A List of References on Lead Isotope Geochemistry

1970-1974

(*with an* Addendum to previous lead isotope listings)

by

Bruce R. Doe, 1931-

Open-File Report 77-749

This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards and nomenclature.

This bibliography compiled primarily from Bibliography and Index of Geology, was constructed to be as complete as possible for final reports of studies that produced new data relative to the geochemical application of:

Common lead
U-Th-Pb isotopic dating
Pb-α

Pb^{210}, Pb^{212}, Pb^{214}

No effort was made to include all:

Annual reports, Yearbooks, etc.
Review papers

although many are included. Abstracts and theses were omitted.

This compilation is the last of a series; but the previous listings are:

Doe, B. R., 1968, A list of references on lead isotope geochemistry through 1966: U.S. Geol. Survey open-file report, 97 p.

and

Doe, B. R., 1971, A list of references on lead isotope geochemistry 1967-1969 (with an addendum to the list through 1966): U.S. Geol. Survey open-file report, 28 p.

In the future, individuals can construct their own listings by canvassing the Bibliography and Index of Geology (Geol. Soc. America). A rather complete listing can be made by looking at the sections on absolute age, environmental geology (lead), isotopes (lead; tracer experiments), and lead (isotopes). Bibliographic searches may also be made at a price through GeoRef, American Geological Institute; 5205 Leesburg Pike, Falls Church, Va. 22041.

Contents

Lead Isotope References for 1974

Afanas'yev, G. D. (ed.), 1974, New data on absolute geochronology: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, 404p.

Afanas'yev, G. D., Ovchinnikov, L. N., and Brandt, S. B., 1974, The effects of various geologic processes on the distortion of absolute age dates: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No 17, p. 3-11

Afanas'yev, G. D., Zykov, S. I., and Stupnikova, I. O., 1974, Age of accessory uranium-bearing minerals of northern Caucasus: Akad. Nauk SSSR, Dokl., V. 215, No. 6, p. 1462-1465.

Allegre, C. J., Albarede, F., Grunenfelder, M., and Koeppel, V., 1974, $^{238}U/^{206}Pb$-$^{235}U/^{206}Pb$-$^{232}Th/^{208}Pb$ zircon geochronology in Alpine and Non-Alpine environment: Contr. Mineral. Petrol., V. 43, p. 163-194.

Allen, R. O., Jr., Jovanovic, S., and Reed, G. W., Jr., 1974, A study of ^{204}Pb partition in lunar samples using terrestrial and meteoritic analogues: Proc. Fifth Lunar Sci. Conf., Geochim. Cosmochim. Acta Suppl. 5, V. 2, p. 1617-1624.

Anismova, Z. M., Kireuskiy, A. S., and Lobanov, M. P., 1974, Radiologic data on effusive and granitoid rocks of the northern Baikol volcanic belt: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17,

Arden, J. W., and Gale, N. H., 1974, New electrochemical technique for the separation of lead at trace levels from natural silicates: Anal. Chem., V. 46, No. 1, p. 2-9.

Arnaudov, V., Pavlova, M., Amov, B., et al., 1974, Age and genesis of pegmatites from southern Bulgaria from data on the isotopic composition of lead in feldspars, in Minerogenezis (E. Aleksiev, ed.): Izd. B'lgarskota Akad. Nauk, Sofia, Bulgaria, p. 315-332.

Baltakmens, T., 1974, Profiles of lead-210 and radium-226 in four New Zealand soils: N. Z. Jour. Sci., V. 17, No. 4, p. 435-439.

Boyadjiev, Sr. 1974, On the results of the radiometric age determinations of the pre-Mesozoic basement in parts of the Balkan Peninsula, in Minergenezis (E. Aleksiev, ed.),: Izd. B'lgarskota Akad. Nauk, Sofia, Bulgaria, p. 349-363.

Bibikova, Ye. V., Gracheva, T. V., and Krasnobayev, A. A., 1974, Belomoriou phase of metamorphism in the Il'menskiye Gory Complex: Acad. Sci. USSR, Dokl., Earth Sci. Sect., V. 208, No. 1-6, p. 93-95.

Bibikova, E. V., Tugarinov, A. I., Gracheva, T. V., and Konstantinova, M. V., 1974, The age of granulites of the Kola Peninsula: Geochem. Internat., V. 10, No. 3, p. 508-519.

Boyko, A., Kamenitski, L., Semenenko, N. P., et al. 1974, Some of the results of absolute age dating of crystalline massif rocks in the Western Carpathians and present-day state of views: Geol. Zb. (Slov. Akad. Vied), V. 25, No. 1, p. 25-38.

Brookins, D. G., 1974, Radiometric age determinations from the Sandia Granite, New Mexico; summary and interpretation: Isochron/West No. 10, p. 11-14.

Bruland, K. W., Koide, M., and Goldberg, E. D., 1974, The comparative marine geochemistries of lead 210 and radium 226: J. Geophys. Res., V. 79, No. 21, p. 3083-3086.

Cahen, L., 1974, Geological background to the copper-bearing strata of southern Shaba (Zaire): Gisements Stratiformes et Provinces Cupriferes, Liege, 1974: Centenaire Soc. Geol. Belgique, p. 57-77.

Cahen, L., 1974, The Nchanga Red Granite (Copperbelt of Zambia). A reappraisal of the isotopic evidence with some new data: Mus. Roy. Afr. Centr., Tervuren (Belg.), Dept. Geol. Min., Rapp. Ann. 1974, p. 43-58.

Church, S. E., and Tilton, G. R., 1974, Lead isotope systematics of some separated components from 76501: Proc. Fifth Lunar Sci. Conf., Geochim. Cosmochim. Acta Suppl. 5, V. 2, p. 1389-1400. Pergamon.

Coomer, P. G., and Robertson, D. K., 1974, A lead isotope study of Archean mineralized areas in Tanzania: J. Geol. Soc. Lond., V. 130, p. 307-318.

Coomer, P. G., and Vail, J. R., 1974, 1100 m.y. model lead age for a Sudan lead deposit: 18th ann. Rept. res. Inst. African Geol., Univ. Leeds, p. 7-9.

Cooper, J. A., Dasch, E. J., and Kaye, M., 1974, Isotopic and elemental geochemistry of Black Sea sediments, in The Black Sea; Geol., Chem., Biol., Geochem.: AAPG, Mem. 20, p. 554-565.

Das, S. M., 1974, Trace element analysis in geological samples and studies in geochronology by nuclear techniques: J. Geol. Soc. India, V. 15, No. 4, p. 421-428.

de Cserna, Z., Fries, C., Jr., and Rincon-Orta, C., et al., 1974, Upper Precambrian age of the Taxco Schist, Guerrero, in Contribuciones a la geocronologia de Mexico: Asoc. Mex., Geol. Pet., Bol., V. 26, No. 4-6, p. 183-193.

de Cserna, Z., Fries, C., Jr., and Rincon-Orta, C., et al., 1974, New Paleozoic geochronometric dates from southern Mexico, in Contribuciones a la geocronol de Mexico: Asoc. Mex., Geol. Pet., Bol., V. 26, No. 4-6, p. 195-204.

de Cserna, Z., Fries, C., Jr., Rincon-Orta, C., et al., 1974, Tertiary geochronometric dates from the states of Mexico, Morelos, and Guerrero, in Contribuciones a la geocronologia de Mexico: Asoc. Mex., Geol., Pet., Bol., V. 26, No. 4-6, p. 263-273.

de Cserna, Z., Fries, C., Jr., Valdez-Mendoza, V., et al, 1974, Additional geochronometric dates for the Cretaceous magmatism in southern Mexico in Contribuciones a la geocronologia de Mexico, V. 26, No. 4-6, p. 225-235.

Delevaux, M. H., and Doe, B. R., 1974, Preliminary report on uranium, thorium, and lead contents and lead isotopic composition in sedimentary samples from the Red Sea; Initial Reports of the Deep Sea Drilling Project: Wash. (U.S. Gov't. Printing Office), V. XXIII, p. 943-946.

Doe, B. R., 1974, Lead isotope references 1972: Abstr. Geochron. Isotope Geol., No. 14, 11p.

Doe, B. R., and Stacey, J. S., 1974, The application of lead isotopes to the problems of ore genesis and ore prospect evaluation: A Review: Econ. Geol., V. 69, No. 6, p. 757-776.

Dontsova, Ye. I., Zykov, S. I., and Briuenko, V. A., et al., 1974, Characteristics of All-Union isotope standards for lead and strontium: Geokhim., No. 6, p. 956-959.

Dooley, J. R., Jr., Harshman, E. N., and Rosholt, J. N., 1974, Uranium-lead ages of the uranium deposits of the Gas Hills and Shirley Basin, Wyoming: Econ. Geol., V. 69, No. 4, p. 527-531.

Erlenkeuser, H., Suess, E., and Willkomon, H., 1974, Industrialization affects heavy metal and carbon isotope concentraticns in recent Baltic Sea sediments: Geochim. Cosmochim. Acta, V. 38, p. 823-842.

Fedyushin, S. Ye., 1974, New data on the southeastern boundary of the Kirovograd Block: Geol. Zh., V. 34, No. 2, p. 128-130.

Fitch, F. J., Miller, J. A., Warrel, D. M., et al., 1974, Tectonic and radiometric age comparisons, in The Ocean Basins and Margins: Vol. 2, The North Atlantic: Plenum Press, p. 485-538. New York.

Fries, C., Jr., Rincon-Orta, C., Silver, L. T., et al., 1974, New contributions to the geochronology of the Oxacan tectonic belt, in Contribuciones a la geocronologia de Mexico: Asoc. Mex. Geol. Pet., Bol., V. 26, No. 4-6, p. 157-182.

Gentry, R. V., Hulett, L. D., and Cristy, S. S., et al., 1974, "Spectacle" array of ^{210}Po halo radiocenters in biotite: A nuclear geophysical enigma: Nature, V. 252, No. 5484, p. 564-566.

Gonzalez, R. R., and Toselli, A. J., 1974, Radiometric dating of igneous rocks from Sierras Pampeanas, Argentina: Rev. Bras. Geocienc., V. 4, No. 3, p. 137-141.

Gorokhov, I. M., and Gerling, E. K., 1974, Geological aspects and Rb-Sr age determination in the western part of the Baltic Shield: Aktual'nyye voprosy sorremennoy petrografii, radiogeokhronologiya kak osnova istoricheskc podkhoda k izucheniyii magmaticheskikh i metamorficheskikh porod, p. 353-407 (Izd. Nauka, Moscow).

Grauert, B., 1974, U-Pb systematics in heterogeneous zircon populations from the Precambrian basement of the Maryland Piedmont: Earth Planet. Sci. Lett., V. 23, No. 2, P. 238-248.

Grauert, B., Hanny, R., and Soptrafanova, G., 1974, Geochronology of a polymetamorphic and anatectic gneiss region: The Moldanubicum of the area Lam-Deggendorf, Eastern Bavaria, Germany: Cont. Mineral. Petrol., V. 45, No. 1, p. 37-64.

Grauert, B., Seitz, M. G., and Soptrafonova, G., 1974, Uranium and lead gain of detrital zircon studied by isotopic analyses and fission-track mapping: Earth Planet. Sci. Lett., V. 21, No. 4, p. 389-399.

Grauert, B., and Wagner, M. E., 1974, Age of the granulite facies metamorphism of the Wilmington complex, Delaware-Pennsylvanian Piedmont: Carnegie Inst. Wash. Yearbook, No. 73, p. 997-999.

Green, D. C., and Webb, A. W., 1974, Geochronology of the northern part of the Tasman geosyncline; a symposium: Geol. Soc. Aust. Inc., Queensl. Div., Brisbane, Queensland, p. 275-293.

Gunnar, J., and Mattinson, J. M., 1974, Rb-Sr and U-Pb isotopic ages of granites in the central Transantarctic Mountains: Geol. Mag., V. 111, No. 6, p. 25-31.

Hansen, B. T., Oberli, F., and Steiger, R. H., 1974, The geochronology of the Scoresby Sund area, central east Greenland; Progress report 6, Rb-Sr whole rock and U-Pb zircon ages: Geochronological studies in Greenland; Groenlands Geol. Unders., Rapp., No. 66, p. 32-38.

Hriao, Y., and Patterson, C. C., 1974, Lead aerosol pollution in the high Sierra overrides natural mechanisms which exclude lead from a food chain: Science, V. 184, p. 989-992.

Khoreva, B. Ya., Murina, G. A., and Mirkina, S. L., 1974, The southwestern Pamirs, in Fanerozoy (N. I. Polovaya, ed.),: Izd. Nedra, Leningr. Otd., Leningrad, USSR, V. 2, p. 122-125.

Kido, K., 1974, Latitudinal distribution and origin of particulate silica in the surface water of the North Pacific: Marine Chem., V. 2, No. 4, p. 277-285.

Koppel, V., 1974, Isotopic U-Pb ages of monazites and zircons from the crust-mantle transition and adjacent units of the Ivrea and Ceneri Zones (Southern Alps, Italy): Contr. Mineral. Petrol., V. 43, p. 55-70.

Koppel, V. H., and Saager, R., 1974, Lead isotope evidence on the detrital origin of Witwatersraud pyrites and its bearing on the provenance of the Witwatersraud gold: Econ. Geol., V. 69, No. 3, p. 318-331.

Koppel, V., and Sommerauer, J., 1974, Trace elements and the behavior of the U-Pb system in inherited and newly formed zircons: Contr. Mineral. Petrol., V. 43, p. 71-82.

Korol'kov, V. G., Rudnik, V. A., and Sobotovich, E. V., 1974, Late Azoic-early Archeozoic age of ancient rocks of the Okhotsk median mass: Akad. Nauk SSSR, Dokl., V. 219, No. 6, p. 1441-1444.

Kosals, Ya. A., Tychinskiy, A. A., Pip, G. S., et al., 1974, Isotopic composition of lead in galenas and interrelation of Pb-Zn and Mo-W mineralization in Dzhida mining district (W. Transbaykal): Int. Geol. Rev., V. 16, No. 7, p. 810-816.

Krashensinnikov, G. F., 1974, Stratigraphy and geochronology, in Obshchoya geologiya; Obshichiye svedeniya o zemle, p. 73-82.

Kratts, K. O., Krylov, I. N., Loback-Zhuchenko, S. B., 1974, The geochronologic boundaries and geologic evolution of the Baltic Shield: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 125-130.

Krogh, T. E., and Davis, G. L., 1974, Alteration in zircons with discordant U-Pb ages: Carnegie Inst. Wash. Yearbook, No. 73, p. 560-567.

Krogh, T. E., and Davis, G. L., 1974, The age of the Sudbury nickel irruptive: Carnegie Inst. Wash. Yearbook, No. 73, p. 567-569.

Krogh, T. E., and Davis, G. L., 1974, Orogenic structural and metamorphic overprints; Archean intrusive and metamorphic rocks within a region of 1000 m.y. deformation and migmatization: Carnegie Inst. Wash. Yearbook, No. 73, p. 569-573.

Krogh, T. E., Ermanovics, I. F., and Davis, G. L., 1974, Two episodes of metamorphism and deformation in the Archean rocks of the Canadian Shield: Carnegie Inst. Wash. Yearbook, No. 73, p. 573-575.

Krogh, T. E., Mysen, B. O., and Davis, G. L., 1974, A Paleozoic age for the primary minerals of a Norwegian eclogite: Carnegie Inst. Wash. Yearbook, No. 73, p. 575-576.

Krylor, A. Ya., 1974, The absolute age determination of rocks beneath the seas and oceans: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 367-379.

Kuo, S. -L. and Folinsbee, R. E., 1974, Lead isotope geology of mineral deposits spatially related to the Tintina Trench, Yukon Territory: Econ. Geol., V. 69, No. 6, p. 806-813.

Kutenets , V. A., and Madzhi, L. A., 1974, The Garm block, in Fanerozoy (N. I. Polovaya, ed.): Izd. Nedra, Leningr. Otd., Leningrad, USSR, V. 2, p. 104-108.

Kutenets, V. A., Mirkina, L. S., Madzhi, L. A., 1974, The geologic-radiologic distinction of Hercynian intrusive complexes of eastern Karategin and southwestern Alai, central Tadzhikistan: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 317-329.

Lancelot, J. R., and Allegre, C. J., 1974, Origin of carbonatitic magma in the light of the Pb-U-Th isotope system: Earth Planet. Sci. Lett., V. 22, No. 3, p. 233-238.

Laursen, J. M., and Hammond, P. E., 1973, Summary of radiometric ages of Oregon and Washington rocks through June 1972: Isochron/West, No. 9, p. 32.

Lippolt, H. J., and Pidgeon, R.,1974, Isotopic mineral ages of a diorite from Eisenkappel intrusion, Austria: Z. Naturforsch., V. 29a, p. 966-968.

Lougnon, J., Duthou, J. -L., and Lasserre, M., 1974, Lead-zinc deposits in the Poitou region and its Limousin surroundings: French Bur. Rech. Geol. Minieres Bull., (Ser. 2), Sect. 2, No. 5, p. 453-476.

Marvin, R. F., Young, E. J., Mehnert, H. H., et al., 1974, Summary of radiometric age determinations of Mesozoic and Cenozoic igneous rocks and uranium and base metal deposits in Colorado: Isochron/West, No. 11, 41p.

Mel'nichenko, A. K., and Shnip, O.A., 1974, Southwestern Tien Shan, in Fanerozoy (N. I. Polevaya, ed.): Izd. Nedra, Leningr. Otd., Leningrad, USSR, V. 2, p. 108-111.

Naydenov, B. M., 1974, Isotopic composition of modern ore lead: Geokhimiya, No. 4, p. 630-635.

Nozaki, Y., Tsunogai, S., and Nishimura, M., 1974, Lead-210 in the Japan Sea: Oceanogr. Soc. Jap., J., V. 29, No. 6, p. 251-256.

Nunes, P. D., Knight, R. J., and Unruh, D. M., et al., 1974, The primitive nature of the lunar crust and the problem of initial Pb isotopic compositions of lunar rocks, a Rb-Sr and U-Th-Pb study of Apollo 16 samples, in Lunar Sci. V, pt. 2: Houston, Texas, Lunar Sci. Inst., p. 559-561.

