UTAH GEOLOGICAL AND MINERALOGICAL SURVEY

QUARTERLY REVIEW

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Gilbert Trades Dry Dock for Lake

by Ann Allen

The Utah Survey's cruiser, the G. K. Gilbert, is back on Great Salt Lake after a two-year absence.

Extensive repairs forced the boat into dry dock and inactivity from 1966 until June 18 of this year, when it was again launched on the lake.

Two DUKWs (pronounced "ducks"), military amphibious trucks, push-pulled the boat-laden trailer to the water, and the six-man crew worried the Gilbert afloat.

The fact that the launch was negotiated without serious incident or mishap is important. Harbor facilities are limited and the lake bottom muddy; both factors compound the difficulties of launching a vessel the size of the 13-ton, 42-foot Gilbert.

The Survey hopes to replace the "homemade" trailer used to transport the boat with new equipment, a flat-bed trailer and crane, which will make the launching procedure easier and safer.

The Gilbert is outfitted with:

—a 42-foot steel hull; a 10-gauge steel bottom, 11-gauge steel sides;
—two 290-horsepower marine engines;
—four 75-gallon gas tanks;
—two marine jet propulsion units;
—deck lighting;
—a steel-framed cabin complete with toilet, sink, built-in gas stove, a 150-gallon culinary water storage tank, lighting, built-in table and benches, six bunks, storage space, a row of eye-level windows and an 18-inch indoor sampling well;
—a windlass and a heavy-duty anchor.

For two months this summer, the Gilbert and its "sister ship," the Clyman, were used for a bottom-meter gravity survey of the lake. The survey was directed by the Defense Department's Army Map Service, working in cooperation with the UGMS and Dr. Kenneth L. Cook of the U. of U.'s Department of Geological and Geophysical Sciences. Special equipment was installed on the Gilbert before the survey was begun.

Gravitational pull was checked along grid lines spaced about five miles apart.

Additional surveys insuring greater coverage are contemplated, when funds, time, navigational and climatic conditions permit. Results of this summer's project will be published later, along with pictures of the gravity meter installation and other particulars of the survey.

The AMS provided the gravity meter, a meter operator, all staff needed to accurately locate gravity stations, and personnel and support vehicles for the survey's triangulation stations. The UGMS furnished pilots, crew and an assistant gravity-meter operator for the operation.

Accurate gravity ties taken between

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Above: Out of dry dock for the first time in two years, the Survey's Gilbert is ready for launch.

Below: The cruiser and its tense crew gamely take to the water.

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the AMS' two land base stations at Silver Sands Beach and Little Valley and two other base stations at the Salt Lake City Airport and Brigham City were arranged by Dr. Cook. Ties were made with an AMS LaCoste and Romberg gravity meter, identical to that used in commercial gravity surveys.

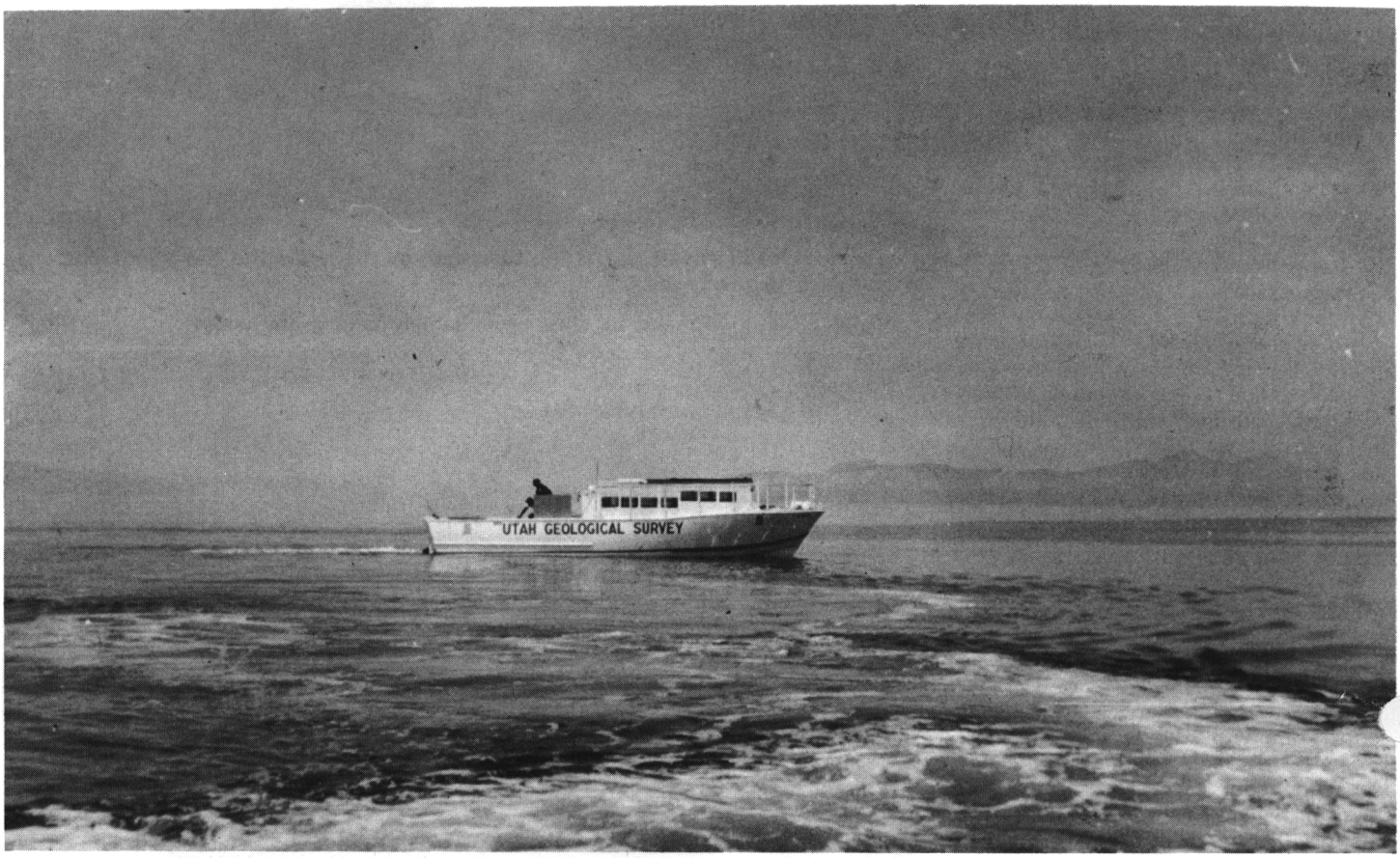
The meter, automatically leveled by Selsyn motors, was lowered to the lake's bottom where it rested on a tripod. While gravity-meter readings were taken, the tellurometer operator located the boat, which was anchored temporarily. To locate the craft, the operator used readings taken by two "slave" instruments positioned on surveyed land triangulation points, such as Fremont and Carrington Islands. Using these techniques, accuracy ranged between one and two meters.

