A CONTRIBUTION

to the

SEISMIC HISTORY OF MISSOURI

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by

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I. INTRODUCTION

A. Regional Earthquake Study in Missouri*

The strong and extended series of earthquakes which centered near New Madrid during 1811 and 1812 early led to inquiry regarding the seismic condition of this part of Missouri. Out of this inquiry, prompted first by historical curiosity, has grown a systematic regional investigation to determine the status of Missouri's seismic activity.

Published contemporaneous accounts of the first great shock of the New Madrid series on December 16, 1811 are the first tangible evidences of earthquake study in this region. During the period of and in the century following the New Madrid earthquakes such studies were essentially macroseismic in method for scientists investigated principally the surface effects of the shocks. These macroseismic studies were not frequent still there was preserved a considerable amount of valuable data - data however which lack the accuracy attained in the later microseismic investigations conducted with instruments.

Microseismic studies of the seismicity of Missouri date from the time the first local earthquake was recorded on the Wiechert seismograph of St. Louis University on October 23, 1909. Installation of this seismograph was a great step forward, still in the following fifteen years advance was slow. With the only regional instrument of a type whose magnification was a

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* Macelwane, James B., S.J., "The Mississippi Valley Earthquake Problem." Bull. Seism. Soc. America, 20: 95-98, June, 1930.

maximum when recording distant disturbances, many of the lighter local shocks were unwittingly overlooked.

As recently as 1925 Doctor Macelwane[1] introduced a plan for a more detailed earthquake study of the Ozark region. This plan had four main objectives:

1. To establish seismograph stations adequately equipped for recording local seismic activity and so situated as to allow triangulation in the location of epicenters.

2. To determine if possible by suitable research the influence of local structure on the seismic waves generated by near earthquakes.

3. To utilize the data obtained in (1) and (2) for detailed studies of strong local earthquakes and those with unusual characteristics and to combine with investigations of this type questionnaire surveys to determine affected areas.

4. To compile a regional seismic history showing the frequency, intensity, and distribution of Missouri earthquakes.

With the inauguration of this plan by the Geophysics Department of St. Louis University in cooperation with the United States Coast and Geodetic Survey, progress became more rapid. More sensitive instruments were installed in the St. Louis station and likewise in the new stations which were set up at Florissant, Missouri, and Little Rock, Arkansas. In the past year a fourth auxiliary station equipped with short period seismometers

(1) Macelwane, James B., S.J., "Earthquake Survey of the Ozark Region Proposed," Editorial Section, St. Louis Post Dispatch, September 30, 1925.

particularly adapted for recording local earthquakes was placed in operation at Cape Girardeau, Missouri. (See Figure I)

All of these various stages in the development of regional earthquake study in Missouri have had effect on the quality and quantity of Missouri earthquake data, so that the present paper which is intended as a contribution to the seismic history of Missouri reflects this progress.