Morrison formation, is about 6 feet. The material described is from a uranium claim, owned by Mr. Irvin Asay, which is located 4 miles east of U. S. 310 on a turn-off about $13\frac{1}{4}$ miles southeast of Lovell, Wyoming.

The discovery of this second locality suggests that natrojarosite may be of widespread occurrence in the Morrison formation within and around the Big Horn Basin.

The writers wish to express their gratitude to Mr. C. F. Mitchell, of Lovell, Wyoming, for his assistance in checking certain field data included in this paper, and for collecting specimens from the Asay property.

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X-RAY DATA FOR DOLOMITE AND ANKERITE

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Although the structure of dolomite was determined by Wyckoff and Merwin (1924) and by Wasatjerna (1924), the effect of the replacement of magnesium by iron on the cell parameters has remained in doubt. Wyckoff and Merwin examined various specimens of dolomite, two of them having over 10% FeO by weight, and using single crystal photographs they found that the cell sizes were identical within experimental error. Schoklitsch (1935), however, using the powder method, gave values for dolomite with 1.17% FeO of a_{rh} 6.007 Å,* α 47°32′ or a 4.843, c 15.95 Å on hexagonal axes and for ankerite with 16.43% FeO a_{rh} 6.062 Å, α 46°58′ or a 4.832, c 16.14 Å; these results indicating that the

* Original values given in kX units have been converted to Å.

c dimension increased with the substitution of the larger ferrous ion for magnesium but that the a dimension decreased.

Two analysed specimens available for study were the Haley dolomite (Harker and Tuttle, 1955) which shows an almost negligible iron content, and an ankerite from the British Coal Measures with a composition approaching $Ca_3(Mg_2Fe)(CO_3)_6$ (Broadhurst and Howie, 1958): the anal-

TABLE 1. ANALYSES AND PROPERTIES OF DOLOMITE AND ANKERITE

	1	2		1A	2A
SiO_2	0.12	0.15	Fe^{+3}		.002
TiO_2	nil	tr.	Fe^{+2}	.006	.330
Al_2O_3	nil	0.28	Mn		.022
Fe_2O_3	tr.	0.10	Mg	.973	.626
FeO	0.22	12.06	Ca	1.036	1.024
MnO	nil	0.77	Na		.002
MgO	21.12	12.85	CO_2	1.993	1.995
CaO	31.27	29.23			
Na_2O	n.d.	0.06	Atomic percentages		
K_2O	n.d.	0.01			
CO_2	47.22	44.70	Mg	48.3	31.2
H_2O^-	0.02	0.02	Fe	0.3	16.6
			Mn		1.1
Total	99.97	100.23	Ca	51.4	51.1
D	2.86	2.97			
ϵ	1.503	1.515			
ω	1.680	1.710			

1. White dolomite, Ross Township, Haley, Ontario (Harker and Tuttle, 1955). Analyst: R. A. Howie.

2. Yellow ankerite, Bed OC 8, Oak Victoria Colliery, Oldham, Lancashire (Broadhurst and Howie, 1958).

1A and 2A. Analyses recalculated to show the number of metal ions on the basis of 6 oxygen ions.

yses of these minerals are given in Table 1, the specific gravity for the dolomite being quoted from Zen (1956). The more iron-rich of these two minerals has been called ankerite following the nomenclature of Smythe and Dunham (1947, p. 66) and of Hey (1955). Palache et al. (1951) recommended that the names dolomite and ankerite should depend on the ratio of Mg to Fe^{+2} in the Mg positions, but arbitrarily divided the series at Mg:Fe=1:1, referring material with Mg > Fe to the species dolomite and material with Fe > Mg to the species ankerite. With their nomenclature, the material of analysis 2 would be termed ferroan dolomite. A

disadvantage of this nomenclature is that the term ferroan dolomite is used for material relatively poor in iron whilst the term ferrodolomite has previously been used for the iron end-member $FeMg(CO_3)_2$, confusion in terminology may therefore easily arise. A plot of carbonate analyses in the series $CaMg(CO_3)_2$-$CaFe(CO_3)_2$, e.g. Hügi (1945), Smythe and Dunham (1947), shows a grouping around the centre of the series in