Nunes, P. D., and Steiger, R. H., 1974, A U-Pb zircon, Rb-Sr and U-Th-Pb whole-rock study of a polymetamorphic terrane in the Central Alps, Switzerland: Contrib. Mineral. Petrol., V. 47, No. 4, p. 255-280.

Nunes, P. D., Steiger, R. H., and Bridgewater, D., 1974, A zircon age from gabbro-anorthosite inclusions in the gneisses of the Angmagssalik area, southeast Greenland: Geochron. Studies in Greenland, Groenlands Geol. Unders., Rapp., No. 66, p. 21-31.

Nunes, P. D., Tatsumoto, M., and Unruh, D., 1974, U-Th-Pb and Rb-Sr systematics of Apollo 17 Boulder 7 from the north massif of the Taurus-Littrow Valley: Earth Planet. Sci. Lett., V. 23, p. 445-452.

Nunes, P. D., Tatsumoto, M., and Unruh, D., 1974, U-Th-Pb systematics of some Apollo 17 lunar samples and implications for a lunar basin excavation chronology: Proc. Fifth Lunar Sci. Conf., Suppl. 5, Geochim. Cosmochim. Acta, V. 2, p. 1487-1514.

Ordynets, G. A., and Poluarshinov, G. P., 1974, The isotopic composition of lead in ore deposits of the Central Ishim region: Geochem. Internat., V. 10, No. 3, p. 519-529.

Oversby, V. M., 1974, New look at the lead isotope growth curve: Nature, V. 248, p. 132-133.

Oversby, V. M., 1974, Redetermination of lead isotopic composition in Canyon Diablo troilite: Geochim. Cosmochim. Acta, V. 37, p. 2693-2696.

Pasteels, P., Delhal, J., and Deutsch, S., 1974, Geochronology applied to the domain of crystalline schists: Cent. Soc. Geol. Belgique, Geol des Domaines Cristallins, Liege, p. 45-65.

Petit, D., 1974, ^{210}Pb and stable isotopes of lead in lacustrine sediments: Earth Planet. Sci. Lett., V. 23, No. 2, p. 199-205.

Pidgeon, R. T., and Johnson, M. R. W., 1974, A comparison of zircon U-Pb and whole-rock Rb-Sr systems in three phases of the Carn Chuinneag granite, northern Scotland: Earth Planet. Sci. Lett., V. 24, No. 1, p. 105-112.

Patintsev, V. K., and Selivanov, V. A., 1974, The Far East; the Bureya Massif, in Fanerozoy (N. I. Polevaya, ed.): Izd. Nedra, Leningr. Otd., Leningrad, USSR, V. 2, p. 274-279.

Radhakrishna, B. P. (Ed.), 1974, The geochemistry of the Precambrian rocks of India: J. Geol. Soc. India, V. 15, No. 4, p. 339-473.

Ravich, M. G., Sobotovich, E. V., and Kamenev, Ye. N., et al., 1974, Late Azoic age of ancient rocks of Antarctica: Akad. Nauk SSSR, Dokl., V. 216, No. 6, p. 1368-1371.

Robertson, D. K., and Folinsbee, R. E., 1974, Lead isotope ratios and crustal evolution of the Slave Craton at Ghost Lake, Northwest Territories: Can. J. Earth Sci., V. 11, No. 6, p. 819-827.

Romanov, I. S., Romanova, L. A., and Bartnitskiy, Ye. N., 1974, Probable ages for the primary source of the Poltava Series of the northeastern edge of the Dnieper-Donets Basin: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 80-82.

Rossman, G. I. Sychev, I. V., and Tarkhanova, G. A., 1974, Geochemical zonation of elements in the hypergenetic zone of uranium deposits: Geol. Rud. Mestorozhd, V. 16, No. 2, p. 112-119.

Rossman, G. I., Sychev, I. V., and Tarkhanova, G. A., et al., Use of radiogenic Pb^{206} halos in prospecting for uranium in acidic volcanic rocks: Int. Geol. Rev., V. 14, No. 4, p. 332-337. (Eng. trans., for orig. see Akad. Nauk SSSR, Izv., Ser. Geol., No. 1, p. 79-86, 1971).

Russell, R. D., and Birnie, D. J., 1974, A bi-directional mixing model for lead isotope evolution: Physics Earth Planet. Interiors, V. 8, p. 158-166.

Rye, D. M., Doe, B. R., and Delevaux, M. H., 1974, Homestake gold mine, South Dakota: II. Lead isotopes, mineralization ages, and source of lead in ores of the northern Black Hills: Econ. Geol., V. 69, No. 6, p. 814-822.

Rye, R. O., Doe, B.R., and Wells, J. D., 1974, Stable isotope and lead isotope study of the Cortez, Nevada, gold deposit and surrounding area: Jour. Res. U.S. Geol. Survey, V. 2, No. 1, p. 13-23.

Sato, K., 1974, A review of common lead isotope geochemistry: Min. Geol. (Japan), V. 24, NO. 125, pt. 3, p. 237-266.

Semenenko, N. P., 1974, Geochronologic structure map of the crystalline basement of the Ukraine and the adjacent territories of the southeastern Eurpoean Platform: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 34-37.

Semenenko, N. P., 1974, Geochronology and problems of the Precambrian: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 38-46.

Semenenko, N. P., Shcherbak, N. S., Bartnitskiy, Ye. N., et al., 1974, Geochronological evidence for the lower age boundary of the Krivoi Rog Series: Akad. Nauk SSSR, Izo., Ser. Geol., No. 11, p. 18-29.

Shcherbak, N. P., Bartnitskiy, Ye. N., and Yeliseyeva, G., 1974, Geologic and radiologic criteria for dividing Precambrian ages in the western part of the Ukranian Shield: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 91-95.

Shcherbak, N. P., Orsa, V. I., Bartnitskiy, Ye. N., et al., 1974, Ancient Precambrian formations of the western part of the Ukranian Shield and the correlation of granitoid ages: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 83-90.

Silver, L. T., 1974, Patterns of U-Th-Pb distributions and isotope relations in Apollo 17 soils, in Lunar Science V, pt. 2: Houston, Texas, Lunar Sci. Inst., p. 706-708.

Sobotovich, E. V., Kameneo, Ye. N., Komaristyy, A. A., et al., 1974, Ancient rocks of Antarctica, Enderby Land: Akad. Nauk SSSR, Izo., Ser. Geol., No. 11, p. 30-50.

Stefanova, M., and Pavlova, M., 1974, Geochemistry and isotopic composition of lead from potassium-alkaline rocks of lamprocte character, in Minerogenetis (E. Aleksiev, ed.): Izd. B'lgarskata Akad. Nauk., Sofia, Bulgaria, p. 333-348.

Sychev, I. V., Kozyrev, V. N., Modnikov, I. S., et al., 1974, Features of transformation of uranium-molybdenum ore under supergene conditions: Int. Geol. Rev., V. 16, No. 12, p. 1315-1321.

Taylor, H. P., Jr., 1974, Oxygen and hydrogen isotope evidence for large-scale circulation and interaction between ground waters and igneous intrusions with particular reference to the San Juan volcanic field, Colorado: Carnegie Inst. Wash., Publ. 634, p. 299-324.

Tatsumoto, M., Nunes, P. D., Knight, R. J., et al., 1974, Rb-Sr and U-Th-Pb systematics of boulders 1 and 7, Apollo 17, in Lunar Science V, pt. 2,: Houston, Texas, Lunar Science. Inst., p. 772-773.

Tera, F., Papanastassiou, D. A., and Wasserburg, G. J., 1974, The lunar time scale and a summary of isotopic evidence for a terminal lunar cataclysm, in Lunar Science V, pt. 2: Houston, Texas, p. 792-794.

Tera, F., Papanastassiou, D. A., and Wasserburg, G. J., 1974, Isotopic evidence for a terminal lunar cataclysm: Earth Planet. Sci. Lett., V. 22, No. 1, p. 1-21.

Tera, F., and Wasserburg, G. J., 1974, U-Th-Pb systematics on lunar rocks and inferences about lunar evolution and the age of the moon: Proc. Fifth Lunar Sci. Conf., Geochim. Socmochim. Acta Suppl. 5, V. 2, p. 1571-1600.

Thorpe, R., 1974, Lead isotope evidence on the genesis of the silver-arsenide deposits of the Cobalt and Great Bear Lake Areas, Canada: Econ. Geol., V. 69, No. 6, p. 777-791.

Tsirnogai, S., Nozaki, Y., and Minagawa, M., 1974, Behavior of heavy metals and particulate matters in seawater expected from that of radioactive nuclides: Jour. Oceanogr. Soc. Japan, V. 30, No. 6, p. 251-259.

Tugarinov, A. I., Bibikova, Ye. V., Gracheva, T. V., et al., 1974, Geochronology of the White Sea region formations: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 120-124.

Turekian, K. K., Kharkar, D. P., and Thomson, J., 1974, The fates of ^{210}Pb and ^{210}Po in the ocean surface: J. Rech. Atmosphiques, V. 8, p. 639-646.

Udas, G. R., 1974, Geochemistry of Precambrian carbonatite complexes of India; present status of, and gaps in our knowledge: J. Geol. Soc. India, V. 15, No. 4, p. 457-462.

Van Breeman, O., Aftalion. M., and Allaart, J. H., 1974, Isotopic and Geochronologic studies on granites from the Ketilidran mobile belt of south Greenland: Geol. Soc. America Bull., V. 85, p. 403-412.

Vartiamin, H., and Woolley, A. R., 1974, The age of the Sokli carbonatite, Finland, and some relationships of the North Atlantic igneous province: Geol. Soc. Finland, Bull. 46, pt. 1, p. 81-91.

Velikaya, N. N., 1974, The Sarysu-Teniz zone, in Fanerozoy (N. I. Poluaya, ed.(: Izd. Nedra, Leningr. Otd., Leningrad, USSR, V. 2, p. 139-140.

Velikaya, N. N., 1974, The Dzhungaria-Balkhash fold system; Tokraus, Bakanas, Uspensk, Akzhal-Aksorau and Chul'kyzyl-Tyul'kulam zones, in Fanerozoy (N. I. Polevaya, ed.): Izd. Nedra, Leningr. Otd., Leningrad, USSR, V. 2, p. 149-155.

Vidal, P., 1974, The meaning of radiometric ideas in polyorogenic domaines, in Precambrian des zones mobiles de l'Europe (Zoubek, V., ed.): Geol. ustav CSAV, Prague, Czekoslovakia, p. 317-340.

Vidal, P., Deutsch, S., Martineau, F., et al., 1974, New radiometric data in the Bay of Saint-Brieuc; the problem of a North American pre-Caledonian basement: Acad. Sci. (Paris), C. R., Ser. D., V. 279, No. 8, p. 631-634.

Vilenskiy, V. D., and Anikiyev, V. V., 1974, Lead-210 and radium-226 in the bottom deposits of freshwater bodies: Geokhim., no. 8, p. 1259-1263. (Eng. trans. in Geochem. Int., V. 11, No. 4, p. 874-877, 1975).

Viswanathan, S., 1974, Contemporary trends in geochemical studies of early Precambrian greenstone-granite complexes: J. Geol. Soc. India, V. 15, No. 4, p. 347-379.

Wolff, E. A., 1974, Age sensors, in Geosci. Instru.: New York, John Wiley & Sons, p. 204-213.

Yeliseyeva, O. P., and Kuz'mina, O. V., 1974, possible causes for the discordance of absolute age data of geologically related granitoids in northern Kazakhstan: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 305-309.

Yeliseyeva, G. D., Shcherbak, N. P., Bartnitskiy, Ye. N., et al., 1974, Discordant age values of zircons in the Ukraine: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 76-79.

Zabolotnaya, N. P., Panteleyev, A. I., Novikova, M. L., et al., 1974, The absolute age of sediments, intrusions, and metasomatic rocks of the Siberian fluorite-phenokite-bertrandite deposits: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 217-222.

Zartman, R. E., 1974, Lead isotopic provinces in the Cordillera of the Western United States and their geologic significance: Econ. Geol., V. 69, No. 6, p. 792-805.

Zaytsev, Yu. A., Zykov, S. I., Krasnobayev, A. A., 1974, Precambrian geochronology of central Kazakhstan: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 17, p. 267-274.

Zykov, S. I., Stupnikova, N. I., Smirnova, K. I., and Myasnikova, V. L., 1974, Isotopic homogenization in the anlaysis of geochronological standards: Proc. USSR Acad. Sciences, Geol. Series, No. 4, p. 5-12.

Zykov, S. I., Stupnikova, N. I., and Smirnova, K. I., 1974, The isotope dilution method of age determination: Akad. Nauk SSSR, Izv., Ser. Geol, No. 4, p. 5-12.

Lead Isotope References for 1973

Afanas'yev, G. D., (ed.), 1973, Geologic and radiologic interpretation of discordant age dates: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, 413 p.

Afanas'yev, G. D., Gukasyan, R. Kh., and Dashtayan, G., 1973, Primary conformable and non-conformable dates from different age determination methods and their relationship to the geologic location of the sample: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. For., Tr., No. 16, p. 3-13.

Afanas'yev, G. D., and Zykov, S. I., 1973, Determinations from a standard probe of "monazite-68": Akad. Nauk SSSR, Izo., Ser. Geol., No. 6, p. 15-19.

Allen, R. O., Jr., Jovanovic, S., and Reed, G. W., Jr., 1973, Primordial Pb in Apollo 15 samples: Lunar Sci. IV, Lunar Sci. Inst., Houston, Texas, p. 34-35.

Almeida, F. F. M. de, Amaral, G., Cordani, U. G., et al., 1973, The Precambrian evolution of the South American cratonic margin south of the Amazon river, in The Ocean Basins and Margins; V. 1, The South Atlantic: New York, Pleniun Press, p. 411-446.

Amov, B. G., Baldjieva, Ts. T., Arnaoudov, V. S., et al., 1973, Isotopic composition of lead in potassium feldspars and the geological age of pegmatites in southern Bulgaria: Bulg. Akad. Nauk, Dokl., V. 26, No. 11, p. 1513-1516.

Andersen, C. A., and Hinthorne, J. R., 1973, $^{207}Pb/^{206}Pb$ ages and REE abundances in returned lunar material by ion microprobe mass analysis: Lunar Sci. IV, Houston, Texas, Lunar Sci. Inst., p. 37.

Lead Isotope References for 1973 (Cont'd)

Armstrong, R. L., and Hein, S. M., 1973, Computer simulation of Pb and Sr isotope evolution of the Earth's crust and upper mantle: Geochim. Cosmochim. Acta, V. 37, No. 1, p. 1-18.

Baadsgaard, H., 1973, U-Th-Pb dates on zircons from the early Precambrian Amitsoq Gneisses, Godthaab District, Greenland: Earth Planet. Sci. Lett., V. 19, p. 22-28.

Barnes, I. L., Garner, E. L., Gramlich, J. W., Machlan, L. A., Moody, J. R., Moore, L. J., Murphy, T. J., and Shields, W. R., 1973, The Pb-U-Th and Rb-Sr systematics of some Apollo 15 and Apollo 16 samples: Lunar Sci. IV, Houston, Texas, Lunar Sci. Inst., p. 51-51b.

Barnes, I. L., Garner, E. L., Gramlich, J. W., Machlan, L. A., Moody, J. R., Moore, L. J., Murphy, T. J., and Shields, W. R., 1973, Isotopic abundance ratios and concentrations of selected elements in some Apollo 15 and Apollo 16 samples: Proc. Fourth Lunar Sci. Conf., Geochim, Cosmochim. Acta, Suppl. 4, V. 2, p. 1197-1207. Pergamon.

Barnes, I. L., Garner, E. L., Gramlich, J. W., Moore, L. J., Murphy, T. J., Machlan, L. A., and Shields, W. R., 1973, Determination of lead, uranium, thorium, and thallium in silicate glass standard materials by isotope dilution mass spectrometry: Anal. Chem., V. 45, p. 880-885.

Barnes, I. L., Murphy, T. J., Gramlich, J. W., and Shields, W. R., 1973, Lead separation by anodic deposition and isotope ratio mass spectrometry of microgram and smaller samples: Anal. Chem., V. 45, p. 1881-1884.

Bartnitskiy,Ye. N., Yeliseyeva, G. D., Ladujeva, V. D., et al., 1973, Ancient sulfide mineralization in the Ukranian Shield from lead isotopic data: Akad. Nauk SSSR Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p. 122-126.

Bartnitskiy, Ye, N., Shcherbak, N. P., Yelisyeva, G. D., et al., 1973, Lead isotopes in crystalline rocks of the western part of the Ukranian Shield: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p. 143-150.

Bass, M. N., Moberly, R., Rhodes, J. M., Shih, Chi-yu, and Church, S. E., 1973, Chapt. 14, Volcanic rocks cored in the central Pacific, Leg 17, Deep Sea Drilling Project, in Winterer, E. L., Ewing, J. L., et al. (eds) Initial Rpts. Deep Sea Drilling Projects, V. 17, p. 429-503.

Bibikova, Ye V., Gracheva, T. V., and Krasnobayev, A. A., 1973, The Belomorsk phase of metamorphism in the Ilmenogorsk Complex: Akad. Nauk SSSR, Dokl., V. 208, no. 5, p. 1165-1167.

Bibikova, Ye V., Tugarinov, A. I., Gracheva, T. V., et al., 1973, Age of granulites of the Kola Peninsula: Geochim. Int., V. 10, no. 3, p. 508-518. (Eng. trans. Geokhimiya, No. 5, p. 664-675).

Black, L. P., Moorbath, S., Pankhurst, R. J., and Windley, B. R., 1973, $^{207}Pb/^{206}Pb$ whole rock age of the Archaean granulite facies metamorphic event in west Greenland: Nature, Phys. Sci., V. 244, p. 50-53.

Boyatyreva, N. A., Zaytsev, Yu A., Zykov, S. I., et al., 1973, The results of studies to determine the radiologic age of metamorphic complexes of southern Ulutau, central Kazakhstan: Akad. Nauk SSSR, Kom., Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p. 272-277.

