are amenable to modern mining techniques. The deposits mined and remaining in Moore County are low grade but probably not large volume. These deposits are in metamorphosed, extrusive, acid igneous rocks. Boyle (1978, p. 38) gives a range in gold content of 0.001 to 0.1130 ppm, and an arithmetic mean of 0.0037 ppm, as average for unmineralized extrusive acid igneous rocks as a whole. Many of the roadside samples from Moore County contain detectable gold within this range for unmineralized rock (table 2) but generally have more gold than the average value given by Boyle. The gold content of the area sampled is anomalously high. My sampling did not outline the limits of this anomalous area.

Several recent papers (Worthington and Kiff, 1970; Spence, 1975; McDaniel, 1976; Spence and others, 1980; and Worthington and others, 1980) have advanced a volcanogenic, hot spring or fumarolic model of origin modified by low-grade regional metamorphism for the gold and pyrophyllite deposits in the Carolina slate belt. Using this as a working hypothesis one should locate additional sampling laterally beyond and (or) stratigraphically above known pyrophyllite deposits. The larger and richer gold mines in Moore County, the Cagle, Burns, Red Hill, and Allen, are near the Standard pyrophyllite mine and may be structurally and stratigraphically above the pyrophyllite deposit.

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Table 1.--Concentrations of gold, molybdenum and copper in selected samples. Gold and copper analyses by atomic absorption by J.G. Frisken and J.C. Viets; molybdenum by colorimetric methods by S.L. Noble. N()-not detected at limit of detection, or at value shown; L()-detected, but below limit of determination, or below value shown.

