than the adiabatic for dry air. The air removed by drainage is replaced by air from above, which flows down the mountain valleys like a river, often with a tumultuous rush. In this descending current, which is the true Föhn, the temperature gradient is that of the dry adiabatic. The onset of Föhn at a given station occurs when the upper level of the cold air sinks to the level of the station.

In their early stages all Föhns are fed by air which has travelled horizontally to the mountain ridges, and then descended on the northern side. There is no evidence of ascent of air on the southern side of the range during this first, or "anticyclonic," stage. If Föhn persists, a condition of things often develops in which there is heavy rain, and a marked absence of diurnal range of temperature on the south side of the Alps, and simultaneously the temperatures are much lower to the south than to the north of the range. We have then unmistakable evidence of the ascent of air on the south and of its subsequent descent on the north of the range. The conditions which determine whether an "anticyclonic" Föhn shall develop into this second or "stationary" stage need further investigation.

R. G. K. L.

RESPIRATION AT HIGH ALTITUDES.¹

PROF R. F. FUCHS, with Dr. Deimler, has confirmed the statement of Zuntz and his co-workers and of Durig, that the oxygen use of the human body during work is greatly increased at altitudes above 3000-4000 metres. While on the Colle d'Olen the O₂ use of Fuchs was only 3 per cent. more than at Erlangen; it was 36 per cent. more on the Capana Regina Margherita.

Fuchs and Deimler lived in the hut on the top of Monte Rosa for some weeks, and proved this point conclusively. This increased use of oxygen explains why most tourists are taken with mountain sickness at altitudes above 3000-4000 metres.

The oxygen needs cannot be supplied by the respiratory and circulatory mechanisms in the face of the falling partial pressure of oxygen, and the high oxygen use. Training and acclimatisation economise the oxygen use, increase the oxygen combining power of the blood, the power of the respiratory and circulating mechanisms.

The respiratory quotient sinks to a very low level, e.g. 0.53 after work, while the resting value is only 0.6-0.7 at these high altitudes. To explain this, it is supposed either that glycogen is built out of fat and protein in the body, or that substances are not completely burnt in the body, but are given off as lactic acid in the urine. We know that lactic acid is excreted in the urine after a hard run, when the oxygen used is greater than the supply.

A. Loewy and Franz Müller recently have found that the respiratory quotient is reduced by sea-bathing, e.g. from 0.88 at Berlin to 0.73 at the North Sea. The diet was the same. There is some evidence that the protein metabolism is different both in high altitudes and after the sea-bathing, but further work is required to explain the low quotients. Under the special conditions substances, such as proteins and their derivatives, may be oxidised, which share but little in the combustion process of the body. Fuchs suggests that the new building of hæmoglobin may explain partly the high oxygen use and the low respiratory quotient. It is generally agreed that a stay in high altitudes does increase the hæmoglobin of the body.

LEONARD HILL.

¹ "Physiologische Studien im Hochgebirge: Versuche über den respiratorischen Stoffwechsel im Hochgebirge." By R. F. Fuchs and T. Deimler. Sitzungsberichte der Physikalisch-medizinischen Societät in Erlangen. Band 41, 1909.

NOTES.

THE ninth meeting of the International Meteorological Committee will be held in Berlin on Monday next, September 26, and following days. It will be preceded by meetings of the Commission for Terrestrial Magnetism and Atmospheric Electricity, of which General Rykatcheff is president and Dr. A. Schmidt is secretary, and by meetings of the Magnetic Observations Committee of the International Association of Academies. Of other commissions which originated with the International Meteorological Committee, those concerning scientific aeronautics, the correlation of solar and terrestrial changes, a proposed *Système Mondial*, weather telegraphy, and maritime weather signals have held meetings in the past year, and their reports will come up for consideration at Berlin. Among new proposals to be considered is one by Prof. V. Bjerknes, of Christiania, for the organisation and publication of strictly synchronous meteorological hourly observations of the air at the surface and above at a large number of stations, with the view of studying in detail the precise changes that take place. Since the last meeting of the International Meteorological Committee, at Paris in 1907, many changes have taken place in the personnel of the committee. Death has removed MM. Lancaster, Pernter, and Eliot, while M. Hepites has resigned his directorship of the Roumanian Meteorological Service, and consequently ceases to be a member of the committee. The new members appointed to fill the vacancies are MM. van Everdingen (Holland), Ryder (Denmark), Trabert (Austria), and G. T. Walker (India). Dr. W. N. Shaw, director of the Meteorological Office, is the president of the committee, and Prof. G. Hellmann, director of the Royal Prussian Meteorological Institute, is the secretary.

MR. R. NEWSTEAD, of the University of Liverpool, who, it will be remembered (see NATURE, June 30, p. 530), was dispatched three months ago to Malta by the Liverpool School of Tropical Medicine to investigate the relation of sand-flies to public health, has now returned. It is understood that in the forthcoming report upon the expedition practical measures for dealing with the various disease-carrying insects in the island will be suggested, Mr. Newstead having brought back a considerable amount of material, not only with reference to sand-flies, but also to other carriers of disease.

THE National Fund Airship, which has just been completed, made its first successful flight at Moisson on September 14. It is a little more than a year ago since Mr. Eric Stuart Bruce, the late honorary secretary of the Aeronautical Society of Great Britain, was asked to visit France to make an exhaustive examination into the various types of dirigibles in connection with the national airship, with the result that the Lebaudy type was selected. This latest Lebaudy airship may certainly be said to be the finest semi-rigid dirigible in the world. It is 337 feet 10 inches long, 39 feet 5½ inches in diameter, and has a gas capacity of 353,165.8 cubic feet. It contains three ballonets. The motive power is derived from two four-cylinder Panhard-Levassor petrol motors of 135 horsepower each. The two propellers are made of wood. Mr. Bruce is now acting as honorary secretary to the test committee of the National Fund Airship.

ATTENTION has from time to time been directed to the flower gardens upon vacant land in the neighbourhood of the Strand. The Selborne Society has been investigating a still more interesting building site in Farrington Street,