Brandt, S. B., and Plyusnin, G. S., 1973, A model for continuous mass transfer in the uranium-lead system: Geochem. Int., V. 10, No. 4, p. 814-823 (Eng. Trans., for orig. see Geokhim., No. 7, p. 1067-1078).

Bridgewater, D., 1973, General compilition of isotopic work on rocks from Greenland: In Report of activities, 1972, Groenlands Geologiske Undersoegelse, Rapp. No. 55, p. 51-60.

Chow. T. J., 1973, Environmental pollution from industrial lead: in Symp. hydrogeochem. biogeochem., V. 2, Clarke Co., Wash. D. C., p. 310-329.

Chow, T. J., Bruland, K. W., Bertine, K., Soutar, A., Koide, M., and Goldberg E. D., 1973, Lead pollution: records in Southern California coastal sediments: Science: V. 181, p. 551-552.

Church, S. E., 1973, Limits of sediment involvement in the genesis of orogenic volcanic rocks: Contr. Mineral. Petrol., V. 39, p. 17-32.

Church, S. E., and Tilton, G. R., 1973, Lead and strontium isotopic studies in the Cascade Mountains: Bearing on andesite genesis: Bul. Geol. Soc. America, V. 84, No. 2, p. 431-454.

Clayton, R. L., and Baker, A. III, 1973, Pb-Pb ages of a galena sample from the Bruce Mine, Yavapai County, Arizona: Isochron/West, No. 6, p. 35.

Cooper, J. A., 1973, On the age of uranium mineralization at Narbarlek, Northern Territory, Australia: Geol. Soc. Aust. Jour., V. 19, pt. 4, p. 483-486.

Craig, H., Krishnaswami, S., and Somayajulu, B. L. K., 1973, ^{210}Pb-^{266}Ra: Radioactive disequilibrium in the deep sea: Earth Planet. Sci. Lett., V. 17, No. 2, p. 295-305.

Cumming, G. L., 1973, Propagation of experimental errors in lead isotope ratio measurements using the double spike method: Chem. Geol., V. 11, no. 3, p. 157-165.

Cumming, G. L., and Gudjurgis, P. J., 1973, Alteration of trace lead isotopic ratios by postore metamorphic and hydrothermal activity: Can. Jour. Earth Sci., V. 10, no. 12, p. 1782-1789.

Deliens, M., 1973, Principal results of the infrared analysis of metamict zircons dated by the U/Pb method: Annal. Societe Geol. Belgeque, V. 96, p. 275-287.

Doe, B. R., and Delevaux, M. H., 1973, Variations in lead isotopic compositions in Mesozoic granitic rocks of California: A preliminary investigation: Bull. Geol. Soc. America, V. 84, no. 11, p. 3513-3526.

Dymond, J., Corliss, J. B., Heath, G. R., Field, C. W., Dasch, E. J., Veeh, H. H., 1973, Origin of metalliferous sediments from the Pacific Ocean: Geol. Soc. America Bull., V. 84, p. 3355-3372.

Farhat, J. S., and Hurst, R. W., 1973, Search for ancient rocks in coastal Labrador, in The Nain Anorthosite Project, Labrador, Field Report 1972: Mass Univ. Dep. Geol. Contrib., no. 11, p. 17-19.

Gale, N. H., and Mussett, A. E., 1973, Episodic uranium-lead models and the interpretation of variations in the isotopic composition of lead in rocks: Rev. Geophys. Space Sci. V. 11, no. 1, p. 37-86.

Garris, M. A., 1973, The lower Precambrian of the Urals: Geokhronologiya SSSR; tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 128-132. (Izd. Nedra, Leningrad Otd.).

Garris, M. A., 1973, The late Precambrian of the Urals, Timan and Mugodzhao: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 133-146. (Izd. Nedra, Leningrad Otd.).

Gaudette, H. E., and Hurley, P. M., 1973, U-Pb zircon age of Precambrian basement gneiss of South Korea: Geol. Soc. Am. Bull., V. 84, p. 2305-2306.

Gaudette, H. E., Hurley, P. M., and Fairbairn, H. W., 1973, U-Pb zircon ages from the northern Guayana Shield, Venezula: Second Latin American Geol. Cong., Caracus, Venezula, p. ?.

Gerling, E. K., and Iskanderova, A. D., 1973, On the evolution of lead isotopic composition in ancient marine basins: Geochim. Int., V. 10, no. 1, p. 82-86 (English trans., for orig. see Geokhimiya, no. 1, p. 116-120.).

Gerling, E. K., and Ovchinnikov, G. V., 1973, The stability of the rate of radioactive decay: Akad Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., no. 16, p. 13-24.

Glover, L. III, and Sinha, A. K., 1973, The Virgilina deformation, a late Precambrian to early Cambrian(?) orogenic event in the central Piedmont of Virginia and North Carolina: in The Byron N. Cooper Vol.: Am. J. Sci., V. 273A, p. 234-251.

Grauert, B., 1973, U-Pb isotopic studies of zircons from the Baltimore Gneiss of the Towson Dome, Maryland: Carnegie Inst. Wash. Yearb., no. 72, p. 285-2

Grauert, B., 1973, U-Pb isotopic studies of zircons from the Gunpowder Granite, Baltimore County, Maryland: Carnegie Inst. Wash. Yearb., no. 72, p. 288-290.

Grauert, B., Crawford, M. L., and Wagner, M. E., 1973, U-Pb isotopic analyses of zircons from granulite and amphibolite facies rocks of the West Chester Prong and Avondale Anticline, southeastern Pennsylvania: Carnegie Inst. Wash. Yearb., no. 72, p. 290-293.

Grauert, B., Haenny, R., and Soptrajanova, G., 1973, Age and origin of detrital zircons from the Pre-Permian basements of the Bohemian Massif and the Alps: Contr. Mineral. Petrol., V. 40, no. 2, p. 105-130.

Grauert, B., and Hall, L., 1973, Age and origin of zircons from metamorphic rocks in the Manhattan Prong, White Plains area, southeastern New York: Carnegie Inst. Wash. Yearb., no. 72, p. 293-297.

Grauert, B., and Hofmann, A., 1973, Old radiogenic lead components in zircons from the Idaho batholith and its metasedimentary aureole: Carnegie Inst. Wash. Yearb., no. 72, p. 297-299.

Grauert, B., and Seitz, M. G., 1973, Uranium gain of detrital zircons studied by isotopic analyses and fission track mapping: Carnegie Inst. Wash. Yearb., no. 72, p. 302-303.

Gulson, B. L., 1973, Age relations in the Bergell region of the southeast Swiss Alps: With some geochemical comparisons: Eclogae Geol. Helv., V. 66, no. 2, p. 293-313.

Gulson, B. L., and Krogh, T. E., 1973, Old lead components in the Young Bergell Massif, South-East Swiss Alps: Contr. Mineral. Petrol., V. 40, no. 3, p. 239-252.

Hills, J. H., and Richards, J. R., 1973, Radiogenic lead in north Australian galenas: Nature, Phys. Sci., V. 241, no. 105, p. 18-19.

Huey, J. M., and Kohman, T. P., 1973, ^{207}Pb-^{206}Pb isochron and age of chondrites: Jour. Geophys. Research, V. 78, no. 17, p. 3227-3244.

Ivanov, I. B., Litsarev, M. A., and Shanin, L. L., 1973, The southwestern Pamirs: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologiches izuchennosti otdel'nykh regionov SSSR, Srednyaya Aziya, p. 151-155. (Izd. Nedra, Leningrad Otd.).

Johnson, M. G., and Todd, V. R., 1973, A summary of radiometric age determinatio of igneous rocks from southeastern Arizona: Isochron/West, no. 8, p. 1-20.

Keller, B. M., Polevayee, N. I., and Semikhatov, M. A., 1973, The late Precambrian; Correlation of the Riphean sections; Geochronological scale of the Riphean: Geokhronologiya SSSR, Tom 1, Dokembriy; Mezhregional' naya korrelyatsiya dokembriyskikh obrazovaniy, p. 307-322 (Izd. Nedra, Leningrad Otd.).

Khoreva, B. Ya., Murina, G. A., and Iskanderova, A. D., 1973, The age of metamorphism in the southwestern Pamirs: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronogicheskoy izuchennosti otdel'nykh regionov SSSR, Srednyaya Aziya, p. 151-159 (Izd. Nedra, Leningrad Otd.).

Klyarovskiy, V. M., 1973, The Altai- Sayan are: Geokhronogiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh reginov SSSR, p. 169-178.

Koeppel, V. and Sommerauer, J., 1973, Trace elements and the behavior of the U-Pb system in inherited and newly formed zircons: Contrib. Mineral. Petrol., V. 43, no. 1, p. 71-82.

Koide, M., Bruland, K. W., and Goldberg, E. D., 1973, Th-228/Th-232 and Pb-210 geochronologies in marine and lake sediments: Geochim. Cosmochim. Acta, V. 37, no. 5, p. 1171-1187.

Komlev, L. V., Danilevich, S. I., Filippov, M. S., et al., 1973, Isotopic composition of lead from galena of ore deposits in the northern Caucasus: Geokhimiya, no. 11, p. 1729-1734.

Kosals, Ya A., Tychinskiy, A. A., Ripp, G. S., et al., 1973, Isotopic composition of lead from ores and relationship between molybdenium-tungsten and lead-zinc mineralization in the Dzhida ore region, eastern Transbaikalia: Geol. Geofiz., no. 5, p. 31-39.

Kosztolanyi, C., 1973, Experimental studies on the change of chemical and isotopic compositions of uraniferous minerals; geochronological consequences: Sci. Terre, V. 18, no. 2, p. 173-187.

Kozubova, L. A., 1973, The Olenek Uplift: Geokhronogiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel nykh regionov SSSR, Ranniy dokembriy Sibiskoy platformiy, p. 262-263. (Izd. Nedra, Leningrad Otd.).

Krishnaswami, S., Lal, D., Omin, B. S., et al., 1973, Geochronological studies in Santa Barbara Basin, ^{55}Fe as a unique tracer for particulate settling; Limnology and Oceanography, V. 18, no. 5, p.

Krogh, T. E., 1973, A low-contamination method for hydrothermal decomposition of zircon and extraction of U and Pb for isotopic age determinations: Geochim. Cosmochim. Acta, V. 37, no. 3, p. 485-494.

Krogh, T. E., and Davis, G. L., 1973, The effect of regional metamorphism on U-Pb systems in zircon and a comparison with Rb-Sr systems in the same whole rock and its constituent minerals: Carnegie Inst. Wash. Yearb., no. 72, p. 601-610.

Krogh, T. E., and Davis, G. L., 1973, The significance of inherited zircons on the age and origin of igneous rocks; an investigation of the ages of the Labrador adamellites: Carnegie Inst. Wash. Yearb., No. 72, p. 610-6

Lancelot, J. R., Vitrac A., and Allegre, C. J., 1973, Dating zircons by U-Th-Pb, grain by grain, with isotope dilution: Geologic consequences: C. R. Sci., Paris, P. 2117-2120.

Le Couteur, P. C., 1973, A study of lead isotopes from mineral deposits in south-eastern British Columbia and in the Anvil Range, Yukon Territory: Univ. Brit. Columbia (Ph.D. Thesis), p. ? .

Legierski, J., 1973, Model ages and isotopic composition of ore leads of the Bohemian Massif: Cas. Mineral. Geol., V. 18, no. 1, p. 1-23.

Leuchenkov, O. A., Gerling, E. K., Mikhaylov, D. A., et al., 1973, New data on the geochronology of crystalline complexes of the Aldan Massif: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., no. 16, p. 151-165.

Lobach-Zhuchenko, S. B., 1973, The eastern part of the Baltic shield, the Belomorian-Laplandian and Murmanian blocks of the Archenides, The Kola-Norway and Karelian zones of the Karelides: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 52-70. (Izd. Nedra, Leningrad Otd.).

Manton, W. I., 1973, Whole-rock Th-Pb age for the Masuke and Dembe-Divula complexes, Rhodesia: Earth. Planet. Sci. Lett., V. 19, p. 83-89.

Manton, W. I., 1973, Significance of lead isotope composition in blood: Nature, V. 244, no. 5412, p. 165-167.

Marvin, R. F., Stern, T. W., Creasey, S. C., et al., 1973, Radiometric ages of igneous rocks from Pima, Santa Cruz, and Cochise Counties, Southeastern Arizona: U.S. Geol. Sur. Bull., no. 1379, 27 p.

Masaytis, V. L., 1973, The middle and upper Precambrian magmatism in the Siberian platform: Geokhronologiya SSSR, T. 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 263-267. (Izd. Nedra, Leningrad Otd.).

Mattinson, J. M., 1973, Anomalous isotopic composition of lead in young zircons: Carnegie Inst. Wash. Yearb., no. 72, p. 613-616.

Mattinson, J. M., Fink, L. K., Jr., Hopson, C. A., 1973, Age and origin of ophiolitic rocks on La Desirade Island, Lesser Antilles Island Arc: Carnegie Inst. Wash. Yearb., no. 72, p. 616-623.

Mauuylova, M. M., 1973, The Baikal Mountains: Geokhronogiya SSSR, Tom 1, Dokembriy; Ocherki geokhronogicheskoy izuchennosti otdel'nykh regionov SSSR, p. 263-267. (Izd. Nedra, Leningrad Otd.).

Mikhaylov, D. A., 1973, The Aldan Shield: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, Panniy dokembriy Sibirskoy platformy, p. 218-228.

Mincheva-Stefanova, Y., and Amov, B., 1973, Isotopic composition of lead in stratiform polymetallic ores of Bulgaria and its genetic significance: in Gidrotermal nyge protsessy, Mezhdunar. Geokhim. Kongr., 1971, Dokl., no. 1, V. 2, p. 84-96.

Mirkina, S. L., and Iskanderova, A. D., 1973, The lead method: Geokhronologiya SSSR, T. I., Dokembriy; Obshchiye voprosy geokhronologii, Radiologecheskiye method opredeleniya vozrasta mineralov i gomykh porod, p. 31-40 (Izd. Nedra, Leningrad Otd.).

Miroshnichenko, L. A., Il'yushchenko, M. I., Cherbyanov, B. Ye, et al., 1973, Late Alpine lead mineralization in Greater Karatou: Akad. Nauk Kaz. SSR, Izo, Ser. Geol., no. 6, p. 77-80.

Mitchell, R. H., 1973, Isotopic composition of lead in galena from the Mountain Pass carbonatite, California: Nature, Phys. Sci., V. 241, No. 105, p. 17-18.

Miyazaki, A., Sato, K., and Saito, N., 1973, Lead isotopic studies of metamorphic and sedimentary rocks from the Hida metamorphic terrain, Japan: Geochem. J., V. 6, no. 3, p. 105-116.

Miyazaki, A., Sato, K., and Saito, N., 1973, Lead isotopes of granitic rocks from the Hida metamorphic belt and some isotopic features of igneous rocks in Japan: Geochem. J., V. 7, No. 4, p. 231-244.

Moorbath, S., O'Nions, R. K., and Pankhurst, R. J., 1973, Early Archaean age for the Isua Iron Formation, West Greenland: Nature, V. 245, p. 138-139

Moore, H. E., Post, S. E., and Martell, E. A., 1973, ^{222}Rn, ^{210}Pb and ^{210}Po profiles and aerosol residence times with altitude: J. Geophys. Res., V. 78, p. 7065-7075.

Murina, G. A., Kutenets, V. A., and Miokina, S. L., et al., 1973, The age of granitoid intrusions of eastern Karategin by data from the argon and lead methods; central Tadzhikistan: Akad. Nauk SSSR, Kom. Opred: Absol. Vozrasta Geol. Form., Tr., No. 16, p. 321-329.

Naydenov, B. M., Semenova, T. V., Khalilov, V. A., Cherdyntsev, V. V., and Zamyatin, N. I., 1973, Lead isotope composition for the sulfur of Mutun Volcano, Kamchatka: Geochem. Int., V. 9, no. 3, p. 471-473. (Eng. trans. for orig. see Geokhimeya, no. 2, p. 290-293).

Nikitina, L. P., and Mitrofanov, V. P., 1973, The eastern Sayan fold area; the eastern Sayan and southwestern part of the Xhamar-Daban Range; Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 178-188. (Izd. Nedra, Leningrad Otd.).

Nozaki, Y., and Tsunogai, S., 1973, A simultaneous determination of lead-210 and polonium-210 in sea water: Anal. Chim. Acta, V. 64, p. 209- ?

Nozaki, Y., and Tsunogai, S., 1973, Lead-210 in the North Pacific and the transport of terrestrial material through the atmosphere: Earth Planet. Sci. Lett., V. 20, no. 1, p. 88-92.

Nunes, P. D., and Tatsumoto, M., 1973, Excess lead in "Rusty Rock" 66095 and implications for an early lunar differentiation: Science, V. 182, p. 916-920.

Nunes, P. D., Tatsumoto, M., Knight, R. J., Unruh, D. M., and Doe, B. R., 1973, U-Th-Pb systematics of some Apollo 16 lunar samples: Proc. Fourth Lunar Sci. Conf., Suppl. 4, Geochim. Cosmochim. Acta, V. 2, p. 1797-1822. Pergamon.

Oberli, G., and Steiger, R. H., 1973, U-Pb age determinations on zircons and monazites from a migmatile area on B joerneoeer, Scoresby Sund, East Greenland; a preliminary report: In Report on the 1972 geological expedition to Scoresby Sund, East Greenland, Groenlands Geologiske Undersoegelse, Rapp. No. 58, p. 63-74.

Obradovich, J. D., and Peterman, Z. E., 1973, A review of the geochronology of Belt and Purcell rocks, in Belt Symposium 1973: Idaho Univ. Dept. Geol. - Idaho Bur. Mines Geol., Moscow, Idaho, V. 1, p. 8-9.

Odom, A. L., and Fullagar, P. D., 1973, Geochronologic and tectonic relationships between the Inner Piedmont, Brevard Zone, and Blue Ridge belts, North Carolina, in The Byron N. Cooper Vol.: Am. J. Sci., V. 273A, p. 133-149.

