

A Science Service Feature

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? WHY THE WEATHER ? Mailed June 8, 1932

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TONS OF AIR

The passage of a barometric depression--marked "low" on the daily weather map--is attended by relatively low readings of the barometer; that of an anticyclone or "high" by relatively high readings. The ups and downs of the barometer indicate variations in the weight or mass of air overhead. It is interesting to consider the total deficit of air occurring at a given moment over the whole area of a depression and the total excess over the area of an anticyclone. The figures are rather startling. Here are some samples, quoted from a work by Sir Napier Shaw:

A tropical cyclone that visited Cocos Island in November, 1909, reduced the weight of the air within its borders by 40,000,000,000 tons--but tropical cyclones are small affairs compared with many depressions on the temperate zone. This one was less than 400 miles in diameter. On January 31, 1926, a depression 2,360 miles in diameter overlay the North Atlantic in middle latitudes. This involved a temporary removal of air amounting to 2,100,000,000,000 tons.

At any one time all cyclonic depressions throughout the world represent a deficiency of air amounting, on an average, to 45,000,000,000,000 tons.

In winter a huge anticyclone is located over Siberia. On November 23, 1907, the atmosphere within its borders was 6,820,000,000,000 tons heavier than the average for all seasons in the same area.

There is an annual transfer of air back and forth between the northern and southern hemispheres, in consequence of which the air of the northern hemisphere is about 10,000,000,000,000 tons heavier in January and about 10,000,000,000,000 tons lighter in July than that of the southern.

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