WEIGHT OF DANDELION-DOWN.

How heavy is a dandelion-down with its achene as it floats away on the breeze? The tiny parachute is so constructed that the weight of the achene brings the spreading rays at the summit of the slender rod (*rostrum*) into the proper position for floating in the air, as any one may readily see for himself by 'blowing' a seeding dandelion head in a quiet place. It makes no difference what the position of the parachute may be, as soon as it is free in the air the weight of the achene rights it at once. One who has not closely observed dandelions will be much interested in watching the quick 'righting' of every little parachute under the action of the tiny achene weight. Recently it occurred to me to find out how heavy dandelion-downs are, and at my suggestion Mr. d'Allemand undertook the delicate task of weighing them. He found that there are about one hundred and ninety achenes in each dandelion head, and, carefully counting this number, he determined their aggregate weight to be .085 gram. From this it was easy to calculate the weight of a single achene to be .00044 gram. It takes more than two and a quarter millions of dandelion-downs to weigh a kilogram, and somewhat more than one million to weigh a pound. In other words each parachute weighs about one millionth of a pound!

TENDRILS OF VIRGINIA CREEPER.

IT is pretty generally known nowadays that some Virginia creepers cling to walls by discoid expansions of their tendril tips, while others produce twining tendrils without such expansions. Among gardeners there is a pretty general notion that there are two quite distinct kinds, distinguished mainly by the presence or absence of disks. This distinction has even been admitted into recent descriptive manuals, as in Britton's 'Manual,' where the disk bearing form is called *Parthenocissus quinquefolia,* and a form with 'tendrils mostly without terminal adhering disks' is set off as the variety *laciniata.*

In a recent popular article Professor Pammel gives his opinion that this difference as to the formation of disks is not constant with any particular plant, and in a subsequent letter cites the case of the planting of a disk-bearing Virginia creeper which later formed ordinary twining tendrils only. On smooth surfaces the disks are not produced. This agrees with the statement made by Goebel in his 'Organography of Plants' (page 268, English edition) as follows: "Mohl was the first to show that the adhesive disks on the tendrils of certain species of *Ampelopsis* appear in consequence of contact with a firm body. We have here to do with a contact stimulus. Different species of *Ampelopsis* behave differently. Some, like *A. hederacea,* possess ordinary tendrils which twine round a support and eventually become firm, woody structures, but if they do not happen to find a support they die off at an early period. *Ampelopsis quinquefolia,* on the other hand, fixes itself to walls and tree trunks by means of adhesive disks on its tendrils, but these can also act like ordinary tendrils. In tendrils which do not come in contact with a firm body no viscid disks appear." Making allowance for some confusion as to the identity of the species, it appears that Goebel regards the formation of disks as a result of a mechanical stimulus. There is need of a number of careful observations on this point in connection with one of the most widely grown of all ornamental climbing plants.

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FIELD WORK FOR 1904 OF THE DIVISION OF GEOLOGY AND PALEONTOLOGY OF THE UNITED STATES GEOLOGICAL SURVEY.

THE field work of the division of geology and paleontology, United States Geological Survey, for the season of 1904 will cover investigations in many states. Dr. C. Willard Hayes, geologist in charge of geology, has general supervision of this work. Some of the most important of the numerous parties in the field are here mentioned.

General Investigations.—Besides investigations confined to the limits of one or two states, several lines of work will be taken up that will cover wide general areas. The gla-

cial geology of the United States will be studied by Professor T. C. Chamberlin, who will have the assistance of Messrs. R. D. Salisbury, W. W. Atwood, F. H. H. Calhoun, Frank Leverett, W. C. Alden and F. W. Taylor. The glacial areas in the Rocky Mountain region will be carefully investigated by Professor Salisbury, assisted by Messrs. Atwood and Calhoun. A monograph on the Pleistocene formations of the lower peninsula of Michigan and adjacent portions of Indiana will be completed by Mr. Leverett. Mr. Alden will map portions of southeastern Wisconsin for folio publication.

The pre-Cambrian and metamorphic geology of the United States will be studied under the direction of Professor C. R. Van Hise, who will also complete his report on the geology of the Lake Superior region. In this work he will be assisted by Messrs. C. K. Leith and W. N. Smith. He is also directed to continue investigation of the metamorphic iron-ore deposits of the United States, particularly those of the Rocky Mountain and Great Basin region.

Other general investigations covering several states will be conducted by Mr. E. C. Eckel. He will complete a study of the cement industry of the United States and prepare a report in which special attention will be paid to the geologic and economic relations of the industry. Mr. Eckel will also complete an investigation of the slate industry of the United States, directing the work of Professor A. H. Purdue in Arkansas and Professor T. N. Dale in Virginia, West Virginia, Maryland, Pennsylvania, Maine and Vermont.