While the gravity survey's principal purpose involved military applications, geological results are expected to apply to overall structural patterns. Gravity data may be used to locate Tertiary basins and miniature Basin and Range faults that may exist in the region.

Along with gravity value readings, crews also sampled bottom sediments and recorded bottom depths and temperatures. These measurements fixed the lake's maximum depth at only 28 feet.

Above: Launched without (serious) incident, the trim Gilbert is ready to go to work. Both pictures of the actual launch were taken by J. M. Heslop of the *Deseret News*. The other two pictures were snapped by former UGMS staffer, Kenneth C. Thomson.

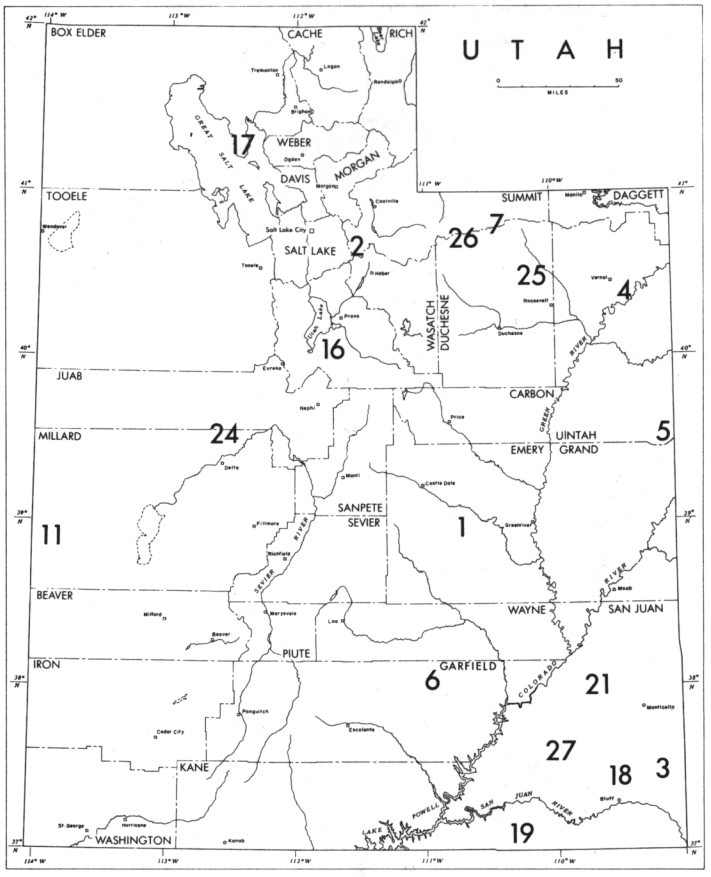
Below: The craft heads for the open lake.