Sample No.	Au	Mo	Cu	Rock type
	Parts per million (ppm)			
Allen Mine				
066	0.66	180	10	Sericite phyllite
067	0.08	N(4)	L(10)	Sericite schist
068	0.16	N(4)	L(10)	Phyllitic felsic tuff
087	0.10	N(4)	10	Phyllitic felsic tuff
098	0.12	N(4)	160	Tuff saprolite
099	0.08	N(4)	L(10)	Quartz
100	0.16	N(4)	L(10)	Felsic tuff
101	0.38	4	L(10)	Tuff saprolite
102	0.04	N(4)	L(10)	Felsic tuff
103	0.04	N(4)	10	Felsic tuff
Belle Mine				
165	0.16	N(4)	40	Tuff saprolite
166	0.78	N(4)	30	Felsic tuff
167	1.80	N(4)	50	Felsic tuff
168	0.06	N(4)	20	Tuff
169	0.46	N(4)	10	Felsic tuff
170	0.12	N(4)	10	Tuff saprolite
171	0.04	N(4)	10	Saprolite
172	0.04	N(4)	L(10)	Saprolite
Brown Mine				
237	0.04	N(4)	L(10)	Silicified tuff
238	0.06	N(4)	L(10)	Felsic tuff
239	0.40	N(4)	L(10)	Silicified tuff
240	0.22	N(4)	L(10)	Tuff saprolite
242	0.18	N(4)	L(10)	Silicified tuff
Burns Mine				
069	0.90	N(4)	20	Phyllite
070	0.22	N(4)	10	Quartz
071	2.10	8	10	Phyllite
072	1.30	25	30	Phyllite
073	1.00	4	L(10)	Quartz
074	0.06	N(4)	L(10)	Felsic tuff
075	0.42	15	20	Brecciated tuff
076	1.60	N(4)	L(10)	Tuff
077	0.06	N(4)	L(10)	Quartz
078	0.92	N(4)	10	Tuff
079	0.20	N(4)	20	Tuff
080	0.10	N(4)	20	Tuff
081	0.06	N(4)	10	Tuff
082	0.28	N(4)	10	Tuff
083	2.00	4	10	Tuff
084	0.20	N(4)	30	Tuff saprolite
085	0.12	N(4)	L(10)	Tuff saprolite
086	0.04	N(4)	70	Tuff
Cagle Mine				
052	0.08	N(4)	L(10)	Saprolite
053	0.16	4	10	Quartz
054	0.10	4	L(10)	Slate
055	0.04	4	L(10)	Quartz
056	0.12	4	20	Slate
057	0.46	N(4)	10	Silicified slate
058	0.18	N(4)	20	Slate
059	0.18	N(4)	L(10)	Phyllite saprolite
060	0.12	N(4)	20	Quartz
061	0.24	N(4)	10	Phyllite saprolite
062	0.06	N(4)	L(10)	Quartz
063	0.30	N(4)	L(10)	Saprolite
065	0.14	N(4)	10	Saprolite
108	0.14	N(4)	10	Felsic tuff
109	0.18	15	20	Felsic tuff
110	1.10	N(4)	10	Tuff saprolite
111	2.30	15	10	Schist saprolite
112	1.10	N(4)	10	Tuff saprolite
113	0.10	8	L(10)	Silicified tuff
114	0.54	15	L(10)	Silicified tuff
115	0.14	N(4)	L(10)	Tuff
116	0.10	N(4)	10	Tuff saprolite
117	0.66	N(4)	10	Silicified tuff
118	0.16	N(4)	L(10)	Tuff saprolite
119	0.30	N(4)	L(10)	Silicified tuff
Cotton Mine				
136	L(0.02)	N(4)	120	Felsic tuff
137	0.02	N(4)	960	Felsic tuff
138	0.04	N(4)	140	Felsic tuff
Monroe Mine				
205	0.10	N(4)	20	Felsic tuff
206	0.02	N(4)	L(10)	Quartz
Red Hill Mine				
089	0.06	N(4)	L(10)	Tuff saprolite
090	0.06	N(4)	1400	Felsic tuff
091	0.16	N(4)	10	Felsic tuff
092	0.20	N(4)	L(10)	Felsic tuff
093	0.06	N(4)	L(10)	Tuff
094	0.30	N(4)	L(10)	Tuff
095	0.44	N(4)	L(10)	Tuff saprolite
096	0.10	N(4)	10	Quartz
097	0.48	N(4)	10	Saprolite
107	0.04	120	L(10)	Felsic tuff
Ritter Mine				
122	0.06	N(4)	L(10)	Quartz
124	0.02	N(4)	10	Tuff
125	0.42	N(4)	10	Tuff
126	0.04	N(4)	10	Tuff
127	L(0.02)	N(4)	1100	Felsic tuff
133	0.04	6	30	Quartz
134	0.02	N(4)	30	Felsic tuff
135	0.02	N(4)	30	Tuff
Pyrophyllite mines				
Phillips				
139	0.02	4	L(10)	Schist
140	0.04	N(4)	L(10)	Schist
141	0.04	N(4)	L(10)	Schist
142	0.04	N(4)	L(10)	Schist
143	0.02	N(4)	L(10)	Schist
144	0.02	N(4)	L(10)	Schist
145	0.02	N(4)	L(10)	Schist
146	0.02	N(4)	L(10)	Schist
147	0.02	N(4)	L(10)	Schist
159	0.04	8	30	Slate
160	L(0.02)	4	30	Slate
161	L(0.02)	4	30	Slate
