

other important step is gained in elucidating the nature of the instability of such chemical elements of high atomic weight and the radio-activity associated with it.—The London *Times*.

The possibilities of such mysterious forces as those possessed by radium present an attractive field of speculation for the physician. May not the radiant energy emitted by radium possess pathogenic as well as curative, destructive as well as stimulating, powers on cells and cellular processes? Perchance, it may be forces of this kind that upset physiologic laws of cellular activity, and lead to abnormal proliferations of various kinds? But questions of this kind are not yet ripe for discussion. Actual experimental studies must furnish the necessary basis of facts from which it may be permitted to draw further deductions. Danysz found that radium destroys the skin of guinea-pigs and rabbits, but subcutaneous and muscular tissue do not seem so sensitive as skin. The nervous tissue is also sensitive to its action. A sealed glass tube with salts of radium placed against the skin over the spine is followed by death in young animals. In older animals the osseous tissue seems to protect the spinal cord against the radiations. The effects of rays of radium on bacteria have not been studied extensively as yet, but both Danysz and Bohn show that various larvæ and embryos are profoundly modified in their growth, many being killed when subjected to the radiations; others developing into monstrosities because of unequal stimulation. Bohn further finds that radium exercises an especially intense action on tissues or cells in proliferation; non-fertilized eggs may undergo more or less parthenogenetic development and give rise to atypical formations. It has been found, too, that in animals whose skin was burned by the rays, the hair, in some cases, appeared to be forced into rapid growth. It seems that various effects are obtainable, depending on the tissue or cell exposed, as well as on the quantity and quality of the rays. Further experiments, no doubt, will yield even more interesting and

conclusive results. We have commented on the announcement that in Vienna cancer has been cured by means of radium. In this particular direction much work will surely be done, and we may expect interesting developments.—*Journal of the American Medical Association*.

SUMMER WORK OF THE GEOLOGICAL SURVEY.

THE preliminary arrangements for the present season are as follows:

Adams, Dr. George I., assistant geologist, will complete study of northern Arkansas lead and zinc district, with some revision of Yellville and Fayetteville quadrangles. On its completion, associated with Dr. Erasmus Harworth, will make an areal and economic survey of Iola thirty-minute quadrangle, Kansas. Later will make reconnaissance of stratigraphy of Coal Measures and Permian in northern Texas.

Alden, Wm. C., assistant geologist, will continue work on Pleistocene geology of quadrangles in southeastern Wisconsin.

Arnold, Dr. Ralph, geologic aid, will assist Dr. Wm. H. Dall in completion of monograph on southeastern and Florida Tertiaries, and Dr. J. C. Branner on the paleontology of the Santa Cruz quadrangle, California.

Ashley, Dr. George H., assistant geologist, will complete, under supervision of M. R. Campbell, study of Cumberland Gap coal field, in cooperation with state of Kentucky.

Atwood, W. W., assistant geologist, will assist Professor R. D. Salisbury in glacial work west of one-hundredth meridian.

Bain, Dr. H. Foster, geologist, will begin systematic study of lead and zinc deposits of Mississippi valley. Will make detailed surveys in southern Illinois and in Galena district in northwestern Illinois; and will visit points in Wisconsin and Missouri for cooperation with state surveys.

Bascom, Dr. Florence, assistant geologist, will complete necessary field work and prepare for publication the Philadelphia Special folio, embracing four fifteen-minute quadrangles.

Bayley, Dr. W. S., assistant geologist, will survey crystalline rocks of Raritan quadrangle, New Jersey.

Boutwell, John M., assistant geologist, will complete investigation of mining geology of Park City district, Utah, and make a reconnaissance of Coalville quadrangle.

Branner, Professor J. C., geologist, will continue areal work in Santa Cruz quadrangle, California, and prepare the folio for publication.

Brooks, Alfred H., geologist in charge of geologic work in Alaska, will continue supervision of geologic work in Alaska. Will visit the Spencer party at Juneau, and later spend six weeks in company with L. M. Prindle in visiting region of lately discovered placer gold fields in Tanana Valley. Latter part of season he will spend in Seward Peninsula visiting the Collier and Moffit parties.

Butts, Charles, assistant geologist, under supervision of M. R. Campbell, will continue areal and economic surveys on quadrangles in western Pennsylvania, in cooperation with state.

Calhoun, F. H. H., assistant geologist, will assist Professor R. D. Salisbury in glacial work west of one-hundredth meridian.

