

## CHAPTER IX

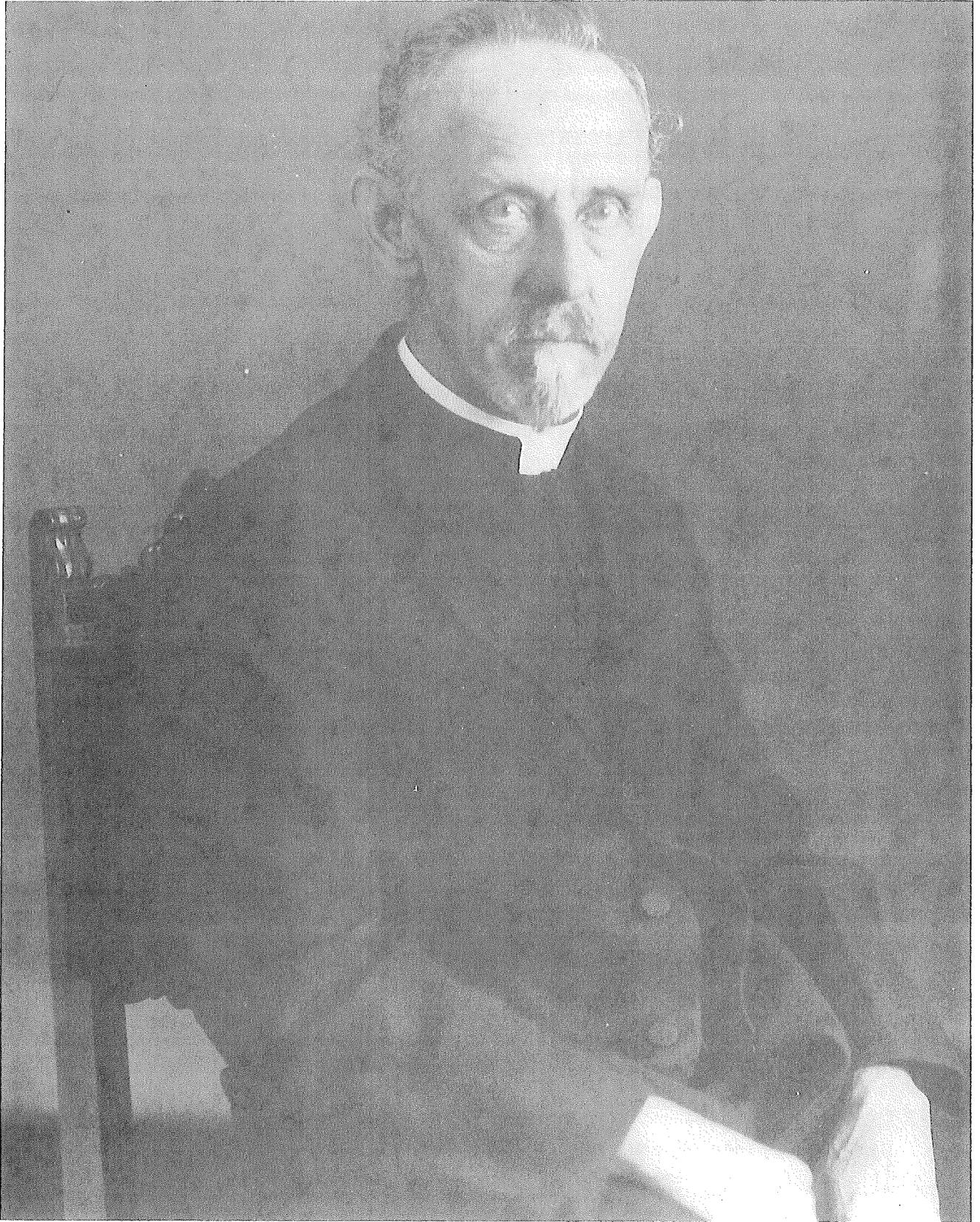
### JOHN CARROLL UNIVERSITY SEISMOLOGICAL OBSERVATORY

CLEVELAND, OHIO

By Henry F. Birkenhauer, S. J.