TABLE 2. X-RAY SPACINGS, INDICES AND INTENSITIES

$hkil$	hkl	Dolomite $d(\text{Å})$	I	Ankerite $d(\text{Å})$	I	$hkil$	hkl	Dolomite $d(\text{Å})$	I	Ankerite $d(\text{Å})$	I
$10\bar{1}1$	100	4.025	15			$11\bar{2},12$	543	1.168	20	1.171	3
$01\bar{1}2$	110	3.690	25	3.704	15	$31\bar{4}2$	$30\bar{1}$	1.144	10	1.144	2
$10\bar{1}4$	211	2.886	500	2.899	500	$21\bar{3},10$	532	1.123	25	1.126	3
0006	222	2.670	50	2.685	15	$13\bar{4}4$	$32\bar{1}$	—*		1.112	3
$01\bar{1}5$	221	2.540	40	2.552	10	$22\bar{4}6$	420				
$11\bar{2}0$	$10\bar{1}$	2.405	50	2.411	15	$30\bar{3}9$	522	1.096	15	1.099	3
$11\bar{2}3$	210	2.192	150	2.199	30	$000,15$	555	1.068	5	1.066	1
$02\bar{2}1$	$11\bar{1}$	2.066	25	2.067	5	$40\bar{4}4$	400	1.008	20	1.010	2
$20\bar{2}2$	200	2.015	75	2.020	15	$31\bar{4}8$	521	1.001	25	1.003	3
$02\bar{2}4$	220	1.848	25	1.852	5	$10\bar{1},16$	655	.973₅	15	.976	1
$01\bar{1}8$	332	1.804	100	1.812	30	$30\bar{3},12$	633	.962	25	.966	3
$11\bar{2}6$	321	1.786	150	1.792	30	$32\bar{5}2$	$21\bar{3}$	.949	5	.953	1
0009	333	1.781				$32\bar{5}4$	$41\bar{1}$	.930	5		
$21\bar{3}1$	$20\bar{1}$	1.567	40	1.569	5	$2\bar{1}3,14$	356	.926	15		
$12\bar{3}2$	$21\bar{1}$	1.545	50	1.548	10	$\bar{4}048$	044	.923	15		
$10\bar{1},10$	433	1.496	10	1.501	2	$32\bar{5}5$	$12\bar{4}$	.913	5		
$21\bar{3}4$	310	1.465	25	1.468	10	$41\bar{5}0$	$31\bar{2}$	.909	10		
$02\bar{2}8$	224	1.445	20	1.449	15	$\bar{2}02,16$	466				
$11\bar{2}9$	432	1.431	50	1.436	5	$31\bar{4},11$	632	.903	5		
$12\bar{3}5$	320	1.413	20	1.416	2	$22\bar{4},12$	642	.894	10		
$03\bar{3}0$	$11\bar{2}$	1.389	75	1.391	5	$21\bar{3},16$	754	.845	15		
$000,12$	444	1.335	40	1.341	5	$11\bar{2},18$	765	.835	20		
$21\bar{3}7$	421	1.297	20	1.300	2	$32\bar{5},10$	631	.821	10		
$02\bar{2},10$	442	1.269	20	1.273	2						
$12\bar{3}8$	431	1.238	25	1.241	5						
$22\bar{4}0$	$20\bar{2}$	1.202	15	1.205	2						

* For dolomite this line was obscured by a line of the Si standard.

line with the accustomed use of the term ankerite. Dolomites with only moderate amounts of ferrous iron are less common, while carbonates with greater than 70% of the $CaFe(CO_3)_2$ molecule are rare: thus to split the series arbitrarily at 50% $CaFe(CO_3)_2$ obscures the prevalence of material of this intermediate composition. Accordingly for the material of composition $Ca_3(Mg_2Fe)(CO_3)_6$ here discussed the name ankerite is preferred.

