

7. It appears that both the influence of a changed solar constant and also that of the 11-year sun spot period on the distribution of the meteorological elements over the earth can be explained by uniform oscillations of the general circulation. In this it must be assumed, however, that an increased relative sun spot number as well as an increased solar constant corresponds, as the result of the coincident increase in the turbidity of the atmosphere, to a lessened insolation and so to a diminished intensity of the general circulation.

It would be of interest to investigate how the relations change in the course of the seasons. One of my students has nearly completed a paper relative to this matter and has divided the decades used here into summer, winter, and transition seasons. An additional investigation proposes to set forth the transition from monthly means to the decade means taken as a basis here. For this purpose my assistant, E. Ekhart, is studying the decade 1911-1920—for the present the distribution of pressure and precipitation—and with the use of a considerably greater number of stations he is able to determine what departures from the average conditions here given occur in the individual years. The work will appear in a short time in *Abhandlungen des Preuss. Meteorol. Institut.* A further investigation, that of lustrum values for 1885-1920, is in view, but for this a great amount of calculating must be done.—*Translated by W. W. Reed.*

City air.—"A sermon in soot," by Arnold H. Kegel, M. D., commissioner of health, Chicago, published in *The Aerologist* (September, 1929, vol. 5, pp. 5-9, 59, 5 ills.), effectively draws attention to the ever-increasing dustiness of city air and its deleterious effect on health. While smoke abatement has reduced the combustible dust in the air and its tarry content, it has not stemmed the increasing dustiness. Sunshine records of January and February, 1915-16 and 1925-26, show a reduction of 12 per cent, which the author ascribes to the greater air pollution in the later year. The health department's dust observations in Chicago show for 20 stations an average of 124.6 tons of insoluble solid matter per square mile per month in 1925, with an extreme maximum of 460 tons per square mile in the loop district one winter month. The minimum was 13.4 tons at an outlying station in October, November, and December. For a rough comparison the dust tonnages of Pittsburgh, 161; Liverpool, 140; Chicago, 124; St. Louis, 93; and Cincinnati, 73, are presented.

The author believes that Pittsburgh's leading position in pneumonia death rate in 1928 is the result of that city's unenviable extreme dustiness. A dweller in the Loop district, Chicago, would inhale a pound and a half of dust in the course of a year, according to Doctor Kegel's computations. At least in the congested districts provision of washed air indoors, where the city dweller spends most of his time, appears essential as an immediate though only partial health measure, while general electrification of transportation and heating may be the only though remote means of reducing atmospheric pollution.—*C. F. B.*

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*Attempts to induce rainfall.*¹—The Colony of Hong Kong has suffered from an unprecedented deficiency in rainfall during the 12 months ending June 30, 1929, with consequent distress to the population, owing to water shortage.

Amongst the many suggestions received from the public by the local government was the proposition that powdered kaolin, sprinkled from airplanes above suit-

able clouds, would induce precipitation; the method was stated to have been employed with success in other countries. After discussion with other government officials I made the following recommendation:

I consider that the experiment might reasonably be attempted once. I have little doubt of its failure, but this avenue of relief may then be considered sufficiently explored and be definitely closed thereafter.

My personal opinion is plainly expressed in the foregoing; had the government refused to countenance the experiment, however, there would have remained a feeling in the public mind that one possible solution of the water problem had not been tried. The experiment was made by the unit of the R. A. F. stationed here, and no precipitation occurred.

The reports in the local press are now being commented upon by journals outside the colony, usually with the implication that this observatory was responsible for the inception and conduct of the experiments. This was not the case: the experiments were authorized by the government to discount any subsequent criticism. No belief in a materially successful result was held by administration or its advisers, including my colleagues and myself.—*C. W. Jeffries.*

*Ocean currents the probable cause of the 3-year pressure cycle of the tropical South Pacific.*¹—H. P. Berlage, jr., finds a striking sequence in departures of pressure or temperature across the Pacific Ocean, extending over some months, which he ascribes to the transfer of heat by ocean currents. The region from extreme northern Australia over New Guinea and eastern Java is an active center of high temperature and low pressure, in which the variations in temperature appear to dominate the greater or lesser degree of lowness of the pressure, while immediately outside this active area the pressure variations emanating from the active center dominate the temperature. The compensatory area of high pressure appears to be centered near Easter Island in the eastern South Pacific. The variations in pressure at Port Darwin, representing the Australia-East Indian low, and at Juan Fernandez, in the eastern Pacific high, are practically in opposition, except at the end of the southern winter.

With the changes in pressure at these centers there are corresponding changes in the trade winds and, presumably, in the speeds and temperatures of the ocean currents. There is a well-defined sequence of temperature departures following the extremes of pressure in the north Australian low and the South Pacific high, reaching their maximum phases 2½ months later at Iquique, 4 months later at Malden and Samoa Islands, and 7½ months later at Manila. This progressive sequence is at about 33 miles a day, a rate suggesting strongly the translation of temperature anomalies through the great ocean currents.

There is also a sequence of pressure departures from Juan Fernandez to Port Darwin of one and one-fourth years for the negative departures and one and one-half years for the positive. Furthermore, when the departures at Samoa are the same as at Port Darwin, the temperatures and pressures at Port Darwin hold much the same for some time beyond the period of usual change in the normal 3-year sequence, which is thereby lengthened. The persisting temperature effects of ocean currents seem also to be responsible for the continuance at Port Darwin of plus departures in late winter till midsummer and for the consequent assymetry of the 3-year pressure curve, the fall being more rapid than the

¹ Reprinted from *Nature*, London, Sept. 28, 1929.

¹ H. P. Berlage, jr., "Über die Ursache der drei-jährigen Luftdruckschwankung." *Met. Zeits.*, July, 1929, 46:249-259, 4 figs.