John Carroll University's Seismological Observatory ranks with the finest Jesuit-operated stations in the country. Yet without the tremendous sacrifice, energy, and spirit of one man, there might never have been a John Carroll Observatory; there might never even have been the nation-wide network of Jesuit stations that today renders such invaluable and unflinching service to science. That one man, recognized as the father of Jesuit seismology in the United States, is the Reverend Frederick L. Odenbach, S. J. (1857-1933).

The slender, studious priest began his work at Cleveland's St. Ignatius College (now John Carroll University) in 1893, a year when most people scoffed at the idea of a machine recording an earthquake thousands of miles away. And, indeed, at this early date, Father Odenbach did profess greater interest in the study of meteorology and astronomy than in reproduction and diagnosis of faraway earth tremors. Yet within little more than a half dozen years he was adding a new piece of equipment to his laboratory, equipment destined to bring fame to his name and place members of the Society of Jesus foremost among the country's seismological experts.



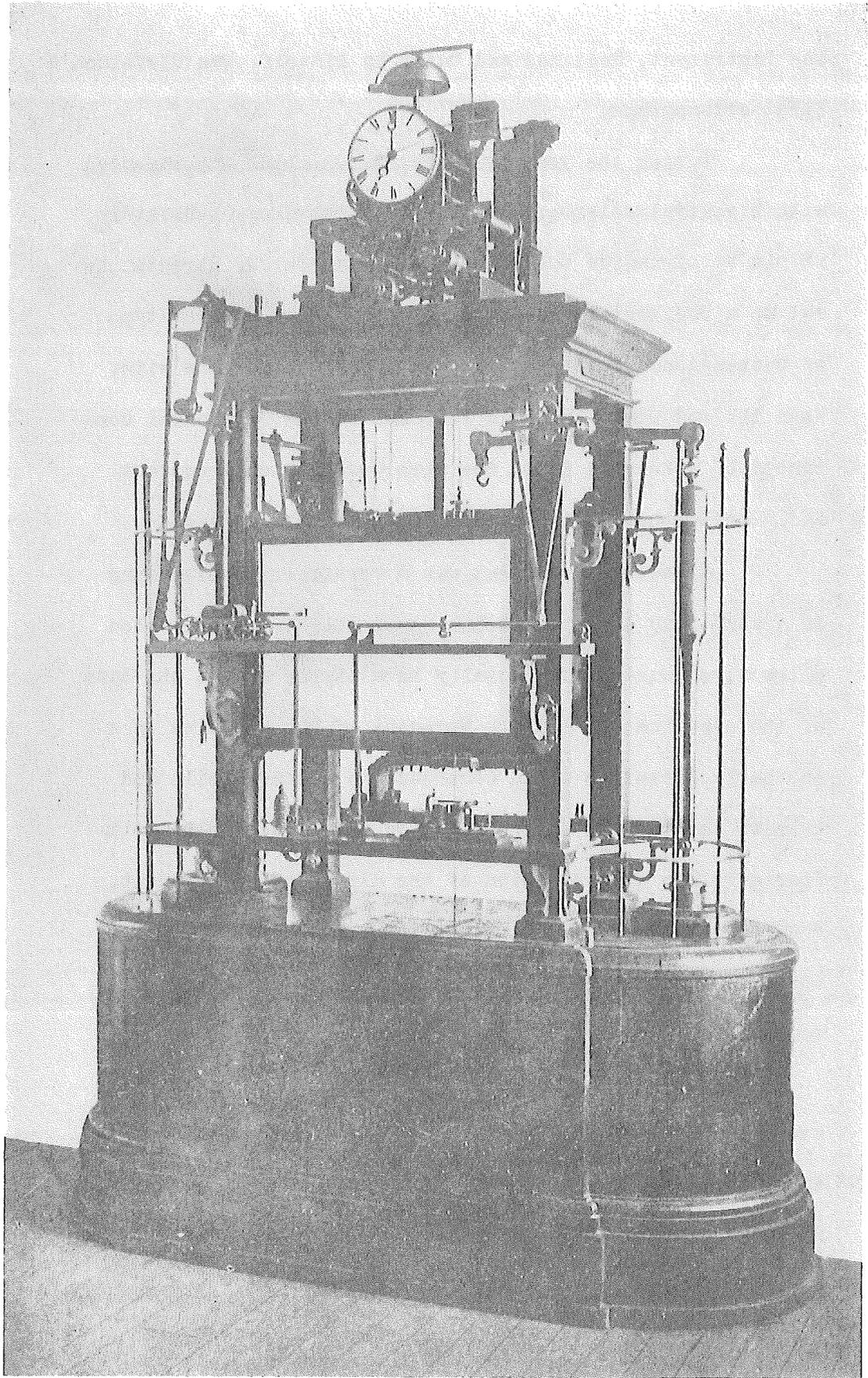
Reverend Frederick L. Odenbach, S. J., the Founder and First Director, 1900 - 1933

The instrument, designed and built by himself, was Cleveland's first seismograph.