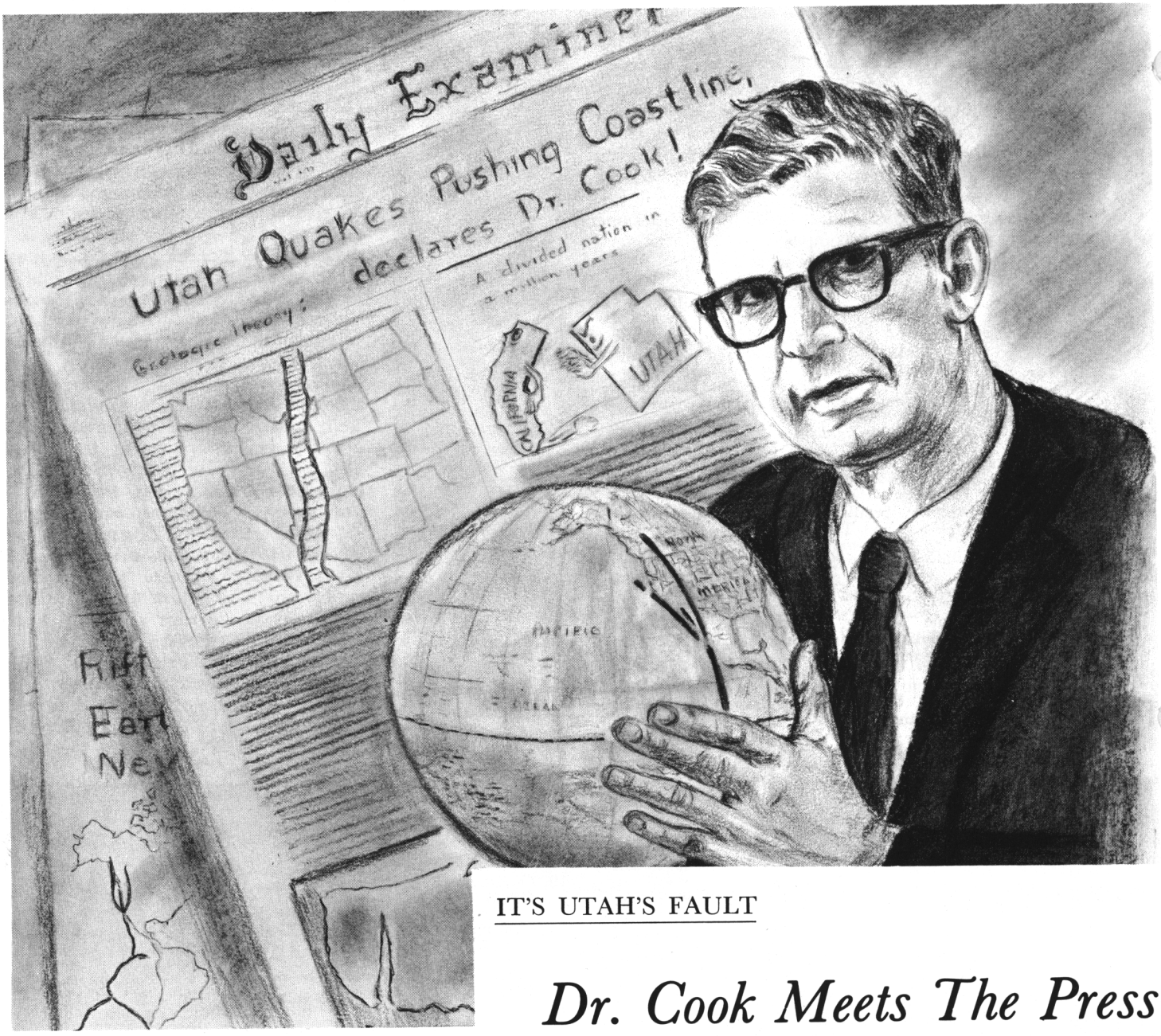
Summer Field Work In Utah

The following alphabetical list of USGS geologists doing summer field work in Utah in 1968 was submitted too late to be included in either the May *Quarterly* or its *Supplement*. On the other hand, the name of Prof. Edward Cotter of Bucknell University was omitted inadvertently. While the reference number in the left column corresponds with a location number for a particular project on the accompanying map, some projects obviously could not be pinpointed in this way.

		Project
1	Bowles, C. G. USGS	Uranium-bearing pipes. Field studies are underway at Grand Canyon and Cameron districts, Arizona, San Rafael Swell, Utah, Grants-Laguna area, New Mexico, and the southern Black Hills, South Dakota, and Wyoming.
2	Bromfield, C. S. USGS	Park City mining district.
3	Cadigan, R. A. USGS	Regional variation in heavy metals of Colorado Plateau stratified rocks. Collection of large bulk samples, specific stratigraphic units of Palezoic, Mesozoic and Tertiary age.
4	Cashion, W. B. USGS	Utah oil shale. Geologic mapping of the Jensen 4 SE and part of the Jensen NE quadrangles, Utah-Colorado.
5	Cashion, W. B. USGS	Grand Junction quadrangle, Utah - Colorado. Compilation of the Grand Junction 2° quadrangle map.
6	Cotter, Edward Bucknell Univ.	Detailed sedimentological environmental analysis of the Ferron Sandstone in the Castle Valley and Henry Mountains.
7	Crittenden, M. D., Jr. USGS	Mineral resources of the High Uintas Primitive area. The Survey has been directed to check the possibilities of oil-bearing rocks continuing south under the proposed wilderness.
8	Doell, R. R. USGS	Rock magnetics laboratory. Field and laboratory work on the early-middle Tertiary tuffs of eastern Nevada and western Utah continues.
9	Dutro, J. T., Jr. USGS	Mississippian brachiopods and stratigraphy.
10	Heyl, A. V., Jr. USGS	Utah heavy metal studies. Synthesis from all available sources of geologic and economic data on deposits of heavy metals in Utah, together with reconnaissance field work.
11	Houser, F. N. USGS	Southwest Basin and Range Tertiary stratigraphy. Reconnaissance and detailed study of the Tertiary stratigraphy and sampling and description of volcanic rocks of the region.
12	Imlay, R. W. USGS	Jurassic of North America.
13	Mabey, D. R. USGS	Upper Mantle gravity studies. Reduction of data collected in the Pueblo 2° sheet; compilation is underway and will complete the western part of the Transcontinental Geophysical Study strip.
14	Mackenzie, Gordon, Jr. USGS	Upper Paleozoic cephalopods.
15	Mackenzie, Gordon, Jr. USGS	Upper Paleozoic faunas and stratigraphy.
16	Morisawa, Marie USGS	Wasatch Fault study. Delineate active and recently active strands of the Wasatch and related Basin and Range faults in northern and northwestern Utah. Field work has been completed from approximately Nephi to Provo.
17	Morrison, R. B. USGS	Promontory Point.