Oosthuyzen, E. J., and Burger, A. J., 1973, The suitability of apatite as an age indicator by the uranium-lead isotope method: Earth Planet. Sci. Lett., V. 18, p. 29-36.

Ordynets, G. Ye, and Poluarshinov, G. P., 1973, Isotopic composition of lead in the central Ishim area: Geochem. Int., V. 10, No. 3, p. 519-524 (Eng. trans., for orig. see Geokhimiya, no. 5, p. 676-682.).

Ozard, J. M., Slawson, W. F., and Russell, R. D., 1973, An integrated model for lead isotopic evolution for samples from the Canadian Shield: Can. Jour. Earth Sci., V. 10, No. 4, p. 529-537.

Pap, A. M., 1973, The basement of the Russian platform, Byelorussia and neighboring areas: Geokhronologye SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 74-79. (Izd. Nedra, Leningrad Otd.).

Pidgeon, R. T., 1973, Discordant U-Pb isotopic system in zircons from a granite northwest of Frederikshaabs Isblink, Fiskenaesset region: In Progress Report on the geology of the Fiskenaesset region, South-west Greenland, Groenlands Geologiske Undersoegelse, Rapp. No. 51, p. 28-30.

Poet, S. E., Moore, H. E., and Martell, E. A., 1973, Lead-210, Bismuth-210 and Polonium-210 in the atmosphere: accurate ratio measurement and application to aerosol residence time determination: J. Geophys. Res., V. 3, p. .

Polovinkina, Yu. Jr., Ed., 1973, Geochronology of the USSR; vol. 1, Precambrian: Izd. Nedra, Leningrad Otd., 350 p.

Polovinkina, Yu., Jr., and Polevaya, N. I., 1973, The Ukranian crystalline massif; age of Archean and early Proterozoic supracrustal complexes; age of Archean and early Proterozoic rocks: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologescheskoy izuchennosti otdel'nykh regionov SSSR, p. 89-111 (Izd. Nedra, Leningrad Otd.).

Ravich, M. G., and Rabkin, M. I., 1973, Taymyr Peninsula and its neighboring islands in the Arctic Ocean: Geokhronologiya SSSR, Tom 1, Dokekmbriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 284-290 (Izd. Nedra, Leningrad Otd.).

Richards, J. R., 1973, Sources of lead in ore-bearing fluids as indicated by lead isotope data: in Gidrotermal'nyye protsessy, Mezhdunar. Geokhim. Kongr., 1971, Dokl., No. 1, V. 2, p. 33-44.

Robertson, D. K., 1973, A model discussing the early history of the earth based on a study of lead isotope ratics from veins in some Archaean cratons of Africa: Geochim. Cosmochim. Acta., V. 37, p. 2099-2124.

Rosholt, J. N., Zartman, R. E., and NKomo, I. T., 1973, Lead isotope systematics and uranium depletion in the Granite Mountains, Wyoming: Geol. Soc. America Bull., V. 84, p. 989-1002.

Rudnik, V. A., 1973, Precambrian history of eastern Siberia based on radiologica data: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR; Ranniy dokembriy Sibirskoy Platformy, p. 228-254 (Izd. Nedra, Leningrad Otd.).

Sangster, D. F., 1973, Reflections on the origin of lead in volcanogenic massive sulfide deposits: in Volcanism and Volcanic Rocks: Dept. Energy, Mines and Resources, Geol. Surv. Canada, Open File Rpt. 164, p. 105-110.

Sato, K., and Saski, A., 1973, Lead isotopes of the Black Ore ("Kuroko") deposits from Japan: Econ. Geol., V. 68, p. 547-552.

Sato, K., Slawson, W. F., and Kanasewich, E. R., 1973, Additional iosotopic measurements on Japanese ore leads: Geochem. Jour., V. 7, p. 115-122.

Schell, W. R., Jokela, T. A., and Eagle, R., 1973, Natural ^{210}Pb and ^{210}Po in a marine environment: Radioactive Contamination of the Marine Environment, IAEA - STI/PUB/ 313, p. 701-711.

Semenenko, N. P., 1973, Geochronology of the stabilization of the Precambrian continental platforms: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p. 25-35.

Semikhatov, M. A., Polevaya, N. I., Volobuyev, M. I., et al., 1973, The upper Precambrian of the Siberian platform and its fold belts; The lower boundary of the Piphean, The middle Piphean; The upper Piphean; The Vendran Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 268-283. (Izd. Nedra, Leningrad Otd.).

Shannon, L. V., and Cherry, R. D., 1973, Polonium-210 and lead-210 in the hydrosphere, in Symposium on hydrogeochemistry and biogeochemistry, V. i, Hydrogeochemistry, Wash. D. C., Clarke Co., p. 284-292.

Shcherbak, N. P., Bartnikskiy, Ye. N., Kotlovskaya, F. I., et al., 1973, Geologic interpretation of the absolute age of coexisting minerals in crystalline rocks of the eastern part of the Ukranian Shield: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p.111-117.

Shcherbak, N. P., Bartnikskiy, Ye. N., Yeliseyeva, G. D., et al., 1973, Age correlation of granites from the Krivorozhye Series and the Kirovogoad and Saksagan granites: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p. 126-136.

Shcherbak, N. P., Vinogoadov, G. G., Yeliseyeva, G. D., et al., 1973, Discordant ages of zircons from schist and charnockite of the eastern part of the Ukranian Shield: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p. 117-122.

Shnip, O. A., Kutenets, V. A., and Mirkina, S. L., 1973, The Hissar zone of Tien Shan: Geokhronogiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR; Srednyaya Aziya, p. 149-150 (Izd. Nedra, Leningrad Otd.).

Silver, L. T., 1973, Uranium-thorium-lead isotopic characteristics in some regolitic materials from the Descartes region: Lunar Sci. IV, Lunar Sci. Inst. Contrib. (J. W. Chamberlain and C. Watkins, Eds), p. 672-674.

Silver, L. T., 1973, Uranium-thorium-lead isotope relations in the remarkable debris blanket at Hadley-Apennine: Lunar Sci. IV, Lunar Sci. Inst., Contrib. (J. W. Chamberlain and C. Watkins, Eds), p. 669-671.

Sinha, A. K., and Tilton, G. R., 1973, Isotopic evolution of common lead: Geochim. Cosmochim. Acta, V. 37, No. 8, p. 1823-1850.

Slawson, W. F., and Russell, R. D., 1973, A multistage history for Flin Flon lead: Can. Jour. Earth Sci., V. 10, No. 4, p. 582-583.

Small, W. D., 1973, Isotopic compositions of selected ore leads from northeastern Washington: Can. J. Earth Sci., V. 10, p. 670-678.

Snihs, J. O., 1973, The content of some natural radioactive elements, especially ^{222}Rn, in some potable waters in Sweden: Nord. Hydrol., V. 4, No. 4, p. 256-274.

Sobotovich, E. V., Shats, M. M., Lovtsyus, A. V., et al., 1973, The abundance of lead isotopes in rocks of the Aldan crystalline shield and their radiologic interpretations: Akad. Nauk SSSR., Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p. 165-186.

Tarkhanov, A. V., and Zhukova, V. I., 1973, Origin of radioactive lead haloes in Precambrian uranium deposits: At. Energy, V. 34, No. 6, p. 455-459 (with Engl. summary).

Tatsumoto, M., 1973, U-Th-Pb measurements of Luna 20 soil: Geochim. Cosmochim. Acta, V. 37, p. 1079-1086.

Tatsumoto, M., Knight, R. J., and Allegre, C. J., 1973, Time differences in the formation of meteorites as determined from the ratio of lead-207 to lead-206: Science, V. 180, p. 1279-1283.

Tatsumoto, M., Nunes, P. D., and Knight, R. J., 1973, U-Th-Pb of some Apollo 16 samples: Lunar Sci. IV (J. W. Chamberlain and C. Watkins, Eds.), p. 705-707. LSI.

Tatsumoto, M., Nunes, P. D., Knight, R. J., Hedge, C. E., and Unruh, D. M., 1973, U-Th-Pb, Rb-Sr, and K measurements of two Apollo 17 samples: EOS, Trans. Amer. Geophys. Union, V. 54, No. 6, p. 614-615.

Tera, F., Papanastassiou, D. A., and Wasserburg, G. J., 1973, A lunar cataclysm at ∿3.95 AE and the structure of the lunar crust: Lunar Sci. IV (J. W. Chamberlain and C. Watkins, Eds.), p. 723-725.

Tera, F., and Wasserburg, G. J., 1973, A response to a comment on U-Pb systematics in lunar basalts: Earth Planet. Sci. Lett., V. 19, No. 2, p. 213-217.

Thorpe, R. I., and Sangster, D. F., 1973, An integrated model for lead isotopic evolution for samples from the Canadian Shield: Discussion: Can. J. Earth Sci., V. 10, No. 11, p. 1693-1696.

Tilling, R. I., 1973, The Boulder batholith, Montana: A product of two contemporaneous but chemically distinct magma series: Geol. Soc. America Bull., V. 84 p.

Tilton, G. R., 1973, Isotopic lead ages of chondritic meteorites: Earth Planet. Sci. Lett., V. 19, No. 3, p. 331-329.

Tugarinov, A. I., and Bibikova, Ye. V., 1973, A new phase of magmatism in Belomorsk; 2400 million years ago: Akad. Nauk SSSR, Kom. Opred. Absol. Vozrasta Geol. Form., Tr., No. 16, p. 83-86.

Tychinskiy, A. A., Zagruzina, I. A., and Shipilov. L. D., 1973, Isotopic composition of lead from the endogene ore formations in the northeastern USSR: Geol. Geofiz., No. 6, p. 31-36 [English summary].

Van Schmus, W. R., 1973, Chronology of Precambrian rocks in Wisconsin, in Guidebook to the Precambrian Geology of northeastern and north central Wisconsin: Inst. Lake Superior Geol., Astr. and Field Guides, No. 19, pt. 2, p. 1-8.

Velikaya, N. N., 1973, Eastern Kazakhstan: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchennosti otdel'nykh regionov SSSR, p. 159-169 (Izd. Nedra, Leningrad Otd.).

Vidal, P., 1973, The significance of radiometric data in polyorogenic domains: Soc. Geol. Mineral. Bretagne, Bull., V. 5, No. 1, p. 37-50.

Volobuyev, M. I., Stupnikova, N. I., and Zykov, S. I., 1973, Yenisei Ridge: Geokhronologiya SSSR, Tom 1, Dokembriy; Ocherki geokhronologicheskoy izuchinnosti otdel'nykh regionov SSSR, p. 159-169 (Izd. Nedra, Leningrad Otd.).

Zartman, R. E., and Tera, F., 1973, Lead concentration and isotopic composition in five peridotite inclusions of probable mantle origin: Earth Planet. Sci. Lett., V. 20, No. 1, p. 54-66.

Lead Isotope References for 1972

Allegre, C. J., and Caby, R., 1972, Absolute chronology of the Precambrian of the L'Ahaggar Occidental: C. R. Sci., Paris, V. 275, p. 2095-2098.

Allen, R. O., Jr., Jovanovic, S., and Reed, G. W., Jr., 1972, ^{204}Pb in Apollo 14 samples: Lunar Science III, Lunar Sci. Inst., Contrib. no. 88, p. 15-17.

Allen, R. O., Jr., Jovanovic, S., and Reed, G. W., Jr., 1972 ^{204}Pb in Apollo 14 samples and inferences regarding primoridial Pb lunar geochemistry: Proc. Third Lunar Sci. Conf., Geochim Cosmochim. Acta, Suppl. 3, V. 2, p. 1645-1650. MIT Press.

Anderson, C. A., and Hinthorne, J. R., 1972, U, Th, Pb and REE abundances and Pb-207/206 ages of individual minerals in returned lunar material by ion microprobe analysis: Lunar Science III, Lunar Sci. Inst. Contrib. no. 88, p. 21-23.

Antweiler, J. C., Doe, B. R., and Delevaux, M. H., 1972, Lead isotope and other evidence on the bedrock source of placergold at Hahns Peak, Colorado: Econ. Geol., V. 67, p. 302-314.

Assaf, G., and Biscaye, P. E., 1972, Lead-212 in the urban boundary layer of New York City: Science, V. 175, p. 890-894.

Atomic Energy Commission Advisory Committee on Standards, Report No. 11, July 18, 1972.

Baadsgaard, H., and Godfrey, J. D., 1972, Geochronology of the Canadian Shield in northeastern Alberta, II. Charles-Andrew-Colin Lakes area: Can. Jour. Earth Sci., V. 9, p. 863-881.

Lead Isotope References for 1972 (Cont'd)

Barnes, I. L., Carpenter, B. S., Garner, E. L., Gramlich, J. W., Kuehner, E. C., Macklan, L. A., Mainethal, E. J., Moody, J. R., Moore, L. J., Murphy, T. J., Paulsen, P. J., Sappenfield, K. M., and Shields, W. R., 1972, The isotopic abundance ratio and assay analysis of selected elements in Apollo 14 samples: Lunar Science III, Lunar Sci. Inst. Contrib. No. 88, p. 41-43.

Barnes, I. L., Carpenter, B. S., Garner, E. L., Granlich, J. W., Kuehner, E. C., Macklan, L. A., Mainethal, E. J., Moody, J. R., Moore, L. J., Murphy, T. J., Paulsen, P. J., Sappenfield, K. M., and Shields, W. R., 1972, Isotopic abundance ratios and concentrations of selected elements in Apollo 14 samples: Proc. Third Lunar Sci Conf., Geochim Cosmochim. Acta, Suppl. 3, V. 2, p. 465-472. MIT Press.

Besaire, H., 1972, The geochronology of Malagasy Republic in 1971: Acad. Malgache, Bull., V. 49, No. 2, p. 121-130.

Bibikova, Ye. V, and Tugarinov. A. I., 1972, Geochronology of the Balomorsk Block, in Ocherki Sovremennoy geokhimii i analiticheskoy khimi: Moscow, Izd. Nauka, p. 419-428.

Black, L. P., and Richards, J. R., 1972, Isotopic composition and possible genesis of ore leads in northeastern Queensland, Australia: Econ. Geol., V. 67, p. 1168-1179.

Black. L. P., and Richards, J. R., 1972, Rock lead isotopes in northeast Queensland: J. Geol. Soc. Australia, V. 19, p. 321-330.

Burlingame, A. L., and Johanson, G. A., 1972, Mass Spectrometry: Anal. . Chem. Annual Revs., V. 44, p. 337R-378R.

Cahen, L., Delhal, J., and Deutsch, S., 1972, A comparison of the ages of granites of S. W. Uganda with those of the Kibaran of Central Shaba (Katanga), Rep. Zaire: Musee Royal de L'Afrique Centrale, Terouren, Belgique Annales, Serie In-8, Sci. Geologiques, No. 73, p. 45-67.

Cassedanne, J., Dethou, J. L., and Lasserre, M., 1972, Lead Isotope analysis of a third series of Brazilian galenas: Min. Metal., V. 36, No. 335, p. 12-19.

Chatterjee, S. K., 1972, Isotopic dating of some Indian galena ores: Geol. Min. Metal. Soc. India, Quart. Jour., V. 44, No. 4, p. 225.

Chow, T. J., and Earl,J. L., 1972, Lead isotopes in North America coals: Science, V. 176, p. 510-511.

Chow, T. J., Earl, J. L., and Snyder, C. B., 1972, Lead aerosol baseline: Concentration of White Mountain and Laguna Mountains: Science, V. 178, No. 4059, p. 401-402.

Committee on Biologic Effects of Atmospheric Pollutants, 1972, Lead; Airborne lead in perspective: Nat. Acad. Sci., Div. Medical Sci. NRC, 330 p.

Cooper, J. A., 1972, Isotopic age determinations and stratigraphic problems--a case history, in Stratigraphic Problems of the Later Precambrian and Early Precambrian: Centre for Precambrian Research, University of Adelaide. Spec. Paper 1, p. 63-69.

Corvalau, D. J., and Munizaga, S., 1972, Radiometric ages of metamorphic and intrusive rocks of Valpariso and San Antonio, Chile: Chile Inst. Invest. Geol., Bol., No. 28, 40p.

Delaloye, M., Cogulu, E., and Chessex, R., 1972, Geochronometry of the Rize and Gumusane Mountains, eastern Pontides, Turkey: Soc. Phys. Hist. Nat. Geneve, C. R., V. 7, No. 2-3, p. 43-52.

Doe, B. R., and Delevaux, M. H., 1972, Source of lead in southeast Missouri galena ores: Econ. Geol., V. 67, p. 409-425.

Doe, B. R., and Tatsumoto, M., 1972, Volatilized lead from Apollo 12 and 14 soils: Lunar Science III, Lunar Sci. Inst. Contrib. No. 88, p. 177-18

Doe, B. R., and Tatsumoto, M., 1972, Volatilized lead from Apollo 12 and 14 soils: Proc. Third Lunar Sci. Conf., Geochim. Cosmochim. Acta, Suppl. 3, V. 2, p. 1981-1988. MIT Press.

Dathou, J. L., Cassedanne, J. P., and Lasserre, M., 1972, Lead isotope analyses of galenas from the Sao Francisco Craton, Brazil: Fr. Bur. Rech. Geol. Minieres, Bull. (Ser. Z), Sect. 4, No. 3, p. 3-20.

Gale, N. H., 1972, Uranium-lead systematics in lunar basalts: Earth Planet. Sci. Lett., V. 17, No. 1, p. 65-78.

Gale, N. H., 1972, Discussion of paper by R. D. Russell, "The Systematics of double spiking": J. Geophys. Research, V. 77, No. 2, p. 380.

Gale, N. H., Arden, J., and Hutchison, R., 1972, Uranium-lead chronology of chronodritic meteorites: Nature, Phys. Sci., V. 240, No. 99, p. 56-57.

Gerling, E. K., Morozova, I. M., Nikitin, Yu. V., et al., 1972, Radiologic interpretation of anomalous age values of terrestrial and lunar rocks, Ocherki sovremennoy geokhimii i analiticheskoy khimi: Moscow, Izd. Nauka, p. 429-440.