During the year 1900, Father Odenbach experimented with his first seismograph. In his fifth floor laboratory at old St. Ignatius College, Carroll and Jersey Streets, he set up a horizontal glass rod with a Hengler-Zollner type of suspension. The glass rod was wound with a bare wire. When the rod would swing in response to the horizontal component of a seismic wave, the wire would touch a contact and a bell rang. This was his first alarm seismoscope.

A second instrument was a vertical pendulum hung in a shaft and equipped with a heavy weight. Four carbon piles were mounted horizontally in a circle around the base of the pendulum  $90^{\circ}$  apart. Movement of the pendulum in a northerly direction would compress the northern pile and release the tension on the southern pile. A simple amplifier gave him an indication of the direction of movement. Four parallel circuits were led to his observatory in the tower of the college where they operated a recording mechanism.

Meanwhile, Father Odenbach had given considerable attention to meteorology. The first meteorological observations had been made in 1896. "Two years later, the Smithsonian Institution placed at Father Odenbach's disposal the universal meteorograph which had been built by the famous astronomer, Father Angelo Secchi, S. J., for the Paris Exposition and which had there won a prize. It was purchased



FATHER SECCHI'S METEOROGRAPH

for the Smithsonian Institution; but the Secretary, Professor Langley, foresaw no possibility of putting the Secchi meteorograph to practical use in Washington. At the suggestion of the present Director of the Weather Bureau, Professor C. F. Marvin, it was offered to Father Odenbach. In three days after its arrival in Cleveland, Father Odenbach had the large and very complicated instrument assembled. Before long, it was ready to record all the principal elements of the weather. Gradually he expanded the meteorological equipment. In 1899, he devised and built the first ceraunograph. It was an adaptation of the Branly coherer to the detection and continuous recording of the static disturbances which precede and accompany thunderstorms. The name ceraunograph which is now in general use was suggested by Father James A. Kleist, S. J., who was then a colleague of Father Odenbach on the faculty of John Carroll University.<sup>1</sup>

In 1908, Father Odenbach conceived the plan of coordinating the Jesuit colleges in the country into a unified group of seismological observatories. He had previously been approached by Professor Willis L. Moore, Chief of the United States Weather Bureau, with a proposal to develop a similar organization in the field of meteorology. This plan had not succeeded but with the appearance on the market of the small Wiechert seismograph at a very reasonable

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<sup>1</sup> "Memorial to the Reverend Frederick L. Odenbach, S. J." by Reverend James B. Macelwane, S. J., Transactions, American Geophysical Union (1933) p. 317

price, Father Odenbach felt that the Jesuit colleges could pool their efforts in reporting seismological phenomena. On February 2, 1909, he addressed a letter to all of the Jesuit colleges in the United States and Canada. In this letter he called their attention to the scientific advantages of such an organization. This letter has been reproduced in the Bulletin of the Seismological Society of America.<sup>2</sup>

So favorably were Father Odenbach's suggestions received that before the winter of the following year, sixteen Wiechert eighty kilogram horizontal component instruments had been imported from Germany and were in operation at the various member stations in the first Jesuit seismological service. The first new station to function regularly was the Regis College station at Denver which installed its seismograph in August of that year. Although this initial effort at a unified seismological service was doomed to but one short year's existence, the ideas implanted by the illustrious Jesuit professor were never forgotten.

Meanwhile, Father Odenbach continued his own earthquake observations. A facsimile of the postcard on which he presented his data is published in this volume. Likewise are introduced sample pages from his seismological bulletins of 1915 and 1916. It may be of interest to the reader to know that these pages were found in the John Carroll archives with

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<sup>2</sup> "Jesuit Seismological Stations in the United States and Canada: A Retrospect" by J. B. Macelwane, S. J., Bulletin of the Seismological Society of America, Vol. 16 (1926) pp. 187-188

the reverse of each page used as leaves in Father Odenbach's meteorological notebook.