18	Olson, A. B. USGS	Photogeologic mapping, Colorado Plateau.
19	O'Sullivan, R. B. USGS	Navajo Reservation.
20	Pipiringos, G. N. USGS	Stratigraphic investigations of Upper Triassic and Upper and Middle Jurassic rocks.
21	Raup, O. B. USGS	Paradox Basin salt studies. Petrographic, geochemical, and X-ray studies of well core and mine samples and surface samples from Cane Creek and Pine Ridge areas.
22	Repenning, C. A. USGS	Cenozoic mammalian faunas.
23	Sandberg, C. A. USGS	Williston Basin oil and gas investigations. Measuring, sampling, and mapping of Devonian and Lower Mississippian sedimentary rocks in southern and western Wyoming, northern Utah, east-central Idaho, and central Montana.
24	Varnes, D. J. USGS	Surficial geology of Oak City area.
25	Vine, J. D. USGS	Geochemical survey of Eocene rocks in the Rocky Mountain region. Reconnaissance stratigraphic and petrologic studies of Eocene rocks to determine their geochemical characteristics are underway in Wyoming, Colorado, Utah, and New Mexico.
26	Wallace, C. A. USGS	Stratigraphy of Uinta Mountain Group.
27	Wyant, D. G. USGS	Geologic map, Colorado Plateau. Field work in the Escalante, Utah, and Gallup, New Mexico, quadrangles continues; compilation of the Cortez, Utah-Colorado, Albuquerque, New Mexico, Salina, Utah, and Marble Canyon, Arizona, quadrangles is nearing completion.



IT'S UTAH'S FAULT

Dr. Cook Meets The Press

Dr. Kenneth L. Cook* is at once a gentle, unassuming giant and a serious, dedicated geophysicist.

From time to time, like many of his colleagues, he has reported his significant findings to various scientific journals, but it has never occurred to him (until now) that John Q. Public would be at all interested in what he does.

So he has been more than a little startled by the media's interest in a theory advanced by him at a scientific meeting last October. During a symposium on the World Rift System, part of the general assembly of the International Union of Geodesy and Geophysics held last fall in Zurich, Switzerland, Dr. Cook expressed his view that internal forces of the earth are "tearing the globe's crust apart," and eventually — if the pattern continues — will split the United States into two continents separated by the Gulf of California.

This analysis so fired the imagination of newsmen that the onetime New Englander's concept overnight became one of the most widely publicized science stories of the year.

Dozens of papers throughout the country followed the New York Times' lead, as did the May issue of the magazine, *Science Digest*. Dr. Cook's mail began to include "fan" letters, all of which were, and are, answered courteously. Then, "Weekend Dimension," a national CBS radio program, broadcast a 10-minute taped interview with him.

The World Rift System is mostly underwater; so its existence remained unestablished until a few years ago. Its rifts follow the center lines of the mid-ocean ridges, and — many geophysicists and geologists believe — overlie belts where hot rock from deep within the earth inches upward. A ridge with a rift down its center is formed when the hot rock splits the crust. Earthquakes often are traced to

(Continued on Page 5)

*Professor of geophysics and director of the University of Utah Seismograph Stations.

(Continued from Page 4)

sites beneath the ridges, and volcanoes sometimes poke their heads above marine waters.

Some workers postulate that the rifts extend inland in some places — and this is the basis of Dr. Cook's theory.

He theorizes that the chief mid-ocean ridge of the Pacific, the East Pacific Rise, snakes inland — toward the Gulf of California, across Arizona, central Utah, under Salt Lake City, southern Idaho and Yellowstone National Park.

In his mind's eye, Dr. Cook sees this western rift valley millions of years hence "possibly filled with water and similar to the Red Sea that separates Africa and Arabia."

The U. geophysicist believes that Baja California (which fits Mexico's coastline like a jigsaw puzzle piece) once was part of the Mexican mainland — evidence, he feels, that the continent already has begun to pull apart.

Last fall, Dr. Cook suggested that earthquake activity beneath Utah has been pushing California out into the Pacific a few centimeters each year. This, he suggested, could account for temblors generated along the West Coast — especially, off the coast of northern California where the Gorda and Mendocino escarpments have formed cliffs as much as a mile above the ocean floor.

In the months that have passed since the Zurich meeting, new data have caused Dr. Cook to modify this opinion somewhat.

He now feels that the continent could split in one of two ways — the Gulf of California could meet the Great Salt Lake, or it could open up further along the San Andreas Fault.