Standard Mineral Co.				
037	0.08	N(4)	L(10)	Quartz
038	0.08	N(4)	10	Saprolite
039	0.22	N(4)	L(10)	Saprolite
040	0.24	4	10	Phyllite saprolite
041	0.08	N(4)	10	Phyllite
042	0.68	N(4)	L(10)	Phyllite
043	0.04	N(4)	L(10)	Quartz
044	0.04	N(4)	L(10)	Phyllite saprolite
045	0.10	N(4)	20	Schist
046	0.04	N(4)	L(10)	Silicified phyllite
047	0.14	N(4)	10	Phyllite saprolite
048	0.04	8	10	Schist
049	0.02	N(4)	L(10)	Schist
050	0.04	N(4)	L(10)	Schist
051	0.04	N(4)	L(10)	Schist
White				
148	0.02	N(4)	10	Slate
150	0.02	N(4)	10	Schist
151	0.02	N(4)	10	Schist
152	0.02	N(4)	30	Slate
Womble				
155	0.02	N(4)	L(10)	Schist
156	0.04	N(4)	L(10)	Slate
157	0.04	500	1100	Schist
158	0.04	10	30	Saprolite
Pyrophyllite (?) prospect				
230	0.04	N(4)	L(10)	Sericite schist
231	0.02	N(4)	10	Sericite schist
232	0.02	N(4)	L(10)	Sericite schist
233	L(0.02)	4	10	Schist saprolite
234	L(0.02)	8	L(10)	Vein quartz
235	0.06	15	130	Limonite after pyrite
Other samples				
001	0.06	N(4)	20	Felsic tuff
002	0.06	N(4)	20	Quartz
003	0.06	N(4)	20	Tuff saprolite
004	0.04	N(4)	L(10)	Quartz
005	0.04	4	30	Tuff saprolite
006	0.02	4	70	Mafic tuff
008	0.04	N(4)	30	Tuff saprolite
009	0.02	4	30	Metashale
010	0.02	8	420	Limonite after pyrite
011	0.04	4	10	Tuff saprolite
013	0.02	4	L(10)	Felsic tuff
014	0.02	N(4)	L(10)	Quartz
017	0.02	N(4)	10	Quartz
018	0.02	N(4)	10	Tuff saprolite
019	0.02	N(4)	L(10)	Saprolite
020	0.02	N(4)	20	Phyllite
021	0.02	N(4)	L(10)	Saprolite
022	0.02	N(4)	30	Phyllite
024	0.02	N(4)	L(10)	Phyllite
025	0.04	N(4)	10	Schist saprolite
027	0.02	N(4)	L(10)	Phyllite saprolite
029	L(0.02)	4	10	Saprolite
031	N(0.02)	N(4)	1200	Phyllite saprolite
032	L(0.02)	4	L(10)	Phyllite saprolite
033	0.02	4	L(10)	Phyllite
034	0.08	10	20	Phyllite
105	0.04	N(4)	L(10)	Saprolite
106	0.06	N(4)	L(10)	Felsic tuff
120	0.04	N(4)	L(10)	Schist
153	0.02	N(4)	L(10)	Tuff
154	0.04	N(4)	10	Tuff
163	0.1	N(4)	16,000	Phyllite, copper prospect
164	0.02	N(4)	70	Slate
174	0.02	N(4)	L(10)	Quartz
175	0.04	N(4)	30	Tuff saprolite
176	0.04	N(4)	40	Felsic tuff
178	0.02	N(4)	40	Felsic tuff
179	0.02	N(4)	10	Tuff saprolite
180	0.02	N(4)	L(10)	Quartz
181	0.04	N(4)	900	Tuff saprolite
182	0.02	N(4)	10	Tuff saprolite
183	0.02	N(4)	L(10)	Quartz
184	0.04	N(4)	10	Tuff saprolite
185	0.02	N(4)	L(10)	Slate saprolite
186	0.02	N(4)	L(10)	Quartz
187	0.02	N(4)	L(10)	Slate
190	0.04	N(4)	10	Tuff
191	0.06	N(4)	L(10)	Quartz
192	0.06	30	L(10)	Felsic tuff
193	2.40	N(4)	10	Quartz
194	0.04	N(4)	L(10)	Felsic tuff
195	0.02	N(4)	L(10)	Quartz
196	0.02	N(4)	L(10)	Tuff saprolite
197	0.02	N(4)	L(10)	Felsic tuff
198	0.02	N(4)	110	Diabase
199	0.02	N(4)	L(10)	Quartz
200	0.02	N(4)	L(10)	Tuff saprolite
201	0.02	N(4)	10	Vein quartz
202	L(0.02)	4	70	Saprolite
203	0.02	N(4)	20	Shale
204	0.04	N(4)	60	Siltstone saprolite
207	0.02	N(4)	L(10)	Quartz
209	L(0.02)	N(4)	60	Quartz
213	N(0.02)	4	20	Tuff saprolite
214	0.02	N(4)	L(10)	Quartz
219	0.02	N(4)	L(10)	Quartz
220	0.08	4	L(10)	Vein quartz
222	L(0.02)	4	L(10)	Tuff saprolite
223	0.04	N(4)	L(10)	Saprolite
224	0.04	N(4)	L(10)	Quartz
225	0.04	N(4)	L(10)	Tuff saprolite
226	0.06	N(4)	L(10)	Tuff saprolite
227	0.08	N(4)	L(10)	Saprolite