The Mississippi Valley.—Several states will be included in an investigation to be made by Mr. H. Foster Bain of the lead and zinc deposits of the Mississippi Valley. He will make a special study of their genesis, geologic occurrence and economic importance. His specific task is to examine the lead and zinc deposits of the upper Mississippi district in Illinois, Iowa and Wisconsin and to prepare a preliminary report upon this district. In addition he will examine certain copper deposits in Shannon County, Missouri, associated lead and zinc ores in St. Genevieve County and in the Mine Lamotte district, and the St. Clair and Granby mines in southwestern Missouri. He is also directed to reexamine the more important lead and zinc mines of the western Kentucky district and to make a reconnaissance examination of the lead and zinc district of the Appalachian Valley in Virginia and Tennessee. Mr. E. O. Ulrich, who is directed to investigate the Silurian and Ordovician paleontology and stratigraphy of the northern Mississippi valley, will cooperate with Mr. Bain in the study of the lead and zinc deposits of that district.

Alabama.—An areal and economic survey of the Brookwood quadrangle, Alabama, will be made by Mr. Charles Butts, who will be assisted by Mr. Hoyt S. Gale. They will probably also begin work upon the Jasper quadrangle, Alabama.

Arkansas.—Professor A. H. Purdue will make an areal and economic survey of the Winslow quadrangle, Arkansas. If time permits, he will also make an economic investigation of the developed slate deposits of Arkansas.

California.—The areal geology of the Redding quadrangle, California, will be revised by Mr. J. S. Diller. He will also complete an areal and economic survey of the Indian Valley Special quadrangle, California.

Mr. Arthur C. Spencer will cooperate with Mr. Waldemar Lindgren in making an investigation of the economic geology of the Redding quadrangle, California.

An areal and economic survey of the Tejon quadrangle, in southern California, will be made by Mr. George H. Eldridge. He will also make, for correlation purposes, the necessary reconnaissance examinations of regions adjacent to this quadrangle.

The areal and economic survey of the Santa Cruz quadrangle, California, will be completed by Dr. J. F. Newsom, who will be assisted by Dr. Ralph Arnold.

Dr. G. K. Gilbert will continue his investigations of the glaciology and physiography of the High Sierras.

Colorado.—Under the direction of Dr. Whitman Cross, detailed areal mapping will be continued in the San Juan region of Colorado.

The Ouray quadrangle will be surveyed and the work extended as far as possible into the adjoining Lake City quadrangle. The survey of the Engineer Mountain quadrangle will also be completed. Dr. Cross will have the assistance of Messrs. Ernest Howe, W. H. Emmons and Albert Johannsen.

Mr. J. E. Spurr will begin an investigation of the areal and economic geology of certain mining districts in Colorado, chiefly in Gilpin and Clear Creek counties. Mr. Spurr will be assisted by Messrs. Sydney H. Ball, George H. Garrey and Oscar H. Hershey.

Mr. S. F. Emmons will complete his monograph on the geology of the Leadville mining district and Dr. J. D. Irving will make an investigation of the ore deposits of the Ouray district.

Delaware.—The Cretaceous and Tertiary formations of Delaware will be investigated by Professor William B. Clark.

Florida.—Mr. George H. Eldridge will complete field work in the phosphate district of Florida and prepare a final report on the region.

Georgia.—A thorough revision of the areal, structural and economic geology of the Cartersville special and Cartersville regular quadrangles, Georgia, will be made by Mr. Laurence LaForge. Preliminary work will be done in the Dahlonega district by Mr. Arthur Keith.

Idaho.—The areal and economic survey of the Cœur d'Alene mining district, Idaho, will be completed by Dr. F. L. Ransome. Special attention will be given to the ore deposits. Such reconnaissance examinations of the adjoining regions as may be deemed necessary will be made. Mr. F. C. Calkins will assist Dr. Ransome in this work.

Indian Territory.—Areal and economic surveys of the Sansbois, McAlester, Tuskahoma and Windingstair quadrangles, Indian Territory, will be made by Mr. J. A. Taff. Mr. E. O. Ulrich will cooperate with him in determining the stratigraphic succession in Indian Territory.

Kansas.—Mr. F. C. Schrader will make an areal and economic survey of the Independence quadrangle, Kansas. He will be assisted by Professor Erasmus Haworth, who will pay special attention to the investigation of the underground structure and its relation to the accumulation of oil and gas.