"To put it another way," the 6-foot, 6-inch professor explained, "movement along the San Andreas Fault could open up the Gulf of California along the West Coast rift, or activity in the eastern Basin and Range region could split the continent through the rift valleys of Utah. Competition is intense."

According to Dr. Cook, Basin and Range rifting began in lower Oligocene time and "the evidence indicates that rifting in Utah may be abating."

"In short," he said, "here we find the dying embers of vulcanism . . . and yet, we also have some black basalts that point to Recent activity.

"If the activity dies out, we wouldn't get a Red Sea situation, but if it continues, the continent could break along the rift system through Utah."

Time will tell.—G.V.I.

Diggin's . . .

Utah Survey teams that have engaged in field work in the Gold Hill and Milford areas for the last five summers report:

—Phelps Dodge is mapping on the Goshute Reservation at Ibapah, Juab County, in the Deep Creek region;

—Cecil Woodman is working both his tungsten mill and the Yellow Hammer Mine;

—Lawrence Hutchings, Reno, is exploring by sinking on the Ramona Claims, a gold-silver prospect;

—Nick Zakis has made three 15-ton shipments from his 8-ton-a-day silver-lead mill on the Spotted Fawn Mine on Dutch Mountain at Gold Hill;

—Engaging in explorative work in this same area is Floyd Myers, resident of American Fork;

—Bear Creek Mining Company is busy exploring the Imperial Mine, while Rosario Mining Company is continuing its investigation of the Cactus Mine, both of which are located in the Frisco Range;

—American Mining West Toledo is operating at the O.K. Mine in the Beaver Lake area;

—Peter Martin and Wesley Allen have shipped 118 tons of copper ore from workings on the Kate Sackett property leased from the Kennebec Mining Company. Their hand-sorted product ran 14 percent copper and 11 ounces silver;

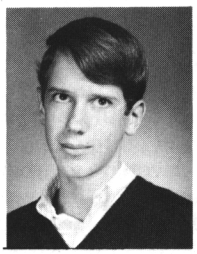
—Star Mining Company, Inc., of Provo is exploring the Last Chance and Silver Bay areas in the Star Range, and

—Wallace Forthingham has shipped 10 tons of ore from the Leonora, also in the Star; ore from his mine has been running 14 ounces silver, 12 percent lead, and 14 percent zinc.

Kenneth C. Thomson, geologist and chief illustrator for the Survey, recently completed his Ph.D. examinations at the University of Utah. He has been appointed assistant professor of geology at Southwest Missouri State College, Springfield, Mo.

Mr. Thomson began working for the UGMS in 1959 as curator of library samples for geologic research. From 1964 to 1966, he worked with the Utah Survey's Deep Creek Mountains project, which also served as his thesis area. In 1967, he was assigned to the State Line project.

Recently, when doctors needed 16 pints of fresh A-positive blood for prospective open-heart patient, Carl Forsberg, Jr., 427 University St., Samuel M. Polinsky of Kennecott Copper Corporation's Research Center responded.



Mr. Forsberg

Not only did he give his own blood, but he rounded up six other donors as well: Robert Schaffer, Donald F. Lowe, Elton L. Varner, John A. Apps, Patricia L. Stewart, and Donna L. Taylor, all of the KCC Research Center.

The 16-year-old Carl was operated on a day later, Aug. 13, at the University Hospital.

The *Quarterly* staff feels that special people like Mr. Polinsky and his friends are newsworthy.

Mrs. Neva Nielsen terminated four years as UGMS executive secretary June 30 to resume her full-time duties as wife and mother.

The Survey extends best wishes to both Neva and her competent successor, Mrs. Bertha Barton.

Results from Utah Survey reconnaissance field work in Jet Basin, Utah, recently furnished data for an article* published in *Science* magazine.

In 1964, Roger W. Kolvoord, co-author of the article, directed the field work for the Survey in the steep-walled valley located near the Wayne-Garfield County line.

According to the article, chemical analysis and reflectance data indicate the jet — conventionally defined as a vitrinitic, high-volatile B bituminous coal — has an abnormally high-volatile content (62 percent — more than in cannel coal) and low reflectance (0.25 percent).

Apparently, the diagenesis process altered the nature of this Utah coal in a direction quite different from that taken by normal vitrinite, while leaving the vitrinitic microstructure mostly intact.

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*"Utah Jet: A Vitrinite with Aberrent Properties" by Alfred Traverse, Department of Geology and Geophysics, Pennsylvania State University, and Roger W. Kolvoord, Department of Geology, University of Texas, Jan. 19, 1968.

IN MEMORIAM

B. F. Stringham

The Utah Geological and Mineralogical Survey keenly feels the loss of Bronson F. Stringham, chairman of the Department of Mineralogy, University of Utah, who died Memorial Day in his 60th year.

Dr. Stringham did field mapping and laboratory research for the Survey and was the author of three of its Special Studies, all devoted to rock alteration, an area in which he was a distinguished authority. He had completed field work on the Rocky Range near Milford, and was writing his report at the time of his death.

His friendly, stimulating advice and admonitions to staff members, associates, students and the public were, and are, deeply appreciated. He will be grievously missed.

Professor Stringham was graduated from the University of Utah in 1933. From 1933 to 1936, he attended Columbia University and received his Ph.D. degree from that school in 1941.