The x-ray powder data were obtained on the Philips high-angle x-ray diffractometer with CuK_α radiation, using a scanning speed of 0.25° 2θ per minute and chart speed of 2.67 cm. per 1° 2θ. Silicon was mixed with the powdered carbonate as an internal standard and linearly interpolated

corrections were applied to the 2θ values measured from the carbonate peaks. The reproducibility of the d-spacings finally determined was ±0.001 Å. The diffraction pattern obtained was indexed on hexagonal axes using the approximate cell dimensions: after the cell dimensions had been accurately determined from the $11\bar{2}0$, $03\bar{3}0$, $22\bar{4}0$, and 0006, $000,12$ and $000,15$ reflections for a and c respectively the d-spacings of all possible reflections up to $2\theta=140°$ were tabulated and compared with those observed, leading to the complete indexing of the pattern (Table 2). The relative intensities of the reflections are given in terms of peak heights, that of the strong $10\bar{1}4$ reflection being arbitrarily assigned an intensity of 500 in each case to avoid giving fractional values for the high angle reflections. The indices assigned differ in some details from those given to the dolomite-type powder patterns by Bradley et al. (1953).

The accurate cell parameters obtained from the powder data are:

	a(Å)	c(Å)	c/a	a_{rh}(Å)	α
Dolomite, Haley, Ontario	4.810 ± 0.002	16.02 ± 0.001	3.330	6.020	47°07′
Ankerite, Oldham, Lancashire	4.819	16.10	3.341	6.045	47°00′

Space group $R\bar{3}$.

The values for dolomite are thus comparable with the results of previous workers. The effect of the substitution of roughly one third of the magnesium ions by the larger ferrous iron ion in the ankerite examined is seen to be an increase in both the a and c dimensions, as might be expected from the structure, but contrary to the results earlier reported by Schoklitsch (1935); the axial ratio c/a also increases.

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INTERNATIONAL MINERALOGICAL ASSOCIATION

This association was started with a motion by Professor Buerger at the Minneapolis meeting of the Mineralogical Society of America, November 1, 1956 (*Am. Mineral.*, **42**, 1957, 270). A pre-organization meeting was held at Montreal July 16, 1957, in connection with the sessions of the International Union of Crystallography (*Am. Mineral.*, **43**, 1958, 352). The inaugural meeting took place at Madrid in the week of April 6, 1958. Here officers were elected, a constitution was adopted, and commissions were set up. All this is described in detail in the Sept. 1958 GeoTimes, a copy of which may be obtained from the American Geological Institute or the writer. A similar description is given (in English) in a Beilage of the *Schweizerische Mineralogische und Petrographische Mitteilungen*, **38** (1), 1958. Professor Grigoriev of Leningrad has written (in Russian, with five half-tones) about the Madrid meetings and the accompanying field trips (*Akad. Nauk, U.S.S.R.*, Memoirs of the All-Union Mineralogical Society, **87** (4), 1958, 518–525.

The chief object of the I.M.A. is to further international cooperation in the mineralogical sciences. Its members are not individuals, but are the various national mineralogical societies or corresponding bodies. In addition to the work of the various commissions, an important function of the I.M.A. is to see that arrangements are made for programs, including field trips of interest to mineralogists at the International Meetings of the geologists, crystallographers and other scientific groups at which there will be a significant attendance of mineralogists and petrologists.

A meeting of the Executive Committee of the I.M.A. is scheduled for Zurich, January 19–21, 1959. This committee consists of the five officers and four councilors. In addition the members of the four commissions (abstracts, data, new minerals, and museums) will be in attendance. It is requested that anyone with suggestions for consideration at this meeting send them to President Parker at Zurich, Professor Amoros (Secretary) at Madrid, or the writer (Treasurer).

The next meeting of the association is to be held at Zurich, August 29–September 6, 1959. At this session, besides meetings of the Executive Committee and Delegates and the various Commissions, there will be two symposia and a field trip (Sept. 4–6).

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D. JEROME FISHER
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The Geochemical Society is undertaking the project of issuing an English translation of the Russian journal *Geokhimiya*, which appears eight times yearly. It is being aided by a grant from the National Science Foundation. The translation of the first issue of 1958 has already appeared.

The success of this venture will depend in large part on the response, in the form of subscriptions, from individual scientists. The subscription price is $20 per year (8 issues); $10 to educational institutions and to members of the Geochemical Society. Send subscriptions to E. Wm. Heinrich, Managing Editor, Mineralogical Laboratory, University of Michigan, Ann Arbor, Mich.

