

TYPHOONS AND DEPRESSIONS ORIGINATING TO THE NEAR EAST OF THE PHILIPPINES

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I. INTRODUCTION

In a preceding paper, "Typhoons Originating in the China Sea,"⁽¹⁾ the writer discussed the conditions of formation for typhoons in the China Sea. It was found that, far from originating in a homogeneous air mass, all the storms studied started along the line of discontinuity between two or even three air masses. Furthermore, some places in the China Sea seemed more especially adapted for typhoon formation than others; and finally, convergence or "jamming" was at least very generally present.

A similar investigation is now presented for typhoons and depressions originating in the region bounded on the north by about Latitude 20°, on the south and east by the Marianas, Carolines and Bonins, and on the west by the Philippines. Roughly this embraces the domain within 700 miles or so eastward of our Islands. Although our data for this region, both as to ships and land stations, are not as plentiful as in the China Sea, still they appear sufficient for a preliminary, ground-breaking study. Furthermore, as the study proceeded, it was seen that these storms formed a natural group. It is a source of great regret that perhaps the most important typhoons of all, those originating south and east of the Marianas and Carolines, must still be left untouched, since we have almost too meagre data for correct judgment. However, our present study leads us to think that in the formation of these storms the *undeviated* trades of the southern hemisphere very often play an important part.

In the present paper we have strictly eliminated all cases in which there existed a legitimate, unsolved doubt as to place of origin. A careful investigation was especially made to be sure that no wave or small, incipient storm passed over the equatorial front or zone from the east or southeast. Ship reports and the frontier stations of Guam, Yap, Palau and Saipan were especially helpful in this regard. This strict elimination is absolutely necessary if we are to form a satisfactory tentative conclusion as to causes of typhoon origin. Only one exception was made, i. e. in the case of the typhoon of January 10, 1938, since this was the only example of trade-northers type which might possibly come up for study here, and we wished to show its structure, peculiarities and possible mode of origin, even though the origin may well have been a little to the east of the stipulated region.

Our investigation was not carried back earlier than 1924 for cogent reasons: (a) ship reports for earlier dates were very scarce; (b) Data concerning weather conditions in the important island station of Palau were not available earlier than 1924. (c) The Kobe (Japan) Daily Weather Charts of the North Pacific Ocean were not on hand for earlier dates. Such data are absolutely necessary to eliminate any possibility of a typhoon having originated farther to the east than intimated by our published Monthly Bulletins.

That we have been strict rather than lenient in our selection may easily be seen from the following. Our Monthly Bulletins give maps showing the course of typhoons from the date they were first sighted. If the beginning of these published tracks were actually the places of origin, there would have been some fifty to sixty typhoons to discuss. Our