He was appointed to the faculty of the University of Utah in 1937, and when a separate Department of Mineralogy was created in 1946, was appointed chairman.

Although an exacting teacher, he was warm, outgoing, and beloved by his students, many of whom became his lifelong friends.

In spite of the attention he devoted to teaching and academic duties, Professor Stringham was active and productive in research as is evidenced by the attached list of scholarly publications. His most eminent work dealt with rock alteration and those types of igneous rocks with which porphyry copper deposits occur. He was a valued contributor to the 1:250,000 geologic map of Utah. Moreover, he aided industrial development through a private consultory service.

Dr. Stringham was associated with T. S. Lovering in the comprehensive study of rock alteration at East Tintic, Utah, and conducted his own investigation of granitization and hydrothermal alteration of the Bingham copper pit. He regarded his interpretation of the relationship of ore to porphyry his most significant scientific work.

He was honored by election to Fellowship in the Geological Society of America and the Mineralogical Society of America. In addition, he was a past president of the Geological Society of Utah and a member of the Society of Economic Geologists, the American Institute of Mining, Metallurgical and Petroleum Engineers, the Geochemical Society, the Clay Minerals Society, Phi Kappa Phi, Sigma Gamma Epsilon (grand historian), and Sigma Xi.

Surviving are his widow, Lucille, son, Michael and daughters, Cynthia Ann and Susan Marie.

1942 Mineralization in the West Tintic mining district, Utah: Geological Society of America Bull., v. 53.

1944 Bibliography of the geology and mineral resources of Utah: University of Utah Bull., v. 34, no. 15, p. 1-99.

1946 Tinticite, a new mineral from Utah: American Mineralogist, v. 31, p. 395-400.

1949 With T. S. Lovering, et al, Rock alteration as a guide to ore, East Tintic district, Utah: Monograph 1 Economic Geology, p. 1-64.

1950 Mordenite in Utah and the discredited mineral, arduinite: American Mineralogist, v. 35, p. 601-604.

1952 Fields of formation of some common hydrothermal alteration minerals: Economic Geology, v. 47, p. 661-664.

1953 Granitization and hydrothermal alteration at Bingham, Utah: Geological Society of America Bull., v. 64, p. 945-991.

1953 Crystallographic control of replacement of quartz by feldspar: American Mineralogist, v. 38, p. 834-839.

1958 Relationship of ore to porphyry in the Basin and Range Province: U.S.A. Economic Geology, v. 53, p. 806-822 (most important paper).

1960 Differences between barren and productive intrusive porphyry: Economic Geology, v. 55, p. 1622-1630.

1960 With T. S. Lovering, et al, Geologic and alteration maps of the East Tintic district, Utah: USGS Field Studies Map MF 230.

1960 With D. H. Adair, Intrusive igneous rocks of east central Nevada: IAPG Guidebook of East Central Nevada, p. 229-232.

1962 Validity of tinticite: American Mineralogist, p. 1187-1189.

1962 With R. Anderson and J. A. Whelan, Secondary phosphates from Bingham, Utah: American Mineralogist, v. 47, p. 1303-1309.

1963 With Stokes, et al, Geologic map of Utah, northwest quarter, 1:250,000.

1964 With Hintze, et al, Geologic map of Utah, southwest quarter, 1:250,000.

1967 Hydrothermal alteration near the Horn Silver mine, Beaver County, Utah: Utah Geol. and Mineralog. Survey, Special Studies 15.

1967 Igneous rock types and host rocks associated with porphyry copper deposits: Arizona Bureau of Mines Memorial Volume to E. H. Wilson, April, 1966.

Survey Teams With Other Agencies To Solve Problems Of Mutual Interest

One of the aims of the Utah Geological and Mineralogical Survey is to cooperate with other government agencies in solving problems of mutual interest.

All levels of government — federal, state, county, or municipal — may request Survey assistance on immediate or long-range needs.

Oftentimes, however, it is the Survey's Engineering Geology Division that can be of most help on local questions.

Morgan County commissioners requested the services of the division when a residential subdivision was considered and geological data were lacking. Health officers invariably find subsurface data inadequate for proposed subdivisions.

In cases where no previous survey has been conducted, the Engineering Geology Division — frequently in cooperation with the Soil Conservation Service or the United States Geological Survey — can be of help.

At the request of the Rich County Soils Conservation District, the division currently is making an environmental geological survey of the portion of the county around the periphery of Bear Lake.

Because that particular area is becoming increasingly popular for recreation, a heavy future build-up of resort accommodations and facilities is inevitable. For this reason, knowledge about the environmental conditions existent in the area is of vital importance to the district.

In this project and in all future soil surveys, the division will cooperate with the SCS of the U.S. Department of Agriculture.

The federal agency will probe the uppermost skin of the earth for supplementary information pertinent to its studies of environmental geology.

The UGMS division, on the other hand, will interpret soils and rocks at depth and will evaluate the engineering geological implications of the data.

As is the case elsewhere in the United States, Utah's cities and recreational areas are beginning to mushroom. The need for competent engineering geological studies will be ever more significant to this growth.

S. Utah Oddities Lure Rock Hounds

by Hellmut H. Doelling*

While working in southern Utah on various projects for the Utah Geological and Mineralogical Survey, I've been impressed by the specimen-sized geologic and mineralogic oddities I've come across.