In the year that followed decline of the first seismological service, Father Odenbach, through his ceaseless research and observation, maintained his position as a leading geophysicist. By reason of his friendly manner and his facility at converting technical aspects of his work into understandable, everyday language, he was a prominent public figure. Clevelanders came to associate his name with most anything of a scientific nature and their frequent excursions to his bulging laboratory left them with a dual appreciation of the priest as a scientist and as a friend. Newspaper accounts of his active days during the 1920's reveal his relentless pursuit of knowledge but, more often, his warm personality that bade to outlast even his reputation as a seismologist.

During the latter half of the twenties seismograms produced by the Cleveland station became less and less accurate due to the increase of traffic and industrial disturbances in the neighborhood. Needless to say, Father Odenbach's disappointment and frustration grew with every heavy truck that rumbled by the college and it was indeed with great joy that he received the news that John Carroll was soon to build a new university plant in one of Cleveland's quiet residential suburbs. Immediate plans were laid for a meteorological and seismological

# SEISMOLOGICAL BULLETIN

1916

OBSERVATORY  
ST. IGNATIUS COLLEGE  
Cleveland, O., U. S. A.

Frederick L. Qdenbach, s.J.  
Director.

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Latitude  $41^{\circ} 29' 08''$  N

Longitude  $81^{\circ} 42' 29''$  W

Altitude 206 m.

Geological formation

Glacial drift 105 ft.

Wiechert Horiz. 80 Kg.

Magnification 80.

Period 7 sec.

Damping, 5:1.

Time: Greenwich 0-24

(Time: By wireless from Washington)

Observatory Press

1915

Date	Phase	Time	Period	Amp.	Remarks
		H M S	s	m m	
Nov. 21	N P	0 24 25	15	25	Phase doubtful
	S	28 00			
	L	29 00			
	M	29 05			
	F	1 15 00			
	E P	0 24 37	15	18	
	S	28 33			
	L	29 40			
	M	31 48			
	F	1 16 00			
Dec. 7	n c	18 44 21		4	Covered by microseisms
	F	48 00			
12	E c	21 13 25	9	1	
	M	19 24			
	F	30 00			
31	n e	12 36 00	11	2	Covered by microseisms
	L	39 00			
	M	40 05			
	F	57 00			
	E c	12 40 00	13	2	
M	43 36				
F	54 00				

station to be incorporated in the over-all building scheme.

In the summer of 1932, with work on the new university buildings nearing the final stages, Father Odenbach could content himself no longer with a location that daily brought increased interference to his delicate recording devices. Even at the advanced age of seventy-five, he still relished a scientific adventure and so with keen anticipation he dismantled his equipment, packed it carefully and effected an early transfer to the site of the yet unfinished building which was to house his laboratory and office.

But this new occupation with its exposure to all types of weather was to prove fatal to the once robust priest. The university's building program, once making steady progress, now came to a premature halt. Living in his windowless brick room proved too much for the aged scientist and, with his health failing rapidly, he was obliged to return to the Jesuit community at St. Ignatius High School in the early winter. Shortly thereafter, on March 15, 1933, in the seventy-sixth year of age, he passed away. His only regret, if regret we may term it was to die before completion of the John Carroll University where he had expected to accomplish so much. His death closed forty years of continuous service as director of the Cleveland Observatory.