Goldich, S. S., and Mudrey, M. G., Jr., 1972, Dilatancy model for explaining discordant uranium-lead zircon ages, in Ocherki sovremennoy geokhimii i analiticheskoy khimi: Moscow, Izd. Nauka, p. 415-418.

Gravelle, M., 1972, Major stages in the Precambrian history of central and west-central Ahagger, Algerian Sahara: France, Cent. Natl. Rech. Sci., Collog. Int., No. 192, p. 41-63.

Gray, C. M., and Oversby, V. M., 1972, the behavior of lead isotopes during granulite facies metamorphism: Geochim. Cosmochim. Acta, V. 36, p. 939-952.

Gulson, B. L., and Krogh, T. E., 1972, U/Pb zircon studies on the age and origin of post-tectonic intrusions from south Greenland: IN Rept. Activities, 1971, Groenlands Geol. Unders., Rapp., No. 45, p. 48-53.

Hills, J. H., and Richards, J. R., 1972, The age of uranium mineralization in northern Australia: Search, V. 3, p. 382-385.

Huey, J. M., and Kohman, T. P., 1972, Search for extinct natural radioactivity of ^{205}Pb via thallium-isotope anomalies in chonrites and lunar soil: Earth Planet. Sci. Lett., V. 16, No. 3, P. 401-412.

Knight, R. J., and Tatsumoto, M., 1972, Contamination correction for the double-spike lead method: Geol. Survey Res., U. S. Geol. Survey Prof. Paper 800-C, p. C215-C219.

Koide, M., Soutar, A., and Goldberg, E. D., 1972, Marine geochronology with ^{210}Pb: Earth Planet. Sci. Lett., V. 14, No. 3, p. 442-446.

Lambert, G., Grjebine, T., LeRoulley, J. C., and Bristeau, P., 1972, Alpha spectrometry of a surface exposed lunar rock: Proc. Third Lunar Sci. Conf., Geochim. Cosmochim. Acta, Suppl. 3, V. 2, p. 1771-1777. MIT Press.

Lenz, H., 1972, Chapt. 6.2, Origin of the lead ore in the Karbon and Zechstein of the Weser-Ems-Gebietes and in the Trochitenkalk between Weser and Harzvorland, in Lead and zinc in the Trochitenkalk (Triassic, Upper Muschenlkalk 1) in northwest Germany: Geologisches Jahrbuch, Reiche D, V. 1, p. 18-82.

Marakis, G., 1972, Dating of the rocks of the internal areas of Greece: Soc. Phys. Hist. Nat. Geneve, C. R., V. 7, No. 2-3, p. 52-58.

Mattinson, J. M., 1972, Ages of zircons from the northern Cascade Mountains, Washington: Geol. Soc. America Bull., V. 83, p. 3769-3784.

Mironyuk, Ye. P., 1972, The Olekma Branch (of the Stanovoy Fold Province): In Geologiya Severo-Vostochnoy Azii, V. 2, stratigrfiya i paleogeografiy Nizhniy dokembriy (Vereshchagin et al., ed.), Izd., Nedra, Leningrad, p. 19-24.

Moore, W. S., and Krishnaswami, S., 1972, Coral growth rates using ^{228}Ra dnd ^{210}Pb: Earth Planet. Sci. Lett., V. 15, p. 187-190.

Naydenov, B. M., 1972, Calculation of the isochron and the original differentia of terrestrial substance: Int. Geol. Rev., V. 14, no. 9, p. 954-958. (Eng. trans., see for orig. Akad. Nauk SSSR, Izo., Ser. Geol. No. 1, p. 16-20, 1972).

Nechayev, S. V., and Bartnitskiy, Ye. N., 1972, Isotopic composition of lead in galena from ore occurrences in the southwestern slope of the Ukranian Shield and the problem of the source of ore-forming elements: Geokhimiya, No. 10, p. 1177-1188 (Abstr. Geochem. Int., V. 9, no. 5, p. 882).

NKomo, I. T., and Rosholt, J. N., 1972, A lead-isotope age and U-Pb discordance of Precambrian gneiss from Granite Mountains, Wyoming: Geol. Survey Res., U. S. Geol. Survey Prof. Paper 800-C, p. C169-C177.

Oversby, V. M., 1972, Genetic relations among the volcanic rocks of Reunion: chemical and lead isotopic evidence: Geochim. Cosmochim. Acta, V. 36, no. 10, p. 1167-1180.

Oversby, V. M., and Ewart, A., 1972, Lead isotopic compositions of Tonga-Kermadec volcanics and their petrogenetic significance: Contrib. Mineral. Petrol., V. 37, no. 3, p. 181-210.

Pidgeon, R. T., and Bowes. D. R., 1972, Zircon U-Pb ages of granulites from the Central Region of the Lewisian, northwestern Scotland: Geol. Mag., V. 109, No. 3, p. 247-258.

Poet, S. E., Moore, H. E., and Mortell, E. A., 1972, Lead-210, bismuth-210 and polonium-210 in the atmosphere: accurate ratio measurement and application to aerosol residence time determination: J. Geophys. Res., V. 77, p. 6515-6527.

Rabinowitz, M. B., and Wetherill, G. W., 1972, Identifying sources of lead contamination by stable isotope techniques: Environ. Sci. Tec., V. 6, p. 705-709.

Rao, K. V., and Khandekar, A. K., 1972, Eichornia as an indicator plant for copper, lead and zinc: in Base metals, pt. 2, India, Geol. Survey, Misc. Pub. No. 16, p. 731-737.

Richards, J. R., Yonk, A. K., and Keighin, C. W., 1972, A re-assignment of the Upper Mississippi Valley lead isotope data: Mineral. Deposita, V. 17, p. 285-291.

Ridge, J. D., and Smolarska, I., 1972, Factors bearing on the genesis of the Silesian-Cracovian lead-zinc deposits in southern Poland: 24th IGC, Section 6, p. 216-229.

Russell, R. D., 1972, Evolutionary model for lead isotopes in conformable ores and in ocean volcanics: Revs. Geophys. and Space Physics, V. 10, p. 529-549.

Russell, R. D., 1972, Reply to "Discussion by N. H. Gale of paper by R. D. Russell, 'The systematics of double spiking": J. Geophys. Research, V. 77, No. 2, p. 381.

Saito, N., and Miyazaki, A., 1972, Isotopic composition of lead in pegmatitic feldspars of Japan: J. Geol. Soc. Japan, V. 78, p. 341-346 (in Japanese with English abstract).

Sangster, D. F., 1972, Precambrian volcanogic massive sulfide deposits in Canada: A review: Geol. Survey Canada, Paper 72-22, 44p.

Sangster, D. F., 1972, Isotopic studies of ore-leads in the Hanson Lake-Flin Flon-Snow Lake mineral belt, Saskatchewan and Manitoba: Can J. Earth Sci., V. 9, p. 500-513.

Semenenko, N. P., 1972, Correlation of the Precambrian in the basement of the Ukraine and the Baltic Shield: Geotectonics, No. 5, p. 306-308.

Semenenko, N. P., 1972, Precambrian geochronology and problems: Int. Geol. Rev., V 14, No. 9, p. 947-953 (Eng. Trans., for orig. see Acad. Nauk SSSR, Izo, Ser. Geol., no. 2, p. 3-12.).

Shaw, D. M., 1972, Development of the Early Continental Crust. Part I. Use of Trace Element Distribution Coefficient Models for the Proto-archean Crust: Can. Jour. Earth Sci., V. 9, No. 12, p. 1577-1595.

Shestakov, G. I., 1972, Diffusion of lead in monazite, zircon, sphene and apatite: Geokhimiya, No. 10, p. 1197-1204.

Silver, L. T., 1972, Lead volatilization and volatile transfer processes on the moon: Lunar Science III, Lunar Sci. Inst. Contrib. No. 88, p. 701-703.

Silver, L. T., 1972, U-Th-Pb abundances and isotopic characteristics in some Apollo 14 rocks and soils and an Apollo 15 soil: Lunar Science III Lunar Sci. Inst. Contrib. No. 88, p. 704-706.

Silver, L. T., 1972, Uranium-thorium-lead isotopes and the nature of the mare surface debris at Hadley-Apennine: The Apollo 15 Lunar Samples, Lunar Sci. Inst. Cont., p. 388-390.

Sinha, A. K., 1972, U-Th-Pb systematics and the age of the Onverwacht series, South Africa: Earth Planet. Sci. Lett., V. 16, no. 2, p. 219-227.

Sinha, A. K., and Hart, S. R., 1972, A geochemical test of the subduction hypothesis for generation of island arc magmas: Carnegie Inst. Wash., Yearbook No. 71, p. 309-312.

Snelling, N. J., Johnson, R. L., and Drysdall, A. R., 1972, The Geochronology of Zambia: Zambia Geol. Surv. Rec., V. 12, p. 19-30.

Stacey, J. S., Wilson, E. E., and Terrazas, R., 1972, Digital recording of mass spectra in geologic studies. II: Can. Jour. Earth Sci., V. 9, p. 824-834.

Steiger, R. H., and Hendriksen, N., 1972, The geochronology of the Scoresby Sund area: Progress rpt. 3: zircon ages: In Report on the 1971 geological expedition to Scoresby Sund, East Greenland, Groenlands Geol. Unders., Rapp., no. 48, p. 109-114.

Tatsumoto, M., Hedge, C. E., Doe, B. R., and Unruh, D., 1972, U-Th-Pb and Rb-Sr measurements on some Apollo 14 lunar samples: Lunar Science III, Lunar Sci. Inst. Contrib. No. 88, p. 741-743.

Tatsumoto, M., Hedge, C. E., Doe. B. R., and Unruh, D., 1972, U-Th-Pb and Rb-Sr measurements on Apollo 14 lunar samples: Proc. Third Lunar Sci. Conf., Geochim. Cosmochim. Acta, Suppl., 3, V. 2, p. 1531-1555.

Tatsumoto, M., Hedge, C. E., Knight, R. J., Unruh, D. M., and Doe, B. R., 1972, U-Th-Pb, Rb-Sr and K measurements on some Apollo 15 and Apollo 16 sampl The Apollo 15 Lunar samples, The Lunar Sci. Inst., p. 391-395.

Tatsumoto, M., Knight, R. J., and Delevaux, M. H., 1972, Uranium, Thorium, and lead concentrations in three silicate standards and a method of lead isotopic analysis: Geological Survey Research 1972, U. S. Geol. Survey Prof. Paper 800-D, p. D111-D115.

Tera, F., Ray, L. A., and Wasserburg, G. J., 1972, Distributuion of Pb-U-Th in lunar anorthosite 15415 and inferences about its age: The Apollo 15 Lunar Samples, The Lunar Sci. Inst., p. 396-401.

Tera, F., and Wasserburg, G. J., 1972, U-Th-Pb systematics in three Apollo 14 basalts and the problem of initial Pb in lunar rocks: Earth Planet. Sci Lett., V 14, No. 3, p. 281-304.

Tera, F., and Wasserburg, G. J., 1972, U-Th-Pb systematics in lunar highland samples from the Luna 20 and Apollo 16 missions: Earth Planet. Sci. Lett., V. 17, No. 1, p. 36-51.

Thorpe, R. I., 1972, Interpretation of lead isotope data for base metal and gold deposits, Slave Province, Northwest Territories, in Report of Activities, Part B, Nov. 1971 to March 1972: Can Geol. Survey Pap. No. 72-1, p. 72-77.

Thorpe, R. I., and Kirkham, R. V., 1972, Lead isotope data for galena from deposits in the Bulkley Valley region, British Columbia, in Report of Activities, Part B, Nov. 1971 to March 1972: Can Geol. Survey Pap. No. 72-1, p. 65-72.

Tugarinov, A. I., 1972, The correlation of Precambrian deposits in the USSR: French; Cent. Natl. Rech. Sci., Colloq. Int., No. 192, p. 249-256.

Tugarinov, A. I., Mityayaeva, N. M., Zamyatin, N. I., Shilov, L. I., Lebedev, V. P., Miyasishchev, V. V., and Shilov, V. J., 1972, Lead and sulfur isotopic composition and the process of ore deposition in the deposits of the Atasuy Region: Geokhimiya, No. 5, p. 547-561. (Eng. Trans. for orig. see Geochem. Inst., V. 9, No. 3, p. 336-350.).

Tychinskiy, A. A., Sotnikov, V. I., and Shipilov, L. D., 1972, Relationship of copper-molybdenium and polymetallic ore formations in eastern Transbaikalia: in Geologiya i genezis endogennykh rudnykh formatsiy Sibiri, Izd. Nauka, Moscow, p. 111-119.

Tychinskiy, A. A., Perovskiy, I. G., and Shipilov, L. D., 1972, Geochemical studies of deposits of the gold-galena-sphalerite type, with the Novo-Shirokinskoye deposit in eastern Transbaikalia as an example: in Geologiya i genezis endogennykh rudnykh formatsiy Sirbiri, Izd. Nauka Pubs., Moscow. p. 120-134.

Vilenskiy, F. D., 1972, Radioactive isotopes in the Antarctic ice sheet: Antarktika, No. 11, p. 157-173. (for Eng. Abstr. see Geochem. Int., V. 9, No. 5, p. 880).

Viswanadham, C. R., and Murty, C. N., 1972, Reactions of rocks with solutions of copper, lead, and zinc salts: in Base metals, pt. 2, India, Geol. Survey, Misc. Publ. No. 16, p. 652-666.

Vitrac, A., 1972, U-Pb dating of the Agly charnockitic granite, Pyrenees-Orientales, France: Acad. Sci., C. R., Ser. D, V. 275, No. 17, P. 184

York, Derek, and Farquhar, R. M., 1972, The Earth's age and geochronology: Oxford, Pergamon Press, 178p.

Wasserburg, G. J., Turner, G., Tera, F., Padosek, F. A., Papanastassiou, D. A., and Huneke, J. C., 1972, Comparison of Rb-Sr, K-Ar, and U-Th-Pb ages; Lunar chronology and evolution: Lunar Science III, Lunar Sci. Inst. Contrib. No. 88, p. 788-791.

Lead Isotope References for 1971

Adams, J. A. S., Barretto, P. M., Clark, R. B., and Duval, J. S., 1971, Radon-222 emanation and the high apparent lead isotope ages in lunar dust: Nature, V. 231, no. 5299, p. 174-175.

Anderson, C. A., Blacet, P. M., Silver, L. T., and Stern, T. W., 1971, Revision of Precambrian stratigraphy in the Prescott-Jerome areas, Yavapai County, Arizona: U.S. Geol. Surv. Bull. 1324-C, C16p.

Angino, E. E., Goebel, E. D., and Waugh, T. C., 1971, Lead isotopes and metallic sulfides as exploration guides in mid-continent rocks: Proc. Third Internat. Geochem. Explor. Symp., Can. Inst. Min. Met., Spec., V. 11, p. 453-456.

Armstrong, R. L., 1971, Isotopic and chemical constraints on models of magma genesis in volcanic arcs: Earth and Planetary Sci. Letters, V. 12, No. 1, P. 137-142.

Armstrong, R. L., and Cooper, J. A., 1971, Lead isotopes in island arcs: Bull. Volcanol., V. 35, No. 1, p. 27-63.

Aronson, J. L., and Tilton, G. R., 1971, Probable Precambrian detrital zircons in New Caldeonia and southwest Pacific continental structure: Geol. Soc. America Bull., V. 82, No. 12, p. 3449-3456.

Bender, M., Broecker, W., Gomitz, V., Middel, V., Kay, R., Sun, S. S., and Biscaye, P., 1971, Geochemistry of three cores from the East Pacific Rise: Earth Planet. Sci. Lett., V. 12, p. 425-433.

Bertine, K. K., and Goldberg, E. D., 1971, Fossil fuel combustion and the major sedimentary cycle: Science, V. 173, p. 525-528.

Black, L. P., Gale, N. H., Moorbath, S., Pankhurst, R. J., and McGregor, V. R., 1971, Isotopic dating of very early Precambrian amphibolite facies gneisses from the Godthaab district, West Greenland: Earth and Planet. Sci. Lett., V. 12, No. 3, p. 245-259.

Blanchard, R. L., and Moore, J. B., 1971, Body burden, distribution and internal dose of lead-210 and polonium-210 in a uranium miner population: Health Phys., V. 21, No. 4, p. 499-518.

Brill, R. H., Shields, W. R., and Wampler, J. M., 1971, New directions in lead isotope research, in Application of science in examination of works of art (W. J. Young, Ed.): Boston, Boston Arts Museum, p. ?

Buchs, A., Chessex, R., and Delaloye, M., 1971, U-Pb ages of zircons from the Mont Blanc Massif, Haute-Savoie, France: Soc. Phys. Hist. Natur. Geneve, C. R., V. 5, No. 2-3, p. 221-228.

Cahen, L., François, A., and Ledent, D., 1971, On the age of uraninite of west Kombove and the Kamoto "principal" and revision of the known relations of uraniferous mineralizations in Katanga and the copper belt of Zambia: Annales Soc. Géol. de Belgique, v. 94, p. 185-198.

Cannon, R. S., Pierce, A. P., and Antweiler, J. C., 1971, Suggested uses of lead isotopes in exploration: Proc. Third Internat. Geochem. Explor. Symp., Can Inst. Min. Met., Spec. Vol. 11, p. 457-463.

Catanzaro, E. J., and Hanson, G. N., 1971, U-Pb ages for sphene from Early Precambrian igneous rocks in northeastern Minnesota--northwestern Ontario: Can. Jour. Earth Sci., v. 8, p. 1319-1324.

Chessex, R., Buchs, A., Allaart, J. H., and others, 1971, U-Pb isotopic ages of zircons from Precambrian rocks of South Greenland: Groenlands Geol. Unders., Rapp., no. 42, 12 p.

Chow, T. J., 1971, Isotopic identification of industrial lead: Proc. Second Internat. Clean Air Congress, p. 348-352.

