the section the velocity is diminished, the air must flow faster in some other portion. This theory seems to explain satisfactorily the increased velocity between 300 and 700 ms. at night. The retardation of the air between 200 and 700 meters during the day, due to ascending currents, results in an increased velocity near the ground, and, as this is not sufficient compensation, also in the section of air between 1,000 and 2,000 meters. Hence, at the latter height, the velocity has a maximum by day and a minimum by night, as is the case at the ground.

Vertical Gradients of Temperature, Humidity and Wind Velocity.—At night the temperature rises with increase of altitude up to about 500 meters, and not until a height of over 1,000 meters is reached is the temperature in the free air as low as at the ground. During the day the temperature decreases with altitude nearly at the adiabatic rate for dry air up to 500 meters. Above that height the rate decreases, probably owing to frequent inverted gradients and to cloud formation. Between 500 and 1,500 meters the temperature decreases more rapidly by night than by day. The decrease is most rapid in summer and least in winter. During the day the rate of decrease diminishes to 2,000 meters, and then increases again. From 0 to 500 meters the rate is at a maximum by day and a minimum by night, but between 1,000 and 1,500 meters this condition is reversed, owing to the inversion of the diurnal period. An important point, noted on page 50, concerns the *mean vertical temperature gradient,* about which much has been written. Gradients which are the mean of two opposing conditions may not occur at all. The most frequent gradients which actually occur are (I.) an increase of temperature with increase of altitude, between $+0°.1$ and $+1°.0$ (C.) per 100 meters, and (II.) the adiabatic gradient, $1°.0$ (C.) per 100 meters. Some gradients exceeding the adiabatic rate have been observed, chiefly between 9 A.M. and 3. P.M. On the average, the relative humidity increases during the day up to about 1,000 meters, and then decreases to about 2,500 meters. During the night the relative humidity diminishes rapidly up to a height of 500 meters, and then more slowly, to a height of about 2,500 meters. Above 2,500 meters the relative humidity increases slowly again. There is a very rapid increase of wind velocity at night to a maximum at 500 meters, a slight decrease between 500 and 1,000 meters, and then an increase becoming more rapid with increasing height. There is a relatively rapid increase of wind velocity by day from the ground to 500 meters; a slower decrease from 500 to 1,500 meters, and almost no change from 1,500 to 2,000 meters.

R. DEC. WARD.

MEETING OF THE BRITISH ASSOCIATION IN SOUTH AFRICA.

THE British Association will hold its meeting this year in South Africa. In these exceptional circumstances, the general officers of the association requested the council to appoint a strong committee to cooperate with them in carrying out the necessary arrangements. This 'South African Committee' has held frequent sittings; and its work is so far advanced that the London *Times* is now able to make the following announcements:

Although the annual circular and program have not yet been issued, pending the receipt of information from South Africa, many members have already intimated their intention of being present at the meeting. The 'official party' of guests invited by the central executive committee at Cape Town, and nominated in the first instance by the council of the association, numbers upwards of 150 persons, comprising members of the council, past and present general officers and sectional presidents, the present sectional officers, and a certain proportion of the leading members of each section. To this list has yet to be added, on the nomination of the organizing committee, the names of representative foreign and colonial men of science, the total number of the official party being restricted to two hundred, including the local officials. It is hoped, however, that many other members of the association will also attend the meeting.

The presidents-elect of the various sections are as follows:

A. *Mathematical and Physical Science.*—Professor A. R. Forsyth, M.A., Sc.D., F.R.S.

B. *Chemistry.*—T. Beilby.

C. *Geology.*—Professor H. A. Miers, M.A., D.Sc., F.R.S.

D. *Zoology.*—G. A. Boulenger, F.R.S.

E. *Geography.*—Admiral Sir W. J. L. Wharton, K.C.B., F.R.S.

F. *Economic Science and Statistics.*—Rev. W. Cunningham, D.D., D.Sc.

G. *Engineering.*—Colonel Sir Colin Scott-Moncrieff, G.C.S.I., K.C.M.G., R.E.

H. *Anthropology.*—A. C. Haddon, M.A., ScD., F.R.S.

I. *Physiology.*—Colonel D. Bruce, M.B., F.R.S.

K. *Botany.*—Harold Wager, F.R.S.

L. *Educational Science.*—Sir Richard C. Jebb, Litt.D., M.P.

The vice-president, recorders and secretaries of the eleven sections have also now been appointed.

In view of the numerous towns to be visited by the association, and in which lectures or addresses will be given, the number of lecturers appointed is much larger than usual. The list of these, as at present arranged, is as follows:

Cape Town.—Professor Poulton, on Burchell's work in South Africa; and Mr. C. V. Boys, on a subject in physics.

Durban.—Mr. F. Soddy, on radioactivity.

Maritzburg.—Professor Arnold, on compounds of steel.

Johannesburg.—Professor Ayrton, on distribution of power; Professor Porter, on mining; and Mr. G. W. Lamplugh, on the geology of the Victoria Falls.

Pretoria (or possibly Bulawayo).—Mr. Shipley, on a subject in zoology.

Bloemfontein.—Mr. Hinks, on a subject in astronomy.

Kimberley.—Sir William Crookes, on diamonds.