Calkins, F. C., assistant geologist, will assist Dr. F. L. Ransome in study of areal and economic geology of Cœur d'Alene mining district, Idaho. Later in the year will assist George H. Eldridge in areal work in southern California.

Campbell, M. R., geologist, will have immediate supervision of areal and economic work in Appalachian coal field.

Chamberlin, Professor T. C., chief of section, will continue supervision of investigations of Pleistocene geology of United States.

Clapp, Frederick G., geologic aid, under supervision of M. R. Campbell, will continue areal and economic surveys on quadrangles in western Pennsylvania, in cooperation with state.

Collier, Arthur J., assistant geologist, will make careful investigation of gold placers of Seward Peninsula, Alaska, with view to supplementing hasty reconnaissance work of previous

years. Will also undertake some areal mapping and stratigraphic studies in this region.

Crane, Professor W. R., field assistant, will assist Dr. Geo. I. Adams in the measurement of gas pressures in connection with the survey of Iola thirty-minute quadrangle, Kansas.

Cross, Dr. Whitman, chief of section, will continue investigation of areal geology of San Juan district, Colorado, and have general supervision of investigations in petrology throughout the United States.

Dale, Professor T. Nelson, geologist, will continue investigation of areal and economic problems in western Vermont, and survey the Brandon quadrangle for folio publication.

Dall, Dr. Wm. H., geologist and paleontologist, will be occupied during greater part of year in completion of monograph on southeastern and Florida Tertiaries. On completion of that work he will take up study of invertebrate Tertiary paleontology of Pacific coast.

Diller, J. S., geologist, will complete areal and economic survey of Redding quadrangle, California, and make general reconnaissance of geology of Klamath Mountains.

Dominian, Leon, field assistant, will assist J. E. Spurr in completion of economic investigation of Tonopah mining district, Nevada, and in economic geology work in Silver Peak quadrangle, Nevada.

Eckel, Edwin C., assistant geologist, will make detailed investigation of cement industry of United States.

Eldridge, George H., geologist, will spend first half of year in completion of reports on Florida phosphates and California oil fields. Later in season will take up areal work in southern California.

Emerson, Professor B. K., assistant geologist, will continue work on areal geology of central Massachusetts.

Emmons, S. F., chief of section, will be occupied throughout the year with supervision of investigations of metalliferous ores and completion of report on geology of Leadville mining district.

Gale, Hoyt S., geologic aid, will assist Ar-

thur Keith in completion of survey of Cowee and Pisgah quadrangles, North Carolina, and in a reconnaissance of adjacent quadrangles.

Gilbert, G. K., geologist, will carry on investigations in glaciology in the high Sierras of California.

Girty, Dr. George H., assistant geologist, will be occupied the greater portion of the season with office work on collections now in hand. Will spend a part of the season in continuation of field work on the Waverly problem in Ohio.

Griswold, W. T., topographer, under supervision of M. R. Campbell, will study structure and stratigraphy of Steubenville and Wellsville quadrangles, Ohio-West Virginia, and of St. Clair quadrangle, Ohio, with special reference to location of oil and gas pools.

Hague, Arnold, geologist, will be occupied with the completion of his monograph on the geology of the Yellowstone National Park.

Hatcher, Dr. J. B., field assistant, will assist Dr. T. W. Stanton in study of non-marine Mesozoic formations of northern Montana.

Haworth, Professor Erasmus, assistant geologist, will be associated with Dr. George I. Adams in areal and economic survey of Iola thirty-minute quadrangle, Kansas.

Hayes, Dr. C. W., geologist in charge of geology, will continue administration of Division of Geology and Paleontology, and will have supervision of investigations in non-metalliferous economic minerals.

Hess, Frank L., field assistant, will assist Arthur J. Collier in study of gold placers of Seward Peninsula, Alaska. Also in areal mapping and stratigraphic studies in the same region under supervision of Alfred H. Brooks.

Hollick, Dr. Arthur, assistant geologist, will visit a number of localities on the Yukon River, Alaska, for the purpose of making detailed stratigraphic studies and paleontologic collections, under supervision of A. H. Brooks.

Howe, Ernest, assistant geologist, will assist Dr. Whitman Cross in investigation of areal geology of San Juan district, Colorado.

Jaggar, Dr. T. A., assistant geologist, will be occupied with the completion of reports on the Sturgis-Spearfish folio, North Dakota, and the Bradshaw Mountain folio, Arizona.