Cliff, R. A., Lee-Hu, C., and Wetherill, G. W., 1971, Rb-Sr and U-Th-Pb measurements on Apollo 12 material, in Proc. Second Lunar Sci. Conf., v. 2, Geochim. et Cosmochim. Acta, Suppl. 2, M.I.T. Press, p. 1493-1502.

Dasch, E. J., Dymond, J. R., and Heath, G. R., 1971, Isotopic analysis of metalliferous sediment from the East Pacific Rise: Earth and Planetary Sci. Letters, v. 13, no. 1, p. 175-180.

Delhal, J., and Ledent, D., 1971, Ages by U/Pb and Rb/Sr and the initial strontium of the gabbro-norite and charnockite complexes of the Kasai shield (Democratic Republic of the Congo and Angola): Annales de la Soc. Géol. de Belgique, v. 94, p. 211-221.

Delhal, J., Ledent, D., Pasteels, P., and Venier, J., 1971, Studies of the isotopic composition in the Rb/Sr and U/Pb systems on the peralkaline granite of Noqui (Democratic Republic of the Congo and Angola): Annales Soc. Geol. de Belgique, V. 94, p. 223-236.

Doe, Bruce R., 1971, A list of references on lead isotope geochemistry, 1967-1969: U.S. Geol. Survey Open File Rept., May, 28p.

Doe, Bruce R., Jager, E., Lanphere, M., Silver, L. T., and Stern, T. W., 1971, Standards, I: Geochem. News, No. 53, p. 3-4.

Donnelly, T. W., Rogers, J. J. W., Pushkar, P., and Armstrong, R. L., 1971, Chemical evolution of the igneous rocks of the eastern West Indies: An investigation of thorium, uranium, and potassium distributions and lead and strontium isotope ratios: Geol. Soc. America Memoir 130, p. 181-224.

Furnica, Gh., 1971, Determination of radioactive lead by electrochemical deposition on nickel: Igiena, V. 20, No. 2, p. 109-116 [in Romanian].

Gentry, R. V., 1971, Radiohaloes. Unique lead isotope ratios and unknown alpha radioactivity: Science, V. 173, No. 3998, p. 727-731.

Geological Society of London, 1971, Isotopic age determinations of rocks and minerals from the British Isles, 1967-68, with consolidated indexes for 1955-68: Geol. Soc. London Quart. Jour., V. 126, pt. 3, No. 503, p. 383-411.

Green, D. C., and Baadsgaard, H., 1971, Temporal evolution and petrogenesis of an Archean crustal segment at Yellowknife, N. W. T., Canada: Jour. Petrology, V. 12, p. 177-217.

Greig, J. A., Baadsgaard, H., Cumming, G. L., Folinsbee, R. E., Krouse, H. R., Ohmoto, H., Sasaki, A., and Smejkel, V., 1971, Lead and sulfur isotopes of the Irish Base Metal mines in carboniferous host rocks, in Geochemistry and crystallography of sulfide minerals in hydrothermal deposits: Internat. Mineral. Assoc.-Internat. Assoc. Genesis Ore Deposits, Joint Symp., Vol., Soc. Min. Geol. Jap., Spec. Issue No. 2, p. 84-92.

Hanson, G. N., Catanzaro, E. J., Anderson, D. H., 1971, U-Pb ages for sphene in a contact metamorphic zone: Earth and Planet. Sci. Lett., V. 12, No. 2, p. 231-237.

Hanson, G. N., Goldich, S. S., Arth, J. G., and Yardley, D. H., Age of the early Precambrian rocks of the Saganaga Lake-Northern Light Lake area, Ontario-Minnesota: Can. Jour. Earth Sci., V. 8, No. 9, p. 1110-1124.

Hoffman, A., 1971, Fractionation corrections for mixed-isotope spikes of Sr, K, and Pb: EPSL, V. 10, p. 397-402.

Hoffman, P., Baechmann, K., Klenk, H., and Lieser, K. H., 1971, Separation of decay products of a radium-224 source as methyl compounds: Inorg. Nucl. Chem. Lett., V. 7, No. 7, p. 577-582.

Huey, J. M., Ihochi, H., Black, L. P., Ostic, R. G., and Kohman, T. P., 1971, Lead isotopes and volatile transfer in the lunar soil: Proc. Third Lunar Sci. Conf., Geochim. et Cosmochim. Acta, Suppl. 2, V. 2, p. 1547-1564.

Jaffey, A. H., Flynn, K. F., Glendenin, L. E., Bentley, W. C., and Essling, A. M., 1971, Precision measurement of half-lives and specific activities of ^{235}U and ^{238}U: Phys. Rev. C, V. 4, p. 1889.

Jaworowski, Z., Bilkiewicz, J., and Zylicz, E., 1971, Radium-226 in contemporary and fossil snow: Health Phys., V. 20, No. 4, p. 449-450.

Joshi, L. U., Rangarojan, C., and Gopalakrishnan, S., 1971, Lead-210 concentrations in various regions of India: Health Phys., V. 20, No. 6, p. 665-668.

Khoreva, B. Ya., Iskanderova, A. D., and Chukhonin, A. P., 1971, Age of the oldest carbonate rocks of southern Altai and central Kyzylkum based on the Pb/Pb method: Akad. Nauk SSSR, Izv. Ser. Geol., no. 11, p. 3-8.

Khoreva, B. Ya., Iskanderova, A. D., and Shergina, Yu. P., 1971, Age of the substratum of the metamorphic series in the southwestern Pamirs according to the Pb/Pb methods: Akad. Nauk SSSR, Izv., Ser. Geol., no. 8, p. 40-56.

Koeppel, V., and Grünenfelder, M., 1971, A study of inherited and newly formed zircons from paragneisses and granitized sediments of Strona-Ceneri-zone (southern Alps): Schweiz. Mineral. Petrogr. Mitt., v. 51, no. 2-3, p. 385-409.

Kohman, T. P., 1971, Nuclear chemistry and geochemistry research, Carnegie-Mellon University, 1970-1971: U. S. Atomic Energy Comm. Rept. No. NYO-844-84, 69 p.

Krishnaswamy, S., Lal, D., Martin, J. M.,and Meybeck, M., 1971, Geochronology of lake sediments: Earth and Planetary Sci. Letters, v. 11, no. 5, p. 407-414.

Lambert, Gérard, LeRoulley, Jean-Claude, and Sanak, Joseph, 1971, Correlations between the deposition of lead-210 in the Antarctic and fluctuations of the geomagnetic field: Acad. Sci. Comptes Rendus, ser. D, v. 272, no. 2, p. 177-180.

Lambert, Gérard, Sanak, Joseph, and Ardouin, Bénédicte, 1971, Correlations between the atmospheric concentrations of lead-210 in Adélie Land and solar activity: Acad. Sci. Comptes Rendus, ser. B., v. 272, no. 8, p. 497-500.

Lancelot, J., Sarazin, G., and Allegre, C. J., 1971, Lead and sulfur isotopic composition of galenas related with sedimentary formations; geological and geophysical interpretations: Contr. Mineralogy and Petrology, v. 32, no. 4, p. 315-333.

Leggo, P. J., Aftalion, M., and Pidgeon, R. T., 1971, Discordant zircon U-Pb ages from the Uganda basement: Nature Phys. Sci., v. 231, no. 21, p. 81-84.

Legrand, J. M., 1971, Details on the evolution of the Birrimien orogeny obtained by new age measurements by the U/Pb method on zircons from the Éburnéens granites of the high Volta: Annales Soc. Geol. de Belgique, v. 94, p. 237-248.

Lindstrom, R. M., Evans, J. C., Jr., Finkel, R. C., and Arnold, J. R., 1971, Radon emanation from the lunar surface: Earth and Planetary Sci. Letters, v. 11, no. 4, p. 254-256.

Magomedov, Sh. A., 1971, Determination of diffusion parameters of lead atoms in natural minerals: Izv. Akad. Nauk SSSR, Ser. Geol., p. 97-100.

Manton, W. I., and Tatsumoto, M., 1971, Some Pb and Sr isotopic measurements on eclogites from the Roberts Victor mine, South Africa: Earth and Planetary Sci. Letters, v. 10, no. 2, p. 217-226.

Masson, H., Chessex, R., and Delaloye, M., 1971, Total lead age determinations on zircons from the Precambrian of the Frederikshab region, southwest coast of Greenland: Schweiz. Mineral. Petrogr. Mitt., v. 51, no. 1, p. 179-192.

Mattinson, J. M., Davis, T. E., and Hopson, C. A., 1971, U-Pb studies in the Salinian block of California: Carnegie Inst. Year Book 70, 1970-1971, p. 248-251.

Mitchell, R. H., and Krouse, H. R., 1971, Isotopic composition of sulfur and lead in galena from the Greenhow-Skyreholme area, Yorkshire, England: Econ. Geology, v. 66, p. 243-251.

Nunes, P. D., and Tilton, G. R., 1971, Uranium-lead ages of minerals from the Stillwater Igneous Complex and associated rocks: Geol. Soc. America Bull., v. 82, p. 2231-2250.

O'Nions, R. K., and Baadsgaard, H., 1971, A radiometric study of polymetamorphism in the Bamble region, Norway: Contr. Mineralogy and Petrology, v. 34, p. 1-21.

Oversby, V. M., 1971, Lead in oceanic islands: Faial, Azores and Trindade: Earth and Planetary Sci. Letters, v. 11, p. 401-406.

——— 1971, Lead (82), in Handbook of Elemental Abundances in Meteorites (Mason, B., editor): Series on Extraterrestrial Chemistry, v. 1, p. 499-510, Gordon and Breach Pubs.

Oversby, V. M., Lancelot, J., and Gast, P. W., 1971, Isotope composition of lead in volcanic rocks from Tenerife, Canary Islands: Jour. Geophys. Research, v. 76, no. 14, p. 3402-3413.

Oversby, V. M., and Ringwood, A. E., 1971, Time of formation of the Earth's core: Nature, v. 234, no. 5330, p. 463-465.

Ozard, J. M., and Russell, R. D., 1971, Lead isotope studies of rock samples from the Superior geological province: Canadian Jour. Earth Sci., v. 8, p. 444-454.

Pap, A. M., Murina, G. A., Murkina, S. L., and others, 1971, Age of the Mikashevichi-Zhitkovichi in the southern part of Byelorussia based on lead isotope data: Akad. Nauk SSSR, Izv., Ser. Geol., no. 6, p. 36-41.

Phair, G., Stern, T. W., and Gottfried, D., 1971, Boulder Creek batholith Colorado. Part III: Fingerprinting discordant zircon ages in a complex intrusion: Geol. Soc. America Bull., v. 82, p. 1635-1656.

Pichamuthu, C. S., 1971, Precambrian geochronology of Peninsular India: Geol. Soc. India Jour., v. 12, no. 3, p. 262-273.

Popov, V. E., 1971, Sources of iron in deposits connected with intrusive volcanic complexes (according to data from isotopic lead analysis): Geol. Rud. Mestorozhd., v. 13, no. 4, p. 103-107.

Prochazka, H., and Jilek, R., 1971, Determination of low activities of uranium-radium series elements by liquid scintillation-spectrometry: Jad. Energ., v. 17, p. 117-120.

Reynolds, P. H., 1971, A U-Th-Pb isotope study of rocks and ores from Broken Hill, Australia: Earth and Planetary Sci. Letters, v. 12, no. 2, p. 215-223.

Reynolds, P. H., and Sinclair, A. J., 1971, Rock and ore-lead isotopes from the Nelson batholith and Kootenay arc, British Columbia: Econ. Geology, v. 66, no. 2, p. 259-266.

Reynolds, Peter H., and Dasch, E. Julius, 1971, Lead isotopes in marine manganese nodules and the ore-lead growth curve: Jour. Geophys. Research, v. 76, no. 21, p. 5124-5129.

Richards, J. R., 1971, Major lead ore bodies--Mantle origin?: Econ. Geology, V. 66, No. 3, p. 425-434.

———— 1971, The evidence from lead isotopes on the immediate source of lead in ore-forming solutions: Cont. Internat. Geochem. Cong., Moscow, P. ? .

Rossman, G. I., Sychev, I. V., Tarhanova, G. A., and Chesnokov, L. V., 1971, Use of lead-206 radiogenic isotope halo in prospecting for uranium mineralization in acidic rocks: Izv. Akad. Nauk SSSR, Ser. Geol., p. 79-85.

Rudnik, V. A., and Sobotovich, E. V., 1971, Lead-isochronous method of stratigraphic analysis (illustrated by the Precambrian of the Aldan Shield): Dokl. Akad. Nauk SSSR, V. 199, No. 4, p. 897-900.

Rudnik, V. A., Sobotovich, E. V., and Iskanderova, A. D., 1971, Isotopic lead ratios as basis for periodization of the Precambrian: Int. Geol. Rev., V. 13, No. 12, p. 1841-1851 [English Trans.].

Sakko, M., 1971, Radiometric zircon ages on the early Karelian metadiabases, Finland: Geologi (Helsinki), V. 23, No. 9-10, p. 117-119.

Shilov, L. I., Egembaev, K. M., Shilov, F. I., and Lebedev, V. P., 1971, Isotopic lead composition of ores and country rocks of the Kairakty deposit (Central Kazakhstan): Geokhimiya, No. 1, p. 18-22.

Shilov, L. I., Kovrigo, O. A., and Podrovskaya, I. V., and others, 1971, Isotopic composition of lead in the Ridder-Sokol and Tishin deposits, Rudny Altai: Geokhimiya, No. 2, p. 209-217.

Sinha, A. K., and Davis, T. E., 1971, Geochemistry of Franciscan volcanic and sedimentary rocks from California: Carnegie Inst. Yearbook 69, 1969-1970, p. 394-400.

Small, W. D., 1971, The isotopic composition of selected ore leads from northeastern Washington and its geophysical interpretation: U. S. Coast Guard Academy, Final Rept., 30 p.

Sobotovich, E. V., 1971, Some questions on isotopic cosmochemistry and cosmochronology (16-39), in Problems of Cosmochemistry and Meteorites: Kiev, Dumka Pubs., 222 p.

Sobotovich, E. V., and Rudnik, V. A., 1971, Real and apparent radiologic age of Aldan complex: Dokl. Akad. Nauk SSSR, v. 198, no. 2, p. 407-410.

Sobotovich, E. V., Shats, M. M., Smirnova, A. V., and Alekseeva, A. L., 1971, Mineralogy, abundance of the elements and age of lunar rocks from Apollo 11 samples in Problems of Cosmochemistry and Meteorites: Kiev, Dumka Pubs., 222 p.

Stern, T. W., Phair, G., and Newell, M. F., 1971, Boulder Creek batholith, Colorado. Part II: Isotopic age of emplacement and morphology of zircon: Geol. Soc. America Bull., v. 82, p. 1615-1634.

Tatsumoto, M., Knight, R. J., and Doe, B. R., 1971, U-Th-Pb systematics of Apollo 12 lunar samples: Proc. Second Lunar Sci. Conf., Geochim. et Cosmochim. Acta, Suppl. 2, v. 2, p. 1521-1546.

Tera, F., Eugster, O., Burnett, D. S., and Wasserburg, G. J., 1971, Comparative study of Li, Na, K, Rb, Cs, Ca, Sr and Ba abundances in achondrites and in Apollo 11 lunar samples: Proc. Apollo 11 Lunar Sci. Conf., Geochim. et Cosmochim. Acta, Suppl. 1, v. 2, p. 1637-1657.

Thorpe, R. I., 1971, Lead isotopic evidence on age of mineralization, Great Bear Lake, District of Mackenzie (including a new model for certain anomalous leads): Canadian Geol. Survey Paper No. 71-1, pt. B, p. 72-75.

——— 1971, Rock ages in the Yellowknife area, District of Mackenzie: Canadian Geol. Survey Paper No. 71-1, pt. B, p. 76-79.

Tilton, G. R., 1971, Radioactive and radiogenic isotope research, in U. S. National Report 1967-1971, Fifteenth General Assembly, IUGG, pt. 2: Trans. Amer. Geophys. Union, v. 52, no. 5, p. IUGG100-IUGG105.

Tsunogai, S., and Nozaki, Y., 1971, Lead-210 and polonium-210 in the surface water of the Pacific: Geochem. Jour., v. 5, p. 165.

Van Breemen, O., Aftalion, M., and Pidgeon, R. T., 1971, The age of the granitic injection complex of Harris, Outer Hebrides: Scottish Jour. Geol., v. 7, p. 139-152.

Zartman, R. E., and Marvin, R. F., 1971, Radiometric age (Late Ordovician) of the Quincy, Cape Ann, and Peabody Granites from eastern Massachusetts: Geol. Soc. America Bull., v. 82, p. 937-958.

Zartman, R. E., and Stacey, J. S., 1971, Lead isotopes and mineralization ages in Belt Supergroup rocks, northwestern Montana and northern Idaho: Econ. Geology, v. 66, p. 849-860.

Lead Isotope References 1970

Afanas'yev, G. D., Brandt, S. B., Bagdasaryan, G. P., Gorokhov, I. M., Dunayev, V. A., Zykov, S. I., and Rubinshteyn, M. M., 1970, Summarized analysis of standards, *in* Geochronology of Phanerozoic orogenic belts--Colloquium, Switzerland, 1969, Papers: Eclogae Geol. Helvetiae, v. 63, no. 1, p. 9-14.

Afanas'yev, G. D., Brandt, S. B., and Garris, M. A., 1970, State and prospects of radiological investigations: Akad. Nauk SSSR Izv. Ser. Geol., no. 4, p. 69-84.

Andersen, C. A., Hinthorne, J. R., and Fredriksson, K., 1970, Ion microprobe analysis of lunar material from Apollo 11, *in* Apollo 11 Lunar Sci. Conf., Houston, Tex., 1970, Proc.--V. 1, Mineralogy and petrology: New York, and Oxford, England, Pergamon Press (Geochim. et Cosmochim. Acta Supp. 1), p. 159-167.

Anonymous, 1970, Age determinations: Uranium exploration geology: I.A.E. A., Panel Proc. Ser., p. 375-376.