The following samples are reported as L(0.02)Au, N(4)Mo, and 30 or less Cu:

007, 012, 015, 016, 023, 026, 028, 035, 036, 064, 121, 123, 128, 129, 130, 131, 132, 149, 162, 177, 188, 189, 208, 210, 211, 212, 215, 216, 217, 221, 225A, 228, 229, 236, 243, and 244.

The following samples are reported as N(0.02)Au, N(4)Mo, and 10 or less Cu:

030, 088, 104, and 218.

Table 3.-- Summary of gold-bearing samples from gold and pyrophyllite deposits.

Gold deposits	Number of samples: Phyllite or schist	Vein quartz	Total gold bearing	Weighted average, all samples, in ppm
Allen	9	2	10	0.13
Belle	8		8	0.39
Brown	8	1	9	0.13
Burns	15	3	18	^.62
Cagle	21	5	26	0.35
Cagle, mine workings	12		12	0.54
Cagle, ore zone on road	9	5	14	0.16
Cotton	3		3	0.03
Red Hill	9	1	10	0.24
Ritter	4	1	5	0.07
Pyrophyllite deposits				
Phillips and Womble	23		23	0.03
Pyrophyllite (?) prospect	6	1	7	0.01
Standard	14	2	16	0.13

Units of Measurement

International System (SI or metric) units of measurement herein are used in preference to Customary (English) units. Some conversion factors are given below.

Multiply	By	To obtain
centimeters (cm)	0.3937	inches
meters (m)	3.2808	feet
kilometers (km)	0.6214	miles (mi)

Table 2.--Range and median values for 24 elements in rock samples from Moore County, N.C. All analyses are by semiquantitative spectrographic methods by E.F. Cooley and J.M. Motooka, except gold and zinc, which are by atomic absorption (AA) by J.G. Frisken, J.G. Viets, Z.C. Stephenson, G.F. Chlumsky, and B.R. Bland, and molybdenum which is by colorimetric (C) methods by S.C. Noble. Copper was analyzed both spectrographically and by atomic absorption. Spectrographic analyses are reported as six steps per order of magnitude (1, 1.5, 2, 3, 5, 7, or multiples of 10 of these numbers) and are approximate geometric midpoints of the concentration ranges. The precision is shown to be within one adjoining reporting interval on each side of the reported value 83 percent of the time and within two adjoining intervals on each side of the reported value 96 percent of the time (Motooka and Grimes, 1976). Letter symbols: L, detected but below the limit of determination (value shown in parentheses after element symbol); N, not detected; G, greater than. Elements looked for spectrographically but not found, and their lower limit of determination (ppm): As(200), Au(10), Bi(10), Cd(20), Sb(100), Sn(10), and W(50).

Element percent	Roadside samples: Fresh Phyllite or schist, 5 samples			Roadside samples: Partly weathered Phyllite or schist, 19 samples			Roadside samples: Saprolite Phyllite or schist, 38 samples			Gold mine samples: Fresh Phyllite or schist, 14 samples			Gold mine samples: Partly weathered Phyllite or schist, 43 samples			Gold mine samples: Saprolite Phyllite or schist, 31 samples			Pyrophyllite mine samples: Fresh Phyllite or schist, 10 samples			Pyrophyllite mine samples: Partly weathered Phyllite or schist, 22 samples			Pyrophyllite mine samples: Saprolite Phyllite or schist, 10 samples			Roadside vein quartz, 25 samples			Gold mine vein quartz, 15 samples			Pyrophyllite mine vein quartz, 5 samples		
	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median	Low	High	Median
Ca (0.05)	0.15	1.5	1	N	3	L	N	1	L	N	7	L	N	7	N	N	1.5	L	L	0.2	0.1	N	0.3	L	N