Johannsen, Albert, field assistant, will assist Dr. Whitman Cross in investigation of areal geology of San Juan district, Colorado.

Keith, Arthur, geologist, will continue areal and economic work in the southern Appalachian Mountains. His work will consist in completion of surveys of the Cowee and Pisgah quadrangles, North Carolina, and a reconnaissance of adjacent quadrangles.

Kindle, E. M., assistant geologist, will assist Professor H. S. Williams in areal survey of Ithaca thirty-minute quadrangle, New York.

Knowlton, Dr. F. H., paleontologist, will be occupied throughout the year in paleobotanical work upon collections on hand.

La Forge, Lawrence, assistant geologist, will assist Dr. W. S. Bayley in survey of crystalline rocks of Raritan quadrangle, New Jersey.

Leith, Dr. C. K., assistant geologist, will assist Dr. C. R. Van Hise in preparation of final report on geology of Lake Superior region.

Leverett, Frank, geologist, will continue work on the preparation of a monograph on the Pleistocene formations of the Lower Peninsula of Michigan and adjacent portions of Indiana. Will also survey Ann Arbor thirty-minute quadrangle for folio publication.

Lindgren, Dr. Waldemar, geologist, will make a resurvey of the Cripple Creek district, Colorado, in cooperation with the state, associated with Dr. Ransome.

Martin, Dr. George C., special assistant, will make an economic reconnaissance of Controller Bay coal and oil fields and of a part of coal and oil fields of Cook Inlet region, under supervision of A. H. Brooks. Will prepare Accident-Grantsville, Maryland, geologic folio for publication.

Moffit, F. H., assistant geologist, will make reconnaissance of northeastern part of Seward Peninsula, giving special attention to problems connected with occurrence of placer gold. Will be with topographic party in charge of D. C. Witherspoon, topographer, under supervision of A. H. Brooks.

Paige, Sidney, field assistant, will assist Dr. Arthur Hollick, who will visit a number of localities on the Yukon for the purpose of

making detailed stratigraphic studies and paleontological collections.

Peterson, William, field assistant, will assist Professor R. D. Salisbury in glacial work west of one-hundredth meridian.

Prindle, L. M., special assistant, will make reconnaissance surveys of Fortymile, Birch Creek and Lower Tanana placer gold fields.

Purdue, Professor A. H., field assistant, will assist Dr. George I. Adams in study of north Arkansas lead and zinc district.

Ransome, Dr. F. L., geologist, associated with Dr. Lindgren, will make a resurvey of the Cripple Creek district, Colorado, in cooperation with the state, and will study areal and economic geology of Cœur d'Alene mining district, Idaho.

Russell, Professor I. C., geologist, will make a geologic reconnaissance of western Idaho and central Oregon, in cooperation with Division of Hydrography.

Salisbury, Professor R. D., geologist, will have immediate supervision over glacial work west of one-hundredth meridian.

Schrader, F. C., geologist, will be occupied in completing reports on geology and mineral resources of northern Alaska, and on the geology and mineral resources of Upper Copper River region.

Smith, Dr. George Otis, geologist, will carry on areal and economic work in Maine, in cooperation with State Geological Survey.

Smith, W. N., field assistant, will assist Dr. C. R. Van Hise in preparation of final report on geology of Lake Superior region.

Smith, Dr. W. S. Tangier, assistant geologist, will complete reports on lead and zinc deposits of Joplin, Missouri, and western Kentucky districts, and complete areal field work on pre-Cambrian areas in the Sundance quadrangle, South Dakota.

Spencer, Dr. Arthur C., geologist, will investigate areal and economic geology of Juneau mining district. Later will make reconnaissance of economic geology of Berners Bay and some of the other mining districts of southeastern Alaska.

Spurr, J. E., geologist, will complete economic investigation of Tonopah mining dis-

trict, Nevada, and will revise economic geology of Silver Peak quadrangle, Nevada.

Stanton, Dr. T. W., chief of section, will make a study of non-marine Mesozoic formations of northern Montana, and later in season will visit various Lower Triassic localities in southeastern Idaho and northern Utah, and Cretaceous outcrops in southern Wyoming; and will have general supervision of investigations in paleontology throughout the United States.

Stone, Ralph W., assistant geologist, under supervision of M. R. Campbell, will continue areal and economic surveys of quadrangles in western Pennsylvania, in cooperation with state.