The area is noted for its petrified wood, jasper, agate, and Mexican onyx — all of which can be polished — but I'm talking about less well-known specimens.

For the rock hound more interested in collecting the unusual than in making a profit, southern Utah is an El Dorado.

Countless ironstone and limonite concretions of various shapes and sizes stud the area. These usually are found associated with sandstones, such as the Navajo Sandstone at Spencer Flat in Garfield County, about 10 miles east of Escalante.

Most are globular, but some nodules have been fused into botryoidal and dumbbell shapes. Others are shaped like miniature "flying saucers." At times, peculiar surface markings remind one of cells undergoing mitosis.

An interesting and unusual display can be created by collecting a series of such nodules ranging in size from a few millimeters to 10 centimeters in diameter.

Each nodule is a thick bubble (the limonitic portion) with sand in its center. Such sand either is cemented siliceously or uncemented and entirely free of iron.

Concentric bubbles are found in some. In the geologic past, a scum of iron gel apparently formed at the top of the water table within the then-unconsolidated sand of the Navajo Sandstone. Later, the sand was compacted by some local disturbance, such as an earthquake.

Air or water forced between the sand grains frothed the iron gel as it passed through it, creating much the same effect as occurs when one blows through a straw in a glass of soapy water. Later reactions hardened the bubbles "freezing" them in place, and the iron concretions were formed.

Iron concretions of more unusual (often bizarre) shapes pepper the Straight Cliffs Formation of Cretaceous age. Nodules occasionally make fine ashtrays, while others look like fossil wasp nests.

These Straight Cliffs concretions may have had a slightly different origin than those of the Navajo; some obviously are the product of pyrite oxidation. In fact, nodules of fine-grained pyrite are abundant in some of the sandstone lenses of that southern Utah formation. These range in size from several millimeters to as much as 30 centimeters along the axis of the irregularly shaped bodies.

Spontaneous burning has claimed many of the coal beds in the Kaiparowits Plateau. Burning reduces the volume of the original formation; so overlying rock collapses and brecciates. Some of the rock overlying the Kaiparowits beds was melted by the intense heat. Then, after the coal was burned out, the liquid rock cemented broken, unmelted pieces as the area slowly cooled.

Just as brick of different colors can be produced by baking several kinds of clays, so burning here has produced varicolored rock pieces. Often colors — yellows, greens, purples, and reds — have fused, creating colorful boulders that are ideal as decorative garden stones.

They are also conversation pieces for geologists interested in classifying rock. Individual cobbles and boulders, which are partly igneous and partly metamorphic, also exhibit definite sedimentary characteristics. (Needless to say, these "clinkers" could hopelessly confuse a student taking a petrology quiz.)

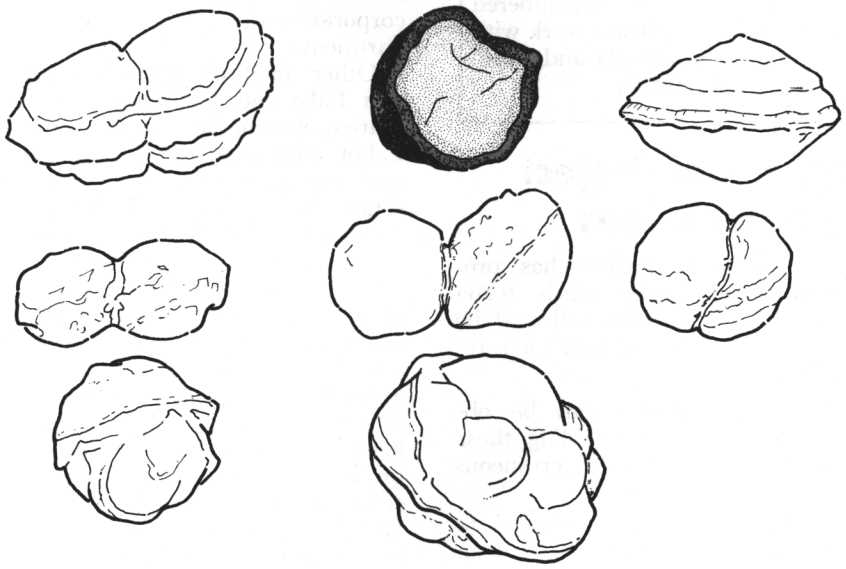
Anyone can pick up septarian concretions in the Chinle Formation below the Orange Cliffs, vugs lined with dogtooth spar in the Organ Rock Tongue of the Cutler Formation near Candlestick Spire, and siliceous nodules from the Kaibab Limestone near the Dirty Devil River. Incidentally, each siliceous nodule holds a miniature oil field — a few drops of oil.

A myriad of other specimens await the resourceful rock hound in southern Utah, and I hope this article helps in some way to encourage Utahns to collect in their own state first.

As a geologist, I feel such rocks should be collected freely, but for fun — not profit.

Even though the oddities I have talked of here are present in profusion, it might be well to remember that men can move mountains. If this is a collector's purpose, he should observe the mineral leasing laws.

Every rock hound should remember the Golden Rule of his hobby — leave something for the next fellow.



Sketches of some of the more unusual iron concentrations from Spencer Flat, Garfield County, Utah. The stippled specimen shows a broken nodule, exhibiting the well-cemented limonitic shell around the loosely cemented friable sandstone core. (Sketches by Brent R. Jones, chief draftsman, Utah Geological and Mineralogical Survey.)