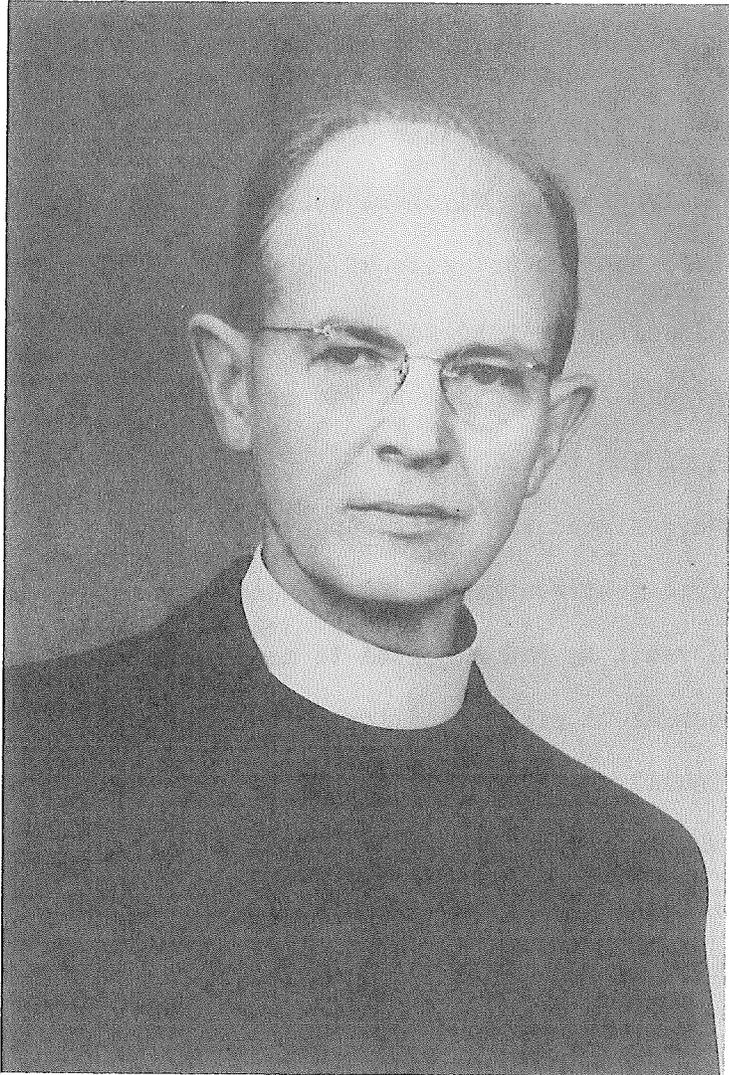
Father Odenbach was born in Rochester, New York,

in 1857, and educated at Exaeten, Holland and Canisius College Buffalo. He made higher studies in England where he was ordained in 1891. From 1893 to his death he served on the faculty of John Carroll University.

In the summer of 1933, Father Joseph S. Joliat, S.J., was appointed director of the Angelo Secchi Seismological Observatory as it was then called. All of Father Odenbach's equipment, including his eighty kilogram Wiechert seismograph, had been brought out to the present site of John Carroll in University Heights. The meteorological equipment was stored in the tower and the seismograph was mounted in the basement at the base of the tower.

Father Odenbach had designed an underground vault beneath the campus one hundred feet southwest of the Administration Building. In the vault he had expected to mount a large seismograph with a boom about eight feet long. Seepage from the ground water continually kept coming in, a fact which has rendered it impossible to use this vault.

Construction on the new John Carroll University buildings was resumed in 1935 with the reopening of classes in the new building in October of that year. In 1936, several members of the faculty moved to Bernet Hall. By the beginning of 1937, Father Joliat had installed the Wiechert in the basement of the Administration Building and continuous recording was begun. Among the early shocks recorded were the Anna, Ohio, earthquakes of March 2 and March 9, 1937.