As the wish has been conveyed to the council from South Africa that a few competent investigators should be selected to deliver addresses dealing with local problems of which they possess special knowledge, a geologist, a bacteriologist and an archeologist have been invited to undertake this work, involving in two cases special missions in advance of the main party. Whilst Colonel Bruce, F.R.S., will deal with some bacteriological questions of practical importance to South Africa, Mr. G. W. Lamplugh (by the courtesy of the Board of Education) will be enabled to investigate certain features in the geology of the Victoria Falls, particularly as regards the origin and structure of the canon; and Mr. D. R. MacIver, who is at present exploring in Nubia, will proceed in March to Rhodes in order to examine and report on the ancient ruins at Zimbabwe and also Inyanga.

Most of the officials and other members of the association will leave Southampton on July 29 by the Union-Castle mail-steamer *Saxon,* and arrive at Cape Town on August 15, the opening day of the meeting; but a considerable number will start from Southampton on the previous Saturday, either by the ordinary mail-boat or by the intermediate steamer sailing on that date.

The sectional meetings will be held at Cape Town (three days) and Johannesburg (three days). Between the inaugural meeting at the former and the concluding meeting at the latter town opportunities will be offered to members to visit the Natal battlefields and other places of interest. Subsequently a party will be made up to proceed to the Victoria Falls, Zambesi; and, should a sufficient number of members register their names, a special steamer will be chartered for the voyage home, *viâ* Beira, by the East Coast route, as an alternative to the return through Cape Town by the West Coast route. Thus all the colonies and Rhodesia will be visited by the association. The tour will last seventy days *viâ* Cape Town, or a week longer *viâ* Beira (all sea), leaving Southampton on July 29, and returning thither on October 7 or 14.

A central executive committee has been constituted at Cape Town, with Sir David Gill as chairman and Dr. Gilchrist as secretary, while local committees have been formed at Johannesburg and other important centers.

Professor G. H. Darwin, F.R.S., is the president-elect; and among the vice-presidents-elect are the following: The Right Hon. Lord Milner, the Hon. Sir Walter Hely-Hutchinson, Sir Henry McCallum, the Hon. Sir Arthur Lawley, Sir H. J. Goold-Adams, Sir David Gill and Sir Charles Metcalfe.

Sir David Gill, Mr. Theodore Reunert and

others have taken a prominent part in the initial work. The South African Association for the Advancement of Science is cordially cooperating in the local organization, and will join with the British Association in attending the meeting.

The aim of the council has been to secure the attendance of a representative body of British men of science, including specialists in various lines of investigation; and that, along with the generous support of the people and authorities in South Africa, should go far to insure the success of the meeting and to stimulate local scientific interest and research.

JOINT ANNOUNCEMENT OF SUMMER FIELD COURSES IN GEOLOGY.

A PAMPHLET has lately been issued containing a brief account of the field courses in geology offered for the summer of 1905 by several universities in various parts of the United States. The number of courses offered and the professors, from whom information about them may be obtained, are as follows:

Intercollegiate Appalachian Course, Professor W. B. Clark.

University of Chicago, five courses, Professor R. D. Salisbury.

Columbia University, one course, Professor A. W. Grabau.

Harvard University, three courses, Professor J. B. Woodworth.

Johns Hopkins University, one course, Professor W. B. Clark.

University of Kansas, one course, Professor E. Haworth.

University of Minnesota, two courses, Professor C. W. Hall.

University of North Carolina, one course, Professor C. Cobb.

Ohio State University, one course, Professor C. S. Prosser.

Stanford University, two courses, Professor J. C. Branner.

University of Wisconsin, one course, Professor W. H. Hobbs.

In order to encourage the taking of summer field courses, the following colleges and universities have agreed to give credit, under certain conditions, to any of their students, who thus spent part of the vacation in scientific study:

Amherst College, University of Missouri, Beloit College, University of North Carolina, University of Chicago, Northwestern University, Colgate University, Oberlin College, Columbia University, Ohio Wesleyan University, Hamilton College, University of Rochester, Harvard University, Syracuse University, Johns Hopkins University, University of Toronto, University of Kansas, Vanderbilt University, Massachusetts Institute of Technology, Wesleyan University, McGill University, Western Reserve University, University of Michigan, Williams College, University of Wisconsin, University of Minnesota, Yale University.

SCIENTIFIC NOTES AND NEWS.

PROFESSOR SIMON NEWCOMB celebrated his seventieth birthday on March 12. Professor Newcomb is at present engaged in an important investigation, under the auspices of the Carnegie Institution, for determining the elements of the moon's motion and for testing the law of gravity.

PROFESSOR HENRI MOISSAN, of Paris, and Professor Wilhelm Ostwald, of Leipzig, have been elected corresponding members of the Berlin Academy of Sciences.

THE following candidates have been selected by the council of the Royal Society to be recommended for election into the society: John George Adami, William Arthur Bone, John Edward Campbell, William Henry Dines, Arthur Mostyn Field, R.N., Martin Onslow Forster, Edwin S. Goodrich, Frederick Gowland Hopkins, George William Lamplugh, Ernest William MacBride, Francis Wall Oliver, David Prain, George F. C. Searle, Robert John Strutt and Edmund Taylor Whittaker.

CAMBRIDGE UNIVERSITY will confer its doctorate of science on Dr. E. B. Taylor, F.R.S., professor of anthropology at Oxford.

ON the occasion of the opening of the new public health laboratory of the Victoria University, Manchester, honorary degrees were conferred upon Professor Calmette, Lille University; Professor Perroncito, Turin University; Professor Salomonsen, Copenhagen University, and Captain R. F. Scott, R.N.

PROFESSOR K. MÖBIUS has retired from the directorship of the Berlin Museum of Natural History. The position has been offered to