Arnaoudov, V., Amov, B., and Pavlova, M., 1970, On the absolute geological age of certain pegmatites in south Bulgaria (Russian): Bulgarska. Akad. Nauk Geol. Inst. Izv. Ser. Geokhyimia Mineralogiya Petrografiya, v. 18, no. 282, p. 19-27.

Artemov, Yu. M., 1970, On some possible interpretations of data on the isotopic composition of leads: Geokhimiya, no. 10, p. 1272-1274.

Ault, W. U., Senechal, R. G., and Erlebach, W. E., 1970, Isotopic composition as a natural tracer of lead in the environment: Environ. Sci. and Technol., v. 4, p. 305-313.

Baratov, R. B., Kutenets, V. A., Murina, G. A., Madzhi, L. A., Mirkina, S. L., and Chukhonin, A. P., 1970, Age of granitization in metamorphic strata of the Garm block (central Tadzhikistan): Dokl. Akad. Nauk Tadzh. SSSR, v. 13, no. 8, p. 41-43.

Barnes, I. L., Sappenfeld, K. M., and Shields, W. R., 1970, Mass spectrometric analysis of subpicogram quantities of lead: Recent Develop. Mass Spectrosc. Proc. Int. Conf. Mass Spectrosc. 1969, p. 682-687.

Boudin, André, and Deutsch, Sarah, 1970, Geochronology--Recent development in the lutetium-176/hafnium-176 dating method: Science, v. 168, no. 3936, p. 1219-1220.

Brill, R. H., 1970, Lead and oxygen isotopes in ancient objects, *in* A symposium on the impact of the natural sciences on archeology: Royal Soc. London Philos. Trans., ser. A, v. 269, no. 1193, p. 143-164.

Brookins, D. G., 1970, A summary of geochronological data for pegmatites of the Middletown, Connecticut area accumulated mainly since 1952: State Geol. and Nat. Hist. Surv. Conn. Rept. Invest., no. 5, p. 10-18.

Brown, John S., 1970, Khandia lead ore and the age of the Aravalli of India [discussion of "Lead-zinc mineralization in the Champaner rocks of Khandia, Barod District, Gujarat, India" by D. D. Yellur, 1969]: Econ. Geology, v. 65, no. 4, p. 517-518.

Buchs, A., Chessex, R., and Delaloye, M., 1970, Uranium-lead isotopic dating determined on zircons from the Mont-Blanc massif (Upper Savoy, France): C. R. Seances Soc. Phys. Hist. Natur. Geneve, v. 5, no. 2-3, p. 221-228.

Buchs, A., Chessex, R., Delaloye, J. C., Landry, J. C., Bertrand, J., and Vuagnat, M., 1970, Uranium-lead and lead-lead age determinations on zircons; results obtained with a direct ionization method for the isotopic analysis of lead: Schweiz. Mineral. Petrogr. Mitt., V. 50, No. 3, p 508-518.

Cahen, L., Delahal, J., Deutsch, S., Grogler, N., and Pasteels, P., 1970, The age of the Roan Antelope and Mufulira granites (Copperbelt of Zambia) [with French summ.]: Mus. Royal Afrique Centrale Annales, Sci. Geol., No. 65, p. 17-37.

Cassedanne, J., and Lasserre, M., 1970, Lead isotope analysis of a second group of Brazilian galenas: Mineracao Metaluriga, V. 51, No. 301, p. 31-40.

Chernyshev, I. V., and Shanin, L. L., 1970, Mass-spectrometric determination of the isotopic composition of traces of lead and uranium: Byull. Kom. Opred. Absol. Vozrasta Geol. Form., Akad. Nauk SSSR, No. 9, p. 30-1

Chow, Tsaihwa J., and Earl, John L., 1970, Lead and uranium in Pennsylvanian anthracite: (Scripps Inst. of Oceanography, Univ. of California, La Jolla, Calif.), Chem. Geol., V. 6, p. 9-43.

Chow. T. J., and Earl. J. L., 1970, Lead aerosols in the atmosphere: Increasing Concentrations: Science, V. 169, p. 577-580.

Cohenour, Robert E., 1970, Sheeprock granite, in Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineralog. Survey Bull. 81 (Utah Univ. Bull., V. 61, NO. 18; Utah Eng. Expt. Sta. Bull. 135), p. 31.

Compston, W., Chappell, B. W., Arriens, P. A., and Vernon, M. J., 1970, The chemistry and age of Apollo 11 lunar material, in Apollo 11 Lunar Sci. Conf., Houston, Tex., 1970, Proc.--V. 2, Chemical and isotope analysis: New York, and Oxford England, Pergamon Press (Geochim. et Cosmochim. Acta Supp. 1), p. 1007-1027.

Cooper, J. A., 1970, Lead isotope classification of the A. B. H. Consols and Browne's shaft veins at Broken Hill, N. S. W.: Australasian Inst. Mining and Metallurgy Proc., no. 234, p. 67-69.

Cumming, G. L., and Tsong, P. J. Gudjurges, 1970, Fractional removal of lead from rocks by volatilization: Earth and Planetary Sci. Letters, v. 9, no. 1, p. 49-54.

Delaloye, M., and Vuagnat, M., 1970, Index of geochronometry--Series No. 1: Archives Sci., v. 22, no. 2, p. 257-391.

Deutsch, Sarah, and Boudin, André, 1970, Half-life of lutetium-176 based on the ratio Lu-176:Hf-176 from two minerals dated by the Pb-U method, *in* Geochronology of Phanerozoic orogenic belts--Colloquium, Switzerland, 1969, Papers: Eclogae Geol. Helvetiae, v. 63, no. 1, p. 77.

Doe, Bruce R., 1970, Lead Isotopes: Minerals, Rocks, and Inorganic Materials: Berlin-Heidelberg-New York, Springer-Verlag, v. 3, 137 p.

———— 1970, Evaluation of U-Th-Pb whole-rock dating on Phanerozoic sedimentary rocks, *in* Geochronology of Phanerozoic orogenic belts--Colloquium, Switzerland, 1969, Papers: Eclogae Geol. Helvetiae, v. 63, no. 1, p. 79-82.

Doe, Bruce R., and Jager, Emilie, 1970, Standards: 1. Isotopic reference samples and standards reported on at the Colloquium on the Geochronology of Phanerozoic Orogenic Belts: Geochem. News., no. 51, p. 7-8.

El-Kholy, Sayed B., Hashad, Ahmed H., and Selim, Ezzat T. M., 1970, Lead isotopes and trace elements in some Miocene Red Sea galenas: Pure Appl. Geophys., v. 81, no. 4, p. 135-150.

El-Shatoury, Hamad, 1970, Gold Hill mining district, *in* Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineral. Survey Bull. 81 (Utah Univ. Bull., v. 61, no. 18; Utah Eng. Expt. Sta. Bull. 135), p. 27.

Farquharson, R. B., and Richards, J. R., 1970, A re-analysis of the monazite from Mica Creek, Mount Isa, Queensland: Geol. Soc. Australia, v. 16, pt. 2, p. 767-768.

——— 1970, Whole-rock U-Th-Pb and Rb-Sr ages of the Sybella micro-granite and pegmatite, Mount Isa, Queensland: Geol. Soc. Australia, v. 17, pt. 1, p. 53-58.

Feely, H. W., and Seitz, H., 1970, Use of lead-210 as a tracer of transport processes in the stratosphere: Jour. Geophys. Research, v. 75, no. 15, p. 2885-2894.

Francis, C. W., Chester, G., and Haskin, L. A., 1970, Determination of lead-210 mean residence time in the atmosphere: Environ. Sci. Technol., v. 4, no. 7, p. 586-589.

Gale, N. H., 1970, A solution in closed form for lead isotopic analyses using a double spike: Chem. Geol., v. 6, no. 4, p. 305-310.

Garris, A. M., and Postnikov, D. V., 1970, Geochronological study of the crystalline basement of the Russian platform: Tr. Sess. Kom. Opred. Absol. Vozrasta Geol. Form. 1967, Akad. Nauk, SSSR, no. 15, p. 38-52.

Gast, Paul W., 1970, Isotopic composition as a natural tracer of lead in the environment: Environ. Sci. Technol., v. 4, no. 4, p. 313-314.

Gerling, E. K., Iskanderova, A. D., Levchenkov, O. A., and Mikhaylov, D. A., 1970, The age of marbles of the Dzheltula and Iyengra series of the Aldan from data of the uranium-lead-isochron method: Akad. Nauk SSSR Doklady, v. 194, no. 6, p. 1397-1400.

Gerling, E. K., and Morozova, I. M., 1970, Oldest minerals of the Earth's crust: Priroda, no. 2, p. 37-42.

Goldich, S. S., Hedge, C. E., and Stern, T. W., 1970, Age of the Morton and Montevideo Gneisses and related rocks, southwestern Minnesota: Geol. Soc. America Bull., v. 81, no. 12, p. 3671-3695.

Goleva, G. A., Polyakov, V. A., and Nechayeva, T. P., 1970, Distribution and migration of lead in ground waters: Geokhimiya, no. 3, p. 344-357.

Gopalan, K., Kaushal, S., Lee-Hu, C., and Wetherill, G. W., 1970, Rubidium-strontium, uranium, and thorium-lead dating of lunar material: Science, v. 167, no. 3918, p. 471-472.

——— 1970, Rb-Sr and U, Th-Pb ages of lunar materials, *in* Apollo 11 Lunar Sci. Conf., Houston, Tex., 1970, Proc.--V. 2, Chemical and isotope analysis: New York, and Oxford, England, Pergamon Press (Geochim. et Cosmochim. Acta Supp. 1), p. 1195-1205.

Gornitz, V., and Kerr, P. F., 1970, Uranium mineralization and alteration, Orphan mine, Grand Canyon, Arizona: Econ. Geology, v. 65, no. 7, p. 751-768.

Graeser, Stefan, 1970, Isotopic composition of lead in basic and ultrabasic rocks from the Alps, *in* Geochronology of Phanerozoic orogenic belts--Colloquium, Switzerland, 1969, Papers: Eclogae Geol. Helvetiae, v. 63, no. 1, p. 105-109.

Graeser, Stefan, and Friedrich, Gunther, 1970, On the question of age and genesis of the lead-zinc occurrences of the Sierra de Cartagena in Spain (with English abs.): Mineralium Deposita, v. 5, no. 4, p. 365-374.

Hashad, A. H., Damon, Paul, and Whelan, J. A., 1970, Precambrian geochronology of the central Wasatch Mountains, *in* Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineralog. Survey Bull. 81 (Utah Univ. Bull., v. 61, no. 18; Utah Eng. Expt. Sta. Bull. 135), p. 15-17.

Holtzman, R. B., 1970, Source of lead-210 in uranium miners: Health Phys., v. 18, no. 2, p. 105-112.

Karol, I. L., 1970, Calculation of planetary distributions of radon and its long-lived daughter concentrations in the troposphere and lower stratosphere: Tellus, v. 22, no. 2, p. 219-227.

Kirsten, T., 1970, Isotopic analyses on Moon samples: Naturwissenschaften, v. 57, no. 5, p. 236-239.

Klyarovskii, V. M., 1970, Isotopic composition and age of lead from deposits and ore occurrences in folded structures in areas adjacent to the southwestern Siberian Platform: Issled. Strukt. Osob. Miner. Sovrem. Fiz.-Khim. Metod., p. 124-200.

Kohman, T. P., 1970, Nuclear chemistry and geochemistry research, Carnegie-Mellon University, 1969-1970: U. S. Atomic Energy Comm. Rpt. No. NYO-844-81, 111p.

———— 1970, Tables of uranium-thorium-lead decay-growth functions: Carnegie-Mellon University--U. S. Atomic Energy Comm. Contract No. AT(30-1)-844, Rpt. No. NYO-844-79, 61 p.

Kohman, Truman P., Black, Lance P., Ihochi, Haruhiko, and Huey, James M., 1970. Lead and thallium isotopes in Mare Tranquillitatis surface material: Science, v. 167, no. 3918, p. 481-483.

——— 1970, Lead and thallium isotopes in Mare Tranquillitatis surface material, *in* Apollo 11 Lunar Sci. Conf., Houston, Tex., 1970, Proc.--V. 2, Chemical and isotope analysis: New York, and Oxford, England, Pergamon Press (Geochim. et Cosmochim. Acta Supp. 1), p. 1345-1350.

Kosztolanyi, Charles, and Coppens, René, 1970, Geochronologic study of the uranium mineralization of the Chardon Mine (Vendée, France) (with English abs.), *in* Geochronology of Phanerozoic orogenic belts--Colloquium, Switzerland, 1969, Papers: Eclogae Geol. Helvetiae, v. 63, no. 1, p. 185-196.

Krasnobaev, A. A., and Sploshnova, N. S., 1970, Evolution and age of zircons from igneous and metamorphic rocks in the Ilmen Mountains: Tr. Inst. Geol. Geokhim., Akad. Nauk SSSR, Ural. Filial, no. 85, p. 214-225.

Kurasawa, H., 1970, Strontium and lead isotopes of volcanic rocks in Japan, *in* (K. Ogata and T. Hayakawa, eds.) Recent developments in mass spectroscopy, 1969: Univ. Tokyo Press, p. 666-670.

Lee, C., 1970, Model age determination of Korean galena by neutron activation: Wonjaryok Yon'gu Nonmunjip, v. 10, no. 1 (pt. 1), p. 41-43.

Lee, Donald E., Marvin, Richard F., Stern, T. W., and Peterman, Zell E., 1970, Modification of potassium-argon ages by Tertiary thrusting in the Snake Range, White Pine County, Nevada, *in* Geological Survey research 1970, Chap. D: U.S. Geol. Survey Prof. Paper 700-D, p. D92-D102.

Levchenko, O. A., Mikhaylov, D. A., Ovchinnikova, G. V., and Gerling, E. K., 1970, Age of the granitoids of the western part of the Aldan massif according to geological and radiological data: Akad. Nauk SSSR Izv. Ser. Geol., no. 10, p. 19-29.

Levchenko, O. A., and Shukolyukov, Yu. A., 1970, A new method of calculating the age and time of metamorphism of minerals and rocks without correcting for common lead (with English summ.): Geokhimiya, no. 1, p. 88-95.

Magomedov, Sh. A., 1970, Study of the mechanism of migration of radiogenic products in zircon: Geokhimiya, no. 2, p. 263-267.

Manuilova, M. M., Nikitina, L. P., Neelov, A. N., and Mikhailov, D. A., 1970, Geochronological study of the Eastern Siberian Precambrian [in Russian]: Tr. Sess. Kom. Opred. Absol. Vozrasta Geol. Form, 1967, Akad. Nauk SSSR, no. 15, p. 72-79.

Marakis, G. I., 1970, Remarks on the age of sulfide mineralization in Cyclades area [in Greek with English summ.]: Annales Géol. Pays Helléniques 1968, v. 19, p. 689-694.

———— 1970, Remarks on the age of sulfide mineralization in Cyclades area [in Greek with English summ.]: Annales Géol. Pays Helléniques 1968, v. 19, p. 695-700.

Marakis, G. I., 1970, Ore mineral occurrences of Samos Island and the isotopic composition of their lead [in Greek]: Annales Géol. Pays Helléniques 1969, v. 21, p. 107-113.

Mattson, Rolf., 1970, Seasonal variations of short-lived Rn progeny, Pb-210 and Po-210, in ground level air in Finland: Jour. Geophys. Research, v. 75, no. 9, p. 1741-1744.

Menzer, Fred J., Jr., 1970, Geochronologic study of granitic rocks from the Okanogan Range, north-central Washington: Geol. Soc. America Bull., v. 81, no. 2, p. 573-578.

Michot, Jean, and Deutsch, Sarah, 1970, U:Pb zircon ages and polycyclism of the Gneiss de Brest and the adjacent formations (Brittany) (with French summ.), *in* Geochronology of Phanerozoic orogenic belts--Colloquium, Switzerland, 1969, Papers: Eclogae Geol. Helvetiae, v. 63, no. 1, p. 215-227.

Mussett, A. E., 1970, Age of the earth and meteorites: Comments Earth Sci., Geophys., v. 1, p. 65-73.

Naidenov, B. M., 1970, Isotopic composition of elementary lead [Russian]: Byull. Kom. Opred. Absol. Vozrasta Geol. Form., Akad. Nauk SSSR, no. 9, p. 87-90.

Naylor, R. S., Steiger, R. H., and Wasserburg, G. J., 1970, U-Th-Pb and Rb-Sr systematics in 2700 x 10^6-year old plutons from the southern Wind River Range, Wyoming: Geochim. et Cosmochim. Acta, v. 34, no. 11, p. 1133-1159.

Niekerk, C. B. van, and Burger, A. J., 1970, The minimum age of the acid lava of the Onverwacht Series of the Swaziland System. Trans. (Proc.) Geol. Soc. S. Africa 1969, v. 72, no. 1, p. 9-21.

——— 1970, Lead isotopic data relating to the age of the Dominion Reef lava: Trans. (Proc.) Geol. Soc. S. Africa 1969, v. 71, no. 2, p. 37-47.

Odekirk, J. R., 1970, Desert Mountain granite, *in* Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineralog. Survey Bull. 81 (Utah Univ. Bull., v. 61, no. 18; Utah Eng. Expt. Sta. Bull. 135), p. 35.

Oversby, V. M., Compston, W., and Penikis, E., 1970, Isotopic analysis of microgram quantities of lead iodide using an electron-bombardment mass spectrometer: Earth and Planetary Sci. Letters, v. 10, no. 1, p. 121-128.

Oversby, Virginia M., 1970, The isotopic composition of lead in iron meteorites: Geochim. et Cosmochim. Acta, v. 34, no. 1, p. 65-75.

Oversby, Virginia M., and Gast, Paul W., 1970, Isotopic composition of lead from oceanic islands: Jour. Geophys. Research, v. 75, no. 11, p. 2097-2114.

Ozard, J. M., and Russell, R. D., 1970, Discrimination in solid source lead isotope abundance measurement: Earth and Planetary Sci. Letters, v. 8, no. 5, p. 331-336.

Panov, B. S., 1970, Lead isotopes of Donbas ore deposits: Acad. Sci. USSR, Dokl., Earth Sci. Sect., V. 195, p. 192-193.