Stose, George W., editor geologic maps, geologist, will be occupied chiefly in editing geologic maps, but will spend a short field season in completion of areal work on Chambersburg quadrangle, Pennsylvania.

Taff, J. A., geologist, will be occupied with the preparation of reports on Indian Territory coal fields.

Taylor, Frank B., field assistant, will continue preparation of his contribution to Leverett monograph, and will complete his work on Pleistocene geology of Taconic quadrangle.

Ulrich, E. O., assistant geologist, will study the paleontology and stratigraphy of the Ordovician and Silurian of the upper Mississippi Valley, and in connection with various geologic parties elsewhere.

Van Hise, Dr. C. R., chief of section, will continue supervision of investigations in pre-Cambrian and metamorphic geology of United States, and will prepare final report on geology of Lake Superior region.

Vaughan, Dr. T. W., geologist, will continue preparation of monograph on fossil corals of United States.

Ward, Professor Lester F., paleontologist, will continue preparation of series of papers on Mesozoic floras of United States, completing the second paper on the older Potomac, the Shasta, the Kootanie and Trinity, and taking up the Middle Cretaceous.

Weed, W. H., geologist, will be occupied with completion of report on economic geology

of Butte mining district, Montana, and will continue field work in investigation of copper deposits in Appalachian region.

White, David, geologist, will continue investigation on paleobotany of the Pottsville and higher Coal Measures in the Appalachian field and will make reconnaissance examination of paleobotany of northern Texas coal field.

Williams, Professor H. S., geologist and paleontologist, will make areal survey of Ithaca thirty-minute quadrangle, New York, and continue studies on Devonian paleontology and stratigraphy.

Willis, Bailey, chief of section, has been granted leave of absence for a year, to carry on stratigraphic investigations in China under the Carnegie Institution.

Wolff, Professor John E., assistant geologist, will continue areal surveys in southern Vermont and New Hampshire.

Woolsey, Lester H., assistant geologist, will assist John M. Boutwell in completion of investigation of mining geology of Park City district, Utah, and in reconnaissance of Coalville quadrangle.

Wright, Charles W., field assistant, will assist Dr. Arthur C. Spencer in investigation of areal and economic geology of Juneau mining district, and in reconnaissance of economic geology of Berners Bay and other mining districts of southeastern Alaska.

SCIENTIFIC NOTES AND NEWS.

SIR W. RAMSAY has been elected president of the Society of Chemical Industry. The society has decided to meet next year in New York City.

In order to devote his entire time to the work of the newly organized Department of Anthropology and Ethnology in the Louisiana Purchase Exposition, Dr. W. J. McGee resigned his position in the Bureau of American Ethnology on July 31, and assumed duty as chief of the new department on August 1. The exhibits will include living representative groups of various primitive peoples, an Indian school in regular operation, and sections of archeology, history, etc.

It is proposed to celebrate the seventieth birthday of Professor August Weismann, which will occur on January 17, 1904. The committee has decided to have prepared for that time a portrait bust of Professor Weismann which shall be deposited at the Zoological Institute of the University of Freiburg with appropriate festivities. It invites cooperation in this undertaking, not only from those who owe scientific stimulus to Professor Weismann and have been guided by him into zoological activity, but also from all colleagues who desire to join in honoring Professor Weismann for his work. Contributions may be sent to the Deutsche Bank, Leipzig, for the account of Professor Zur Strassen, who is treasurer. The alphabetical list of all contributors without statement of amount will be printed, and will accompany the bust. The American members of the committee of fifteen are Professor H. H. Wilder, of Smith College, and Professor Henry B. Ward, of the University of Nebraska.

THE Worshipful Company of Drapers have contributed £1,000 to assist Professor Karl Pearson in his statistical researches at University College, London, and in the higher work of his department.

MR. J. HUTCHINSON, F.R.S., who has recently returned from the study of leprosy in India, was given a complimentary dinner on July 23 by the members of the medical profession to celebrate his seventy-fifth birthday.

MR. CHARLES SCHUCHERT will represent the U. S. National Museum at the Vienna International Congress of Geologists. He is at present studying European, Silurian and Devonian rocks.

MR. FORD A. CARPENTER, U. S. Weather Bureau, San Diego, Cal., has sailed for San Quetin, Mexico, where he will spend a month in meteorological and other investigations on the San Piedra Martir, a 12,000 foot plateau in the Baja California peninsula.

The American Geologist states that Dr. C. R. Eastman, of Harvard University, who has been spending his sabbatical year abroad in special paleontological research, has returned