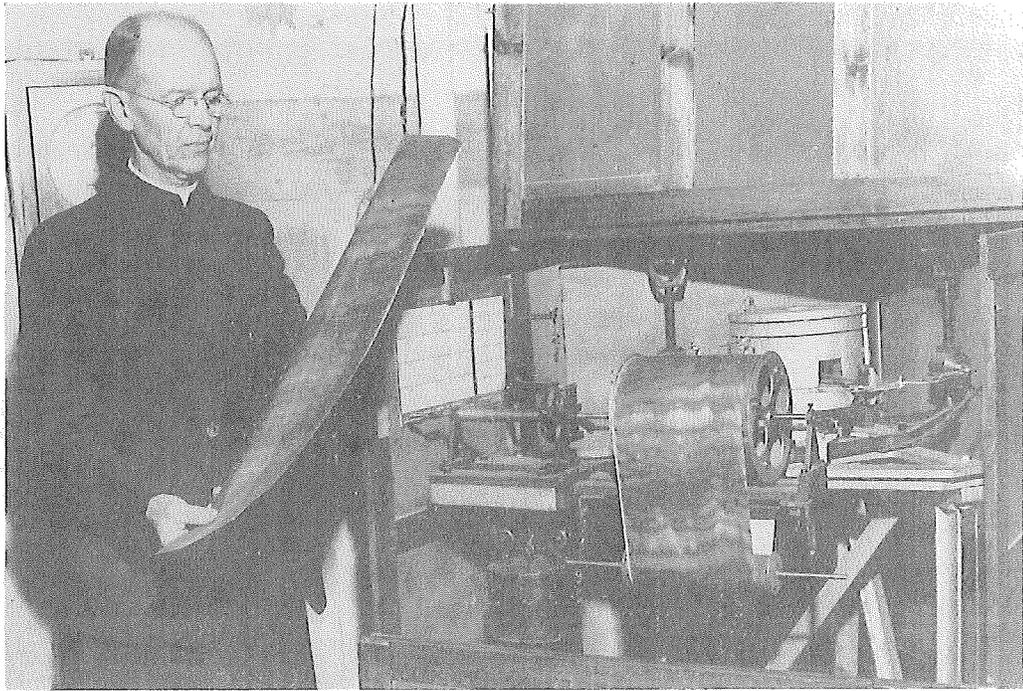
Reverend Joseph S. Joliat, S. J.  
Director, 1933 - 1947



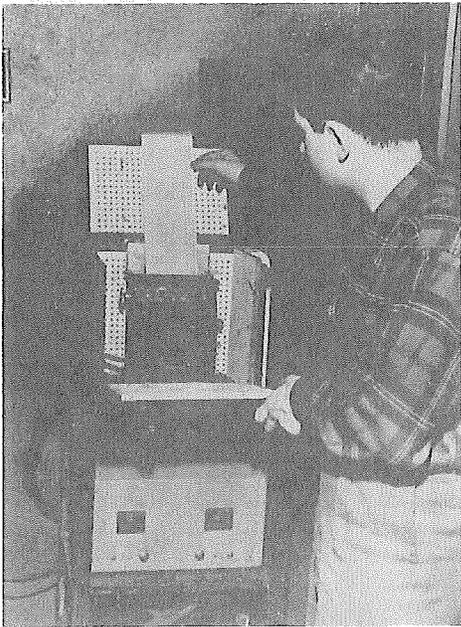
Rev. Henry F. Birkenhauer, S.J.  
Director, 1947 -



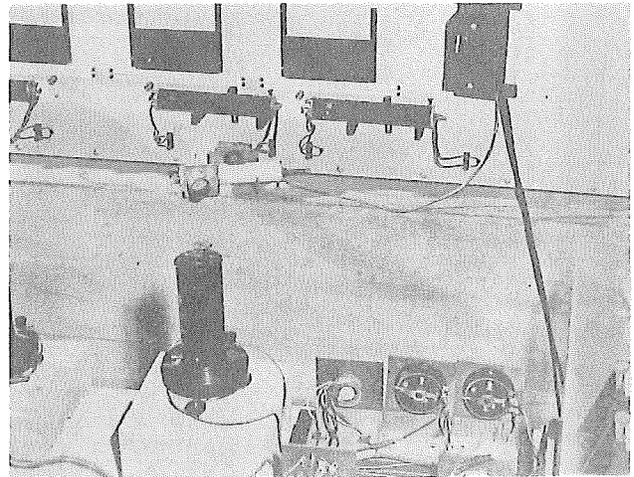
Doctor Edward J. Walter  
Assistant to the Director  
1947 -



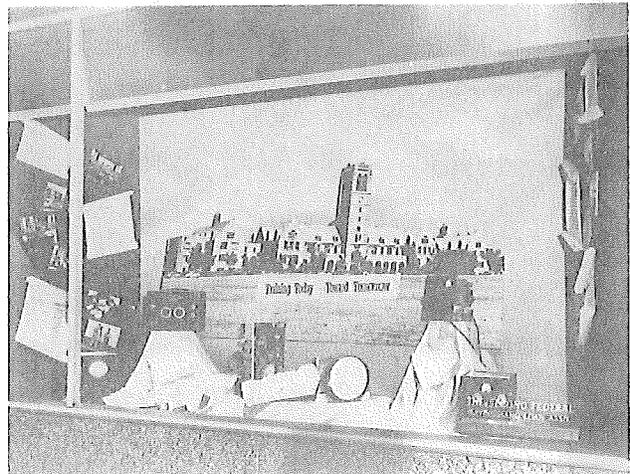
Father Joliat Examining a Record of the 80 Kg. Wiechert Seismograph