Louisiana and Texas.—Professor N. M. Fenneman will make an economic investigation of the oil fields of the gulf coastal plain of Texas and Louisiana.

Maine.—Dr. George Otis Smith will, with the assistance of Messrs. E. S. Bastin and C. W. Brown, continue the survey of the Penobscot Bay quadrangle in Maine. Dr. Smith will also exercise general supervision over geologic work in New England and the crystalline belt of New York and New Jersey.

Maryland.—Acting in cooperation with the Maryland State Geological Survey, Professor William B. Clark will continue areal and economic surveys in Maryland for the preparation of geologic folios.

Massachusetts.—Professor B. K. Emerson will continue his investigation of the areal and structural geology of central Massachusetts.

Mississippi.—In cooperation with the division of hydrology, Mr. E. C. Eckel, assisted by Mr. A. F. Crider, will prepare a report on the geology and the water resources of Mississippi.

Missouri.—The Silurian and Ordovician paleontology of central Missouri will be investigated by Mr. E. O. Ulrich, who will work in cooperation with the state survey. The lead and zinc deposits of the state will be examined by Dr. H. F. Bain.

Montana.—Mr. W. H. Weed will complete the preparation of a report on the Butte mining district.

New Jersey.—In cooperation with Messrs. N. H. Darton and W. B. Clark, Dr. Florence Bascom will make an areal survey of the pre-Paleozoic formations of the Trenton quadrangle, New Jersey, in preparation for the Trenton folio. Dr. Bascom will also complete the mapping of the Paleozoic, pre-Paleozoic and Pleistocene formations in the Burlington, Lambertsville, Bordentown and Princeton quadrangles.

Professor W. S. Bayley will complete the mapping of the crystalline rocks of the Raritan quadrangle, New Jersey. He will also

make an areal, economic and structural survey of the crystalline rocks of the Delaware Water Gap, Easton and Allentown quadrangles, in New Jersey and Pennsylvania.

A thorough field revision of the areal and economic geology of the Franklin Furnace quadrangle, New Jersey, will be made by Dr. A. C. Spencer, who will also prepare a report on the economic geology of the district. Dr. Spencer will cooperate with Professor J. E. Wolff in the preparation of the Franklin Furnace folio.

New York.—Professor R. S. Tarr will complete his investigation of the Pleistocene geology of the Watkins Glen quadrangle, New York, and will prepare the Pleistocene section for the Watkins Glen folio. He will also investigate the Pleistocene geology of the Harford-Owego quadrangle, New York, and prepare the Harford-Owego folio in cooperation with Professor H. S. Williams.

Professor Williams, assisted by Dr. E. M. Kindle, will make an areal and economic survey of the quadrangle that embraces the Dryden, Harford, Owego and Appalachian quadrangles, New York.

Professor J. F. Kemp will continue the areal and economic survey of the eastern part of the Adirondack region.

Nevada.—Mr. J. E. Spurr will visit the Tonopah district, Nevada, some time during the summer, in order to make a final revision of his conclusions before publishing the report on the Tonopah ore deposits on which he has been at work for the last year.

North Carolina, South Carolina, Tennessee and Georgia.—Mr. Arthur Keith will complete areal and economic surveys of the Mount Mitchell, Nantahala, Cowee, Pisgah, Roan Mountain and Morganton quadrangles, in North Carolina, South Carolina and Tennessee, with a view to the preparation of geologic folios. Assisted by Mr. Hoyt S. Gale, he will make a reconnaissance of the Hickory, Pickens, Walhalla and Dahlonega quadrangles, North Carolina and Georgia. Dr. W. Lindgren, assisted by Mr. L. C. Graton, will make a preliminary investigation of the mineral resources, particularly gold and tin, in several counties of the northeastern part of South Carolina.

Ohio and West Virginia.—A revision of the Cadiz-Steubenville quadrangles in Ohio and West Virginia will be made by Mr. M. R. Campbell, who will prepare the Cadiz-Steubenville folio in cooperation with Mr. W. T. Griswold.

Pennsylvania.—Mr. M. R. Campbell will revise the mapping of the Slatington quadrangle, Pennsylvania, for the preparation of the Slatington folio. In cooperation with the state of Pennsylvania, he will also survey for folio publication the Amity, Rogersville, Burgettstown and Claysville quadrangles. In this work he will have the assistance of Messrs. W. T. Griswold and F. C. Clapp.

The Trenton limestones of eastern Pennsylvania and their continuation into New Jersey will be mapped by Mr. R. S. Bassler for the purpose of furnishing information to Mr. E. C. Eckel that may be of assistance to him in the preparation of his report on the cement resources of the United States.