BIBLIOGRAPHY AND INDEX OF LITERATURE ON URANIUM AND THORIUM AND
RADIOACTIVE OCCURRENCES IN THE UNITED STATES. PARTS 1–5

The Geological Society of America has published as its Special Paper No. 67 "Bibliography and Index of Literature on Uranium and Thorium and Radioactive Occurrences in the United States. Part 5: Connecticut, Delaware, Illinois, Indiana, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin," prepared by Margaret Cooper of the U. S. Geological Survey on behalf of the Division of Raw Materials of the U. S. Atomic Energy Commission, September 1958, 472 pages (paper cover), and priced at $6.75 a copy.

This book contains a section on bibliography (26 pages), a gazetteer for the States (38 pages), a geographical index (243 pages), and a subject index (165 pages). Factually it is a key to the literature on deposits in which uranium, thorium, and radioactive minerals are found in the northeastern United States. For many of the States there is also much detailed information in the indexes on the geology and the general mineralogy of the pegmatites, coal beds, sandstones, shales, beach sands, and other formations in which the uranium and thorium have been repoted.

Parts 1 to 4 of this bibliography were prepared by Margaret Cooper in the Division of Raw Materials of the U. S. Atomic Energy Commission and published in the Bulletin of the Society. These sections, which also include a bibliography, gazetteer, geographical index, and subject index, with detailed geological information for each area covered, are available as reprints for public sale, as follows:

Part 1: Arizona, Nevada, and New Mexico. February 1953, 38 pp.   25 cents
Part 2: California, Idaho, Montana, Oregon, Washington, and Wyoming. October 1953. 70 pp.   25 cents
Part 3: Colorado and Utah. June 1954, 124 pp.   50 cents
Part 4: Arkansas, Iowa, Kansas, Louisiana, Minnesota, Missouri, Nebraska North Dakota, Oklahoma, South Dakota, and Texas. March 1955, 70 pp.   50 cents

All five parts of the bibliography may be purchased from the Geological Society of America at the prices indicated above. Remittance must accompany orders, which should be sent to:

> Geological Society of America
> 419 West 117 Street
> New York 27, New York

MINERALOGICAL ABSTRACTS

The councils of the Mineralogical Society of America and the Mineralogical Society (Great Britain and Ireland) have agreed to jointly sponsor the publication of *Mineralogical Abstracts* as a separate publication, commencing with volume 14 for 1959.

The new journal will have a two-column format with a page size of ($10\frac{3}{8}'' \times 7\frac{7}{8}''$) and will contain at the outset about twice the number of abstracts in the present issues. The journal will be published quarterly.

Mineralogical Abstracts will be grouped under the following headings:

> Age-determination
> Apparatus and techniques
> Bibliographies
> Clay minerals
> Crystal structure of minerals

Experimental mineralogy
Geochemistry
Gemstones
History and biography
Meteorites and tektites
Mineral data
New minerals
Notices of books
Ore deposits and economic mineralogy
Petrology
Physical properties of minerals
Topographical mineralogy
Various topics

The price of the new journal to subscribers other than personal members of the two sponsoring societies will be $9. U. S. per calendar year issue of 4 numbers. There will be a special price of $6. for educational institutions.*

It is proposed to make the journal available to personal members of the Mineralogical Society of America at $3. per calendar year. Those who are now members of the Mineralogical Society of Great Britain and Ireland, who already receive the abstracts as part of their privileges of membership, will continue to receive Mineralogical Abstracts for an increase in the annual membership fee of 10s.

* The price of the Mineralogical Magazine when separated from Mineralogical Abstracts will be reduced to £2 10s. 0d. per calendar year issue of 4 numbers.

ANNUAL MEETING

The fourth annual meeting of the Mineralogical Association of Canada will be held in Toronto, Ontario, Canada, March 1–4, 1959. It is to be held in conjunction with the annual meetings of the Prospectors and Developers Association and the Geological Association of Canada. For further information write to:

S. Kaiman, Secretary,
Mineralogical Association of Canada,
c/o Mines Branch,
552 Booth Street,
Ottawa, Canada.