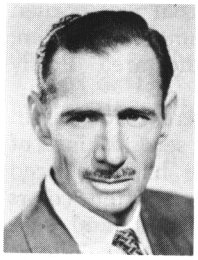
*Economic geologist, Utah Geological Survey.

Quarterly staff: Gladys V. Isakson, editor; Paula Young, assistant; Ann Allen, Terry Talcott and Sharon Monson; Connie Evans, artist.

Eugene Callaghan Takes New Post

Dr. Eugene Callaghan, formerly assistant director of the Utah Survey, has assumed duties as chairman of the U. of U.'s new Department of Geological and Geophysical Sciences in the College of Mines and Mineral Industries.

The new department combines the functions and staff positions of the former departments of Geophysics, Mineralogy and Geology.



Dr. Callaghan

Dr. Callaghan is a man of wide experience in the earth sciences and mineral industries.

His professional career includes positions as educator, administrator, and scientist. In the educational field, he served as professor of economic geology at Indiana University and was a member of the faculty of New Mexico Institute of Mining and Technology. Through employment and in-service training, he has become familiar with the educational needs of students planning careers in earth sciences and mineral industries.

In the field of administration, he was commodity geologist for heavy chemical mineral resources in the U. S. Geological Survey during World War II and briefly held the position of acting chief of the Nonmetals Section. He was director of the New Mexico Bureau of Mines and Mineral Resources for eight years, during which time its funds more than doubled and many projects were initiated.

He has been active in engineering geology projects in Massachusetts, Puerto Rico, Turkey, and Iran. He has worked with Haile Mines, Inc.; De Leuw, Cather & Company; Hanna Mining Company; St. John d'el Rey Mining Company, Limited; and Cyprus Mines Corporation.

Most recently, his work with Cyprus Mines was devoted to a study of mineral potential of the Mediterranean region and Middle East, and to special investigations and property examinations in Greece, Saudi Arabia, Israel, Spain, Portugal, and Morocco.

Along with acting as departmental chief, Dr. Callaghan will serve as professor of geology and associate director of the Survey.

UTAHNS MOURN HOOVER MACKIN

Friends and colleagues of Dr. J. Hoover Mackin, William Stamps Farish professor of geology, University of Texas, have been saddened by news of his recent death.

The noted geologist suffered a fatal heart attack following heart surgery in Texas Aug. 12.

Dr. Mackin will be remembered in Utah for his significant work with Cedar City iron deposits and Basin and Range ignimbrites.

Magnesium Project Programs Brines

The Magnesium Project has programmed on computer cards 6,284 analyses of brine samples collected by the Utah Survey's Great Salt Lake research team.

Cation-anion balances can be obtained from the cards, enabling those who use them to identify erroneous assays.

These cards have been donated to the UGMS and results placed on open file.

The Survey appreciates the Magnesium Project's contribution and its recognition of the need for and importance of the lake study.

IN OPEN FILE

The U.S. Geological Survey has placed in open file a tabular summary of estimated remaining coal resources in the United States as of Jan. 1, 1967, and two preliminary geologic maps.

Released to open file:

Geologic map of the Sugar House quadrangle, Salt Lake County, Utah, by Richard Van Horn. Sheet 1: surficial geologic map, scale 1:24,000; sheet 2: geologic diagrammatic section; sheet 3: explanation sheet.

Geologic map of the Griffin Point quadrangle, Garfield County, Utah, by William E. Bowers. Sheet 1: geologic map, scale 1:24,000; sheet 2: coal sections.

The summary and both maps can be inspected at the offices of the Utah Survey, 103 Geological Survey Building, University of Utah. All can be seen and reproduced at 8102 Federal Office Building, Salt Lake City.

Anaconda Opens New S. L. Offices

The Anaconda Building, 1849 W. North Temple, officially opened its doors to the public Aug. 1.

The newly completed structure serves the giant mining company as headquarters in Salt Lake City for exploration activities both in the Salt Lake district and the western United States. It also is headquarters of Anaconda's corporate-wide Mining Research Department.

Other facilities include offices for Salt Lake and Utah management activities, Anaconda's western operations Labor Relations and Legal Divisions, and ore purchasing for the Tooele, Utah, lead smelter of International Smelting and Refining Company.

An Anaconda brochure points out to visitors, "that here is specific evidence of the continuing faith of the Anaconda Company in the mineral potential of Utah and the Western States generally. The overall purpose of these facilities, and the personnel housed herein, is to search out, develop, and produce more metals for the American economy. It is logical to have these facilities located in an area central to a large segment of the natural resource reserve of the United States."

In reality, the Anaconda Building is three buildings separated according to function — Building "A", reception, general offices, mining research; Building "B", exploration offices; Building "C"—"E", analytical, mineralogical and geophysical laboratories.

The structure provides 32,000 square feet of working area located on five acres of Anaconda property. A staff of about 50 men and women eventually will be required. The completed building with property and equipment represents an expenditure of approximately $1 million.

QUARTERLY REVIEW

State of Utah ..... *Calvin L. Rampton, Governor*
University of Utah ..... *James C. Fletcher, President*
College of Mines & Mineral Industries ..... *George R. Hill, Dean*
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