In cooperation with Messrs. N. H. Darton and W. B. Clark, Dr. Florence Bascom will complete the field work and prepare for publication the Philadelphia special folio.

Texas.—Mr. E. C. Eckel will visit northeastern Texas, particularly Marion, Cass, Morris, Camp, Harrison and Upshur counties, for the purpose of making a reconnaissance examination of iron-ore deposits and determining the areas in which topographic and geologic work can most advantageously be taken up next year.

Utah.—Mr. J. M. Boutwell will complete an investigation of the mining geology of the Park City district, Utah. He will also make a reconnaissance of the areal, stratigraphic and structural geology of the western portion of the Uinta Mountains. Mr. Lester H. Woolsey will assist him.

Vermont.—Areal and economic surveys will be made in western Vermont by Professor T. Nelson Dale.

West Virginia.—Dr. George H. Ashley, assisted by Mr. W. C. Phalen, will make areal and economic surveys of the Nicolas quadrangle, West Virginia.

Mr. George W. Stose will complete the areal and economic surveys on the Pawpaw and Hancock quadrangles, in West Virginia and Maryland. He will be assisted by Mr. E. F. Burchard.

Wisconsin.—Professor U. S. Grant will make an areal and economic survey of the Mineral Point quadrangle, Wisconsin. The work will probably be done in cooperation with the state survey of Wisconsin.

BARON TOLL.

PRINCE KROPOTKIN contributes to the last number of the *Geographical Journal* an account of the return of the expedition sent to search for Baron Toll, under the direction of Lieutenant Kolchak. There appears to be little hope that Baron Toll and Dr. Seeberg have survived. The last news from them is a letter found in Bennett Island and dated November 8, 1902. It is as follows:

In company with the astronomer, F. G. Seeberg, and two hunters, the Tungus Nicholas Diakonoff and the Yakut Vassili Gorokhoff, on June 7, I left the winter harbor of the *Zarya* (Nerpichiya Bay of Kotelnyi Island). We followed the northern coasts of Kotelyni and Thadéeff Islands, keeping our course towards Cape Visoki on New Siberia. On June 13 I took the course towards Bennett Island. The ice was pretty broken. On June 25, three miles from Cape Visoki, the ice was definitely broken. Preparing to take to our *baidaras* [leather boats], we killed our last dogs. From here we were carried on an ice-floe, for four and a half days, 48 miles in the desired direction. Then, having noticed that our ice-floe had drifted 10 miles southwards, we left it on July 31, and after having covered the remaining 23 miles in our *baidaras,* landed on August 3 on Bennett Island, at Cape Emma.

According to the survey of Seeberg, who has also determined the magnetical elements both here and on the journey—in ten places in all—Bennett island is a plateau, not higher than 1,500 feet. By its geological structure it appears as a continuation of the plateau of Middle Siberia, which is built up, here also, of very ancient marine deposits (Cambrian), pierced by irruptions of basalt. In places one finds, under the sheets of basalt, deposits of brown coal with relics of vegetation, namely conifers. In the valleys of the island, bones of mammoths and other Quaternary-period animals, washed out of the deposits, are found occasionally.

As to the present inhabitants of Bennett Island, they are, besides the temporary visitor, the walrus, the polar bear and the reindeer. A herd of some thirty of the latter wandered on the rocky feeding-ground of the island. We fed upon them, and made out of their skins the fur cloth and the boots required for the winter journey. The following birds stay here: two species of *Somateria,* one sandsnipe, one bullfinch and five species of gulls, including the roseate one.

As for migratory birds, we saw one eagle which flew south to north, one falcon which flew north to south, and geese whose flock went also north to south. Owing to fogs, we could not see the land wherefrom these birds came; neither could we see Sannikoff's Land, any more than during our last navigation.

We are going to leave here the following instruments: a reflecting circle with artificial horizon, a Krause's inclinator, the anemometer, the photographic apparatus 'Norah,' and some others.

To-day we are going southwards. We have provisions for fourteen to twenty days. All in good health. 76° 38′ N. lat., 149° 42′ E. long.

SCIENTIFIC NOTES AND NEWS.

LORD KELVIN celebrated his eightieth birthday on June 26.

MR. W. H. M. CHRISTIE, the astronomer royal, and Sir David Gill, of the Cape Observatory, have been elected corresponding members of the Paris Bureau des Longitudes.

THE University of Manchester has conferred the doctorate of science on Professor Bohuslav Brauner, Ph.D., of the Czech University of Prague, Mr. Ludwig Mond, F.R.S., and Mr. W. H. Perkin. Professor Dixon, in making the presentations, said Dr. Brauner was an old student of this university, and one of