confined to such cases as those mentioned. The production of liquid ammonia in quantity has led to its investigation as a solvent, in which it resembles water to some considerable degree. Salts render it a conductor of electricity and a similar dissociation seems to take place as in aqueous solution. In the December number of the *American Chemical Journal* E. C. Franklin and C. A. Kraus record the solubilities of something over five hundred substances, inorganic and organic, in liquid ammonia in which many analogies with water are shown. They also give the determinations of molecular rise in boiling-point of liquid ammonia for twenty-nine different substances.

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CURRENT NOTES ON METEOROLOGY.

UPSALA CLOUD OBSERVATIONS.

THE first publication embodying the results of the International Cloud Observations comes from Upsala, where Dr. Hildebrandsson carried on the work during the International Cloud Year (May 1, 1896–May 1, 1897). According to *Nature* (Dec. 1) nearly 3,000 measurements of heights and velocities were made, 1,635 of which were made by means of photography. The annual variation of the mean heights of the clouds is very marked, the maximum coming in June and July, and the minimum in the winter. During the summer the mean height of the cirrus is 8,176 meters, and of the cumulus 1,685 meters. The heights of the upper and middle level clouds are lower than at Blue Hill Observatory. The velocity of all the clouds is greater in winter than in summer.

RECENT ANEMOMETER STUDIES.

AT the meeting of the Royal Meteorological Society, held in London, November 16th, a report on the exposure of anemometers at different elevations was presented by the Wind Force Committee. The experiments were carried out by Dines and Wilson-Barker, on board H. M. S. *Worcester*, off Greenhithe. Five pressure-tube anemometers were employed, the first being at the mizzen royal masthead; the second and third at the ends of the mizzen topsail yard-arm, and the fourth and fifth on iron standards 15 feet above the bulwarks. The results show that the ship itself affected the indications of the lower anemometers, while some low hills and trees, which were a quarter of a mile away from the ship, to the south and southwest, also affected the wind velocity from those quarters. The Committee are of the opinion that the general facts deducible from these observations bearing on the situation of instruments for testing wind force are: (1) That they must have a fairly clear exposure to be of much value, and it would appear that for a mile, at least, all around them there should be no hills or anything higher than the position of the instruments. (2) That on a ship the results may be considered fairly accurately determined by having the instrument 50 feet above the hull, but that on land it will generally be necessary to carry the instrument somewhat higher, to be determined entirely by local conditions. (3) That no other form of anemometer offers such advantages as the pressure-tube, from the fact that it can be run up and secured easily at this height above a building, and that the pipes and stays can be so slight as to offer no resistance to the wind or cause any deflecting currents.

SAN FRANCISCO RAINFALL.

A PAPER by Marsden Manson in the October number of *Climate and Crops, California Section*, concerns the seasonal and monthly rainfall at San Francisco from 1849 to 1898. In this period of forty-nine years the normal annual rainfall has been 23.4 inches. Fluctuations have occurred between an annual rainfall of 7.4 inches in 1850–51, and

of 49.2 inches in 1861–62. The rainfalls of the winters of 1850–51, 1862–63, 1863–64, 1870–71, 1876–77 and 1897–98 have been the smallest, averaging 10.8 inches. Five seasons have had an average rainfall of 40.89 inches, viz., 1852–53, 1861–62, 1867–68, 1877–78, 1889–90. The variations in winter rainfall are stated to be due primarily to the changes in the positions of the lines upon and along which the areas of low pressure originate and move in their course from the North Pacific Ocean into the interior of the continent.

FREQUENCY OF RAINY DAYS IN THE BRITISH ISLES.

THE British rainfall records for the period 1876–1895 have been studied by Scott, in order to determine the frequency of rainy days in the British Isles (*Quart. Journ. Roy. Met. Soc.*, Oct., 1898). Charts have been drawn showing the mean monthly frequency of rainfall in percentages. The greatest excess of frequency is always on the extreme north and west Atlantic coasts. The highest figures of all are found at Dunrossness (Shetland) and at Stornoway in most months, especially in the late autumn and winter. In summer the figures for the west of Ireland are higher.

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CURRENT NOTES ON ANTHROPOLOGY.

MAN AND MONKEY.

UNDER the title 'L'Homme et le Singe,' the Marquis de Nadaillac, in the *Revue des Questions Scientifiques*, October, 1898, gives a thorough and searching criticism of the alleged descent of man from the anthropoids. He points out forcibly how many assumptions, without positive support, underlie the general theory of evolution, and especially the evolution of man from any known lower type. At the same time, he does not pretend that our present knowledge is decisive, either for the negative or the affirmative. "At the present time," he says, "in view of what is actually known, we are not prepared to deny the possibility of any such theory; but, I hasten to add, we are just as little prepared to affirm it as a truth." Such caution is certainly in season, as the tendency is constant to hasty conclusions.

THE NATIVE TRIBES OF COSTA RICA.

AN interesting contribution to the anthropology of Costa Rica has recently been published by Dr. H. Pittier (*Razas Indigenas de Costa Rica*, 1ª Contribucion, November 1898). He furnishes a number of anthropometrical data of the Guatusos Indians and a newly collected glossary of their language. Diagrams of their feet and hands are added. There are wide variations in all the physical measurements, illustrated by the pulse-rate, which varies from 58 to 87, and by the skull-form, which is dolicho-, meso- or brachy-cephalic. Dr. Pittier concludes, "that it is not possible from these data, which display such marked divergences, to establish a definite type for the race." The vocabulary is especially useful for the careful study of the sounds of the language which accompanies it.

THE CHRONOLOGY OF ARCHÆOLOGY.

FEW questions in pre-historic archæology are of greater interest than the means of determining the positive chronology of its various epochs and periods. A distinctly valuable contribution to this point is one by Dr. Robert Munro in the *Archæological Journal*, September, 1898, entitled 'The Relation between Archæology, Chronology and Land Oscillation in Post-glacial Times.' He assumes the probability of the astronomical theory of glacial causation and also the generally admitted opinion that the maximum cold in each glacial period coincided with the maximum submergence of land. With these as guides, he reviews the evi-