Panov, B. S., 1970, Lead isotopes of ore deposits in the Donets Basin: Akad. Nauk SSSR Doklady, V. 195, No. 2, p. 454-455.

———— 1970, Isotopic composition of lead from the Nagolny Ridge galenites [in English with Russian Summ.]: Akad. Nauk Ukr. RSR, Dopov., Ser. B., p. 688-690.

Park, G. M., 1970, Volcanics, Thomas Range, in Radioactive and isotopic age determinations of Utah Rocks: Utah Geol. and Mineralog. Survey Bull. 81, (Utah Univ. Bull., V. 61, No. 18; Utah Eng. Expt. Sta. Bull. 135), p. 23.

Pasteels, Paul, 1970, Uranium-lead radioactive ages of monazite and zircon from the Vire-Carolles granite (Normandy), a case of zircon-monazite discrepancy, in Geochronology of Phanerozoic orogenic belts--Colloquium, Switzerland, 1969, Papers: Eclogae Geol. Helvetiae, V. 63, No. 1, p. 231-237.

———— 1970, Geochronologic data obtained by the uranium-lead method on some sphenes of igneous and metamorphic rocks of the Sor-Rondane Mountains, Antarctica (with English abs.): Soc. Geol. Belgique Annales, V. 92, pt. 3, p. 371-375.

Pasteels, Paul, and Michot, Jean, 1970, Uranium-lead radioactive dating and lead isotope study on sphene and K-feldspar in the Sor-Rondane Mountains, Dronning Maud Land, Antarctica, in Geochronology of Phanerozoic orogenic belts--Colloquium, Switzerland, 1969, Papers: Eclogae Geol. Helvetiae, V. 63, No. 1, p. 239-254.

Pasteels, P., Michot, J., and Lavreau, J., 1970, The eruptive complex of the Rogaland Meridional (Norway): The petrogenetic significance of the farsundite and mangerite quartzite of the united oriental; geochronologic and isotopic arguments: Extrait des Annales de la Societe Geol. de Belgique, V. 93, p. 453-476.

Pavlov, S. I., and Stotskii, G. I., 1970, Single and multiple ionization of lead atoms by electrons: Sov. Phys. Jetp., V. 31, No. 1, p. 61-64.

Peterman, Zell E., Doe, Bruce R., and Prostka, Harold J., 1970, Lead and strontium isotopes in rocks of the Absaroka volcanic field, Wyoming: Contr. Mineralogy and Petrology, V. 27, No. 2, p. 121-130.

Pidgeon, R. T., Koppel, V., and Grunenfelder, M., 1970, U-Pb isotopic relationships in zircon suites from a para- and ortho-gneiss from the Ceneri zone, southern Switzerland: Contr. Mineralogy and Petrology, V. 26, No. 1, p. 1-11.

Pilot, Joachim, Legierski, Jan, and Rossler, Hans Jurgen, 1970, Pb and S isotope investigations on the Freiberg and other ore deposits (with English and Russian summ.): Geologie, V. 19, No. 1, p. 41-55.

Popov, V. E., 1970, Lead isotopes in volcanogenic sedimentary iron ores from the deposits of southern Siberia, northern and eastern Europe: Deut. Ges. Geol. Wiss, Ber., Reihe B, Mineral Lagerstattenforsch., V. 15, No. 3-4, p. 293-297.

Puchelt, H., and Kullerud, G., 1970, Sulfur isotope fractionation in the Pb-S system: Earth and Planet. Sci. Lett., V. 7, No. 4, p. 301-316.

Robertson, D. K., 1970, The geology and lead isotope geochronology of some Archean cratons in Africa and North America: Jour. Earth Sci., V. 8, pt. 1, p. 63-74.

Rosholt, J. N., Peterman, Z. E., and Bartel, A. J., 1970, U-Th-Pb and Rb-Sr ages in granite reference sample from southwestern Saskatchewan: Canadian Jour. Earth Sci., v. 7, no. 1, p. 184-187.

Rudnik, V. A., Sobotovich, E. V., and Iskanderova, A. D., 1970, Lead-isotope ratios as the basis for subdividing the Precambrian: Akad. Nauk SSSR Izv. Ser. Geol., no. 11, p. 44-55.

Russell, R. D., 1971, Systematics of double spiking: Jour. Geophys. Research, v. 76, p. 4949-4955.

Sastri, C. S., and Silvaramakrishnan, V., 1970, Age determination of size fractions of monazite and zircon sands: Indian Jour. Pure and Appl. Physics, v. 8, no. 2, p. 103-105.

Semenenko, N. P., 1970, International correlation of the Precambrian, *in* Geologiya dokembriya: Moscow, Izdatel'stvo "Nauka," p. 5-22.

Semenenko, N. P., and Tkachuk, L. G., 1970, Absolute age of the Precambrian of the western framework of the East European platform, *in* Geologiya dokembriya: Moscow, Izdatel'stvo "Nauka," p. 23-35.

Semenenko, N. P., Tugarinov, A. I., Komlev, L. V., Tkachuk, L. G., Shcherbak, N. P., Bartnitskiy, Ye. N., Yeliseyeva, G. D., Kotlovskaya, F. N., Demidenko, S. G., and Zaydis, B. B., 1970, Precambrian geochronology of the Ukraine: Akad. Nauk SSSR Kom. Opredeleniyu Absolyut. Vozrasta ol Formatsiy Trudy, sess. 15, p. 16-24.

Shannon, L. V., Cherry, R. D., and Orren, M. J., 1970, Polonium-210 and lead-210 in the marine environment: Geochim. et Cosmochim. Acta, v. 39, no. 6, p. 701-711.

Shannon, L. V., and Orren, M. J., 1970, Determination of polonium-210 and lead-210 in seawater: Anal. Chim. Acta, V. 52, No. 1, p. 166-169.

Shcherbak, N. P., Bartnitskiy, Ye. N., Yeliseyeva, G. D., Kotlovskaya, F. I., and Zaydis, B. B., 1970, Precambrian geochronology of the Ukrainian shield, in Geologiya dokembriya: Moscow, Izdatel'stvo "Nauka," p. 36-52.

Shields, W. R. (ed.), 1970, Analytical mass spectrometry section: Summary of activities July 1968 to June 1969: NBS Tech. Note 506, 48 p.

Shimizu, N., 1970, Lead isotopic studies on granitic rocks of the Abukuma and Sidara areas in the Ryoke-Abukuma metamorphic belt, central Japan: Jour. Faculty Sci., Univ. Tokyo, Sec. II. Geol., Mineral., Geography, Geophys., V. 17, pt. 3, p. 445-484.

Shimizu, Y., and Urabe, T., 1970, Isotope abundance variation and the evolution of the earth and meteorites: Recent Develop. Mass Spectrosc., Proc. Int. Conf. Mass Spectrosc. 1969, p. 688-691.

Silver, L. T., 1970, Uranium-thorium-lead isotopes in some Tranquillity Base sample and their implications for lunar history, in Proceedings of the Apollo 11 Lunar Science Conference: Geochim. et Cosmochim. Acta, Suppl. 1, V. 2, p. 1533-1574. Pergamon.

Silver, Leon T., 1970, Uranium-thorium-lead isotope relations in lunar materials: Science, V. 167, No. 3918, p. 468-471.

Sinha, A. K., 1970, Model lead and radiometric ages from the Churchill Province, Canadian shield: Geochim et Cosmochim. Acta, V. 34, No. 10, p. 1089-1106.

Sobotovich, E. V., 1970, Heterogeneity of terrestrial matter and the age of the Earth: Akad. Nauk SSSR Iz. Ser. Geol., No. 2, p. 3-12.

———— 1970, Isotopes of lead in geochemistry and cosmochemistry: Moscow, Alomizdat, 349 p.

Sobotovich, E. V., and Grashchenko, S. M., 1970, Lead isotopes in geochronology: Tr. Sess. Kom. Opred. Absol. Vozrasta Geol. Form. 1967, Akad. Nauk SSSR, No. 15, p. 350-370.

Sobotovich, E. V., Grashchenko, S. M., and Lovtsyus, A. V., 1970, Age of some rocks of the western Baikal region: Akad. Nauk SSSR Kom. Opred. Absol. Vozrasta Geol. Form. Trudy, sess. 15, p. 111-114.

Stupnikova, N. I., Zykov, S. I., and Zhirov, K. K., 1970, Radiological age of the pegmatite veins of North Karelia: Akad. Nauk SSSR Izv. Ser. Geol., No. 4, p. 85-103.

Subotowicz, M., 1970, Isotopic analysis of lunar material (Polish): Postepy Fiz., V. 21, No. 4, p. 499-509.

Tatsumoto, M., 1970, Age of the Moon--An isotopic study of U-Th-Pb systematics of Apollo 11 lunar samples, in Proc. of Apollo 11 Lunar Sci. Conf., Geochim Cosmochim. Acta, Suppl.1, V. 2, p. 1595-1612.

———— 1970, U-Th-Pb age of Apollo 12 rock 12013: Earth and Planet. Sci. Lett., V. 9, No. 2, p. 193-200.

Tatsumoto, M., and Rosholt, J. N., 1970, Age of the Moon--An isotopic study of uranium-thorium-lead systematics of lunar samples: Science, V. 167, No. 3918, p. 461-463.

Thompson, M. W., 1970, Cornucopia for implanted ions: New Scientist, v. 48, no. 729, p. 429-430.

Thomson, Kenneth C., 1970, Deep Creek Mountains, *in* Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineralog. Survey Bull. 81 (Utah Univ. Bull., v. 61, no. 18; Utah Eng. Expt. Sta. Bull. 135), p. 29.

Tilton, G. R., Doe, B. R., and Hopson, C. A., 1970, Zircon age measurements in the Maryland Piedmont, with special reference to Baltimore Gneiss problems (429-434), *in* G. W. Fisher, F. J. Pettijohn, J. C. Reed, Jr., and K. N. Weaver (eds.), Studies of Appalachian Geology, Central and Southern: New York, Interscience Publishers, 460 p.

Tsvinev, Z. A., 1970, Relation to magmatism of the Revnyushinsk ore field mineralization in the Altai: Tr. Inst. Geol. Nauk, Akad. Nauk Kaz. SSR, no. 29, p. 127-134.

Tugarinov, A. I., Bibikova, Ye. V., and Gorlov, N. V., 1970, On the age relations of the Karelian and Belomorian formations (with English summ.): Geokhimiya, no. 3, p. 303-308.

Tugarinov,, A. I., Bibikova, Ye. V., Krasnobayev, A. A., and Makarov, V. A., 1970, Geochronology of the Precambrian of the Urals (with English summ.): Geokhimiya, no. 4, p. 501-509.

Vail, J. R., and Dodson, M. H., 1970, Geochronology of Rhodesia: Geol. Soc. South Africa Trans. 1969, v. 72, pt. 3, p. 79-113.

Vilenski, V. D., 1970, Effect of natural radioactivity of atmospheric dust on the average residence time of lead-210 in the troposphere: Izv. Akad. Nauk SSSR, Fiz. Atmos. Okeana, v. 6, no. 3, p. 307-310.

Vinogradov, A. P., and Tugarinov, A. N., 1970, Precambrian geochronologic scale: Akad. Nauk SSSR Kom. Opred. Absol. Vozrasta Geol. Form. Trudy, sess. 15, p. 25-37.

Volobuyev, M. I., Zykov, S. I., and Stupnikova, N. I., 1970, Geochronology of the Yenisei-eastern-Sayan folded region: Akad. Nauk SSSR Kom. Opred. Absol. Vozrasta Geol. Form. Trudy, sess. 15, p. 85-106.

——— 1970, On the question of the use of lead isotopes for the metallogenic analysis of the sources of ore-forming matters (Russian): Geokhimiya, no. 1, p. 22-34.

Wanless, R. K., Loveridge, W. D., and Stevens, R. D., 1970, Age determinations and isotopic abundance measurements on lunar samples: Science, v. 167, no. 3918, p. 479-480.

Whelan, J. A., 1970, Mineral Range granite, *in* Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineralog. Survey Bull. 81 (Utah Univ. Bull., v. 61, no. 18; Utah Eng. Expt. Sta. Bull. 135), p. 25.

——— 1970, Notch Peak, House Range, *in* Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineralog. Survey Bull. 81 (Utah Univ. Bull., v. 61, no. 18; Utah Eng. Expt. Sta. Bull. 135), p. 35.

——— 1970, Rocky Range quartz monzonite, *in* Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineralog. Survey Bull. 81 (Utah Univ. Bull., v. 61, no. 18; Utah Eng. Expt. Sta. Bull. 135), p. 37.

Whelan, J. A. (compiler), 1970, Radioactive and isotopic age determinations of Utah rocks: Utah Geol. and Mineralog. Survey Bull. 81 (Utah Univ. Bull., v. 61, no. 18; Utah Eng. Expt. Sta. Bull. 135), 75 p.

Yamaguchi, M., and Yanagi, T., 1970, Geochronology of some metamorphic rocks in Japan: Eclogae Geol. Helvetiae, v. 63, p. 371-388.

Yellur, D. D., 1970, Khandia lead ore and the age of the Aravalli of India--A reply [to 1970 discussion by J. S. Brown of 1969 paper]: Econ. Geology, v. 65, no. 4, p. 519.

Zhirov, K. K., Chernykh, Ye. N., Ryungenen, G. I., Kravchenko, E. V., and Shestakov, G. I., 1970, Attempt to use lead isotopes in archeology: Geokhimiya, no. 1, p. 120-123.

ADDENDUM

to

Previous Lead Isotope Listings

1969

Allegre, C. J., 1969, Behavior of U-Th-Pb systems in the upper mantle and a model of the evolution of the upper mantle: Geochem. Int., V. 6, No. 6, p. 1174-1181. [English translation].

Bernasovskiy, V. Ya., 1969, Dependence of the amount of accessory zircon in rocks of the Ukrainian shield on their time of formation: Mineral. Sb., No. 23, pt. 1, p. 91-92.

Brill, R. H., 1969, Lead isotopes in ancient glass: Ann. Congr. Journees Int. Verre, 4th (Internat. Asso. History Glass), Liege, p. 251-255.

Chow, T. J., Earl, J. L., and Bennett, C. F., 1969, Lead aerosols in marine atmosphere: Environ. Sci. and Technol., V. 3, p. 737.

Gol'd, R. M., and Grigor'ev, N. K., 1969, Age of lead mineralization in eastern slopes of the Kuznetsk Ala-Tau: Izv. Tomsk. Politekh. Inst., V. 165, p. 19-24.

Graeser, S., and Hunziker, J. C., 1969, Rb-Sr and Pb isotope determination on rocks and minerals of the Ivrea zone: Geochem. Int., V. 6, No. 5, p. 983-993. [English Translation].

Michot, J., and Pasteels, P., 1969, The prospects of the Rb-Sr and the U-Pb methods for an advanced geochronological investigation of the Precambrian of southern Norway: Norges Geol. Undersokelse [Skr.], no. 258, (Arb. 1968), p. 17-26.

1969 (Cont'd)

Niekerk, C. B. Van, and Burger, A. J., 1969, A note on the minimum age of the acid lava of the Onverwacht Series of the Swaziland System: Geol. Soc. South Africa Trans., V. 72, pt. 1, p. 9-21.

Popov, V. E., 1969, Lead isotopes in volcanic-sedimentary iron ores of southern Siberia and northern and eastern Europe: Deut. Ges. Geol. Wiss., Ber., Rihe B, Mineral. Laggerstattenforsch., V. 14, No. 4, p. 394.

Silver, L. T., 1969, A geochronologic investigation of the anorthosite complex, Adirondack Mountains, New York, in Origin of anorthosite and related rocks: New York State Mus. and Sci. Service Mem. 18, p. 233-251.

Tugarinov, A. I., (ed.), 1969, Lead isotopes in ore deposits. Compilation of papers: Moscow, Atomizdat, 344 p.

Windom, H., 1969, Atmospheric dust records in permanent snowfield: Implications to marine sedimentation: Geol. Soc. America Bull., V. 80, p. 761-782.

York, D., 1969, Least squares fitting of a straight line with correlated errors: Earth Planet. Sci. Lett., V. 5, No. 5, p. 320-324.

1968

Mudge, M. R., Erickson. R. L., and Kleinkopf, D., 1968, Reconnaissance geology, geophysics and geochemistry of the southeastern part of the Lewis and Clark Range, Mont.: U.S. Geol. Survey Bull. 1252-E, p. E1-E35.

Tugarinov, A. I., Pavlenko, A. S., and Kovalenko, V. I., 1968, Origin of apogranites according to geochemical data (with English summ.): Geokhimiya, No. 12, p. 1419-1463.

1967

Brill, R. H., and Wampler, J. M., 1967, Isotope ratios in archaeological objects of lead, in Application of science in examination of works of art (W. J. Young, Ed.): Boston, Boston Arts Museum, p. 155-166.

1966

Borucki, Jerzy, and Lis, Josof, 1966, Isotopic composition and absolute age of galena lead from Silesian-Cracow area: Kwart. Geol., V. 10, No. 4, p. 911-929.

1965

Brill, R. H., and Wampler, J. M., 1965, Isotope ratios in archeological objects of lead, in Application of Science in Examination of Works of Art: Boston, Museum of Fine Arts, p. 155-166.

Chow. T. J., and Johnstone, M. S., 1965, Lead isotopes in gasoline and aerosols of the Los Angeles basin, California: Science, V. 147, p. 502.

1963

LeRoux, L. J., and Glendenin, L. L., 1963, Half-life of thorium-232: Proc. Natl. Conf. Nuclear Energy, Pretoria: April.

1962

Brill, R. H., and Wampler, J. M., 1962, Isotope studies of ancient lead: Amer. J. Archaeol., V. LXXI, p. 63-77.

1962 (Cont'd)

Rama, Koide, M., and Goldberg, E. D., 1962, Lead-210 in natural waters: Science, V. 134, p. 98- 。

1960

Schurmann, H. M. E。, et al., 1960, Fourth preliminary note on age determinations of magmatic rocks by means of radioactivity: Geol. Mijnbow, V. 39, p。 93-104。