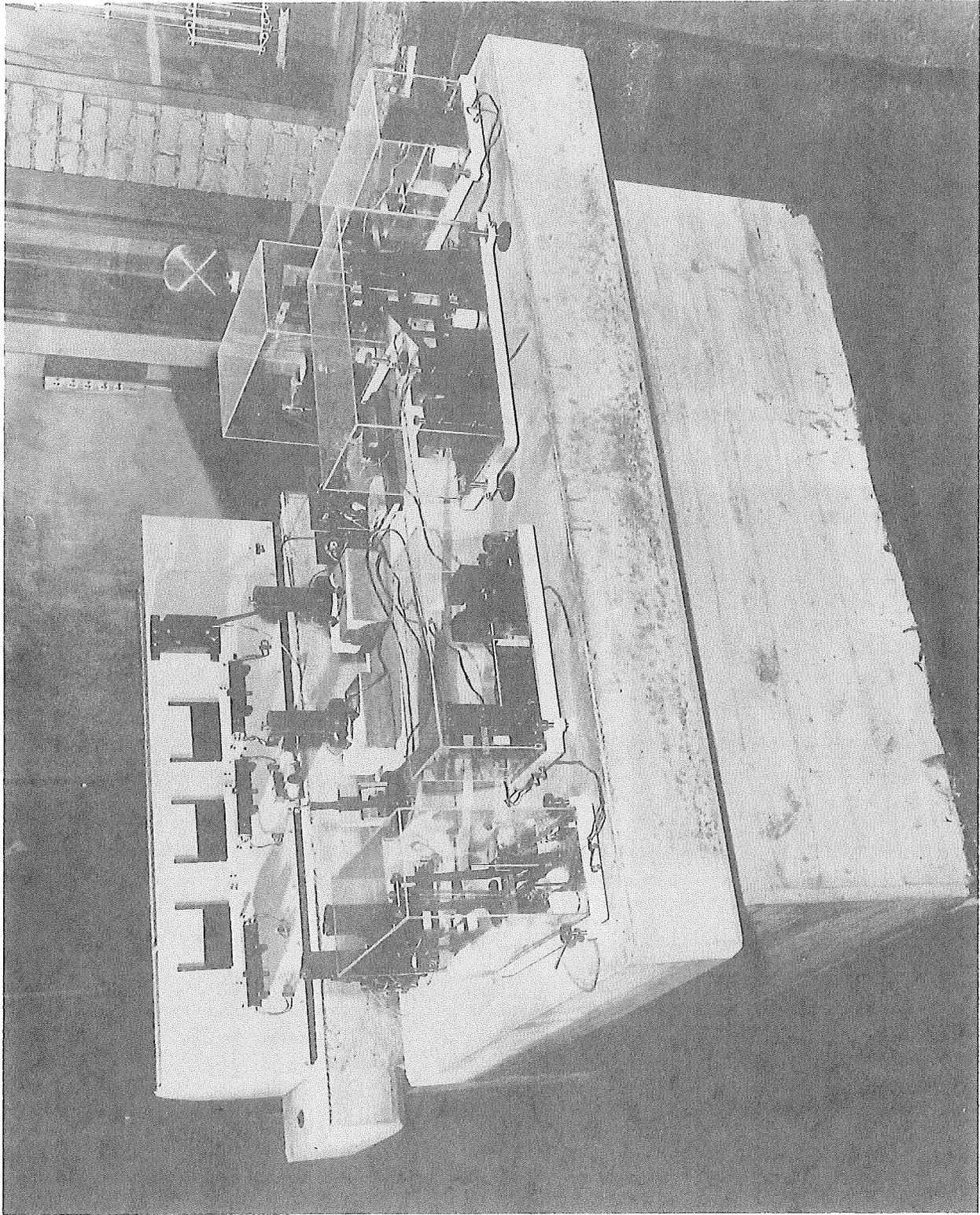
Recorder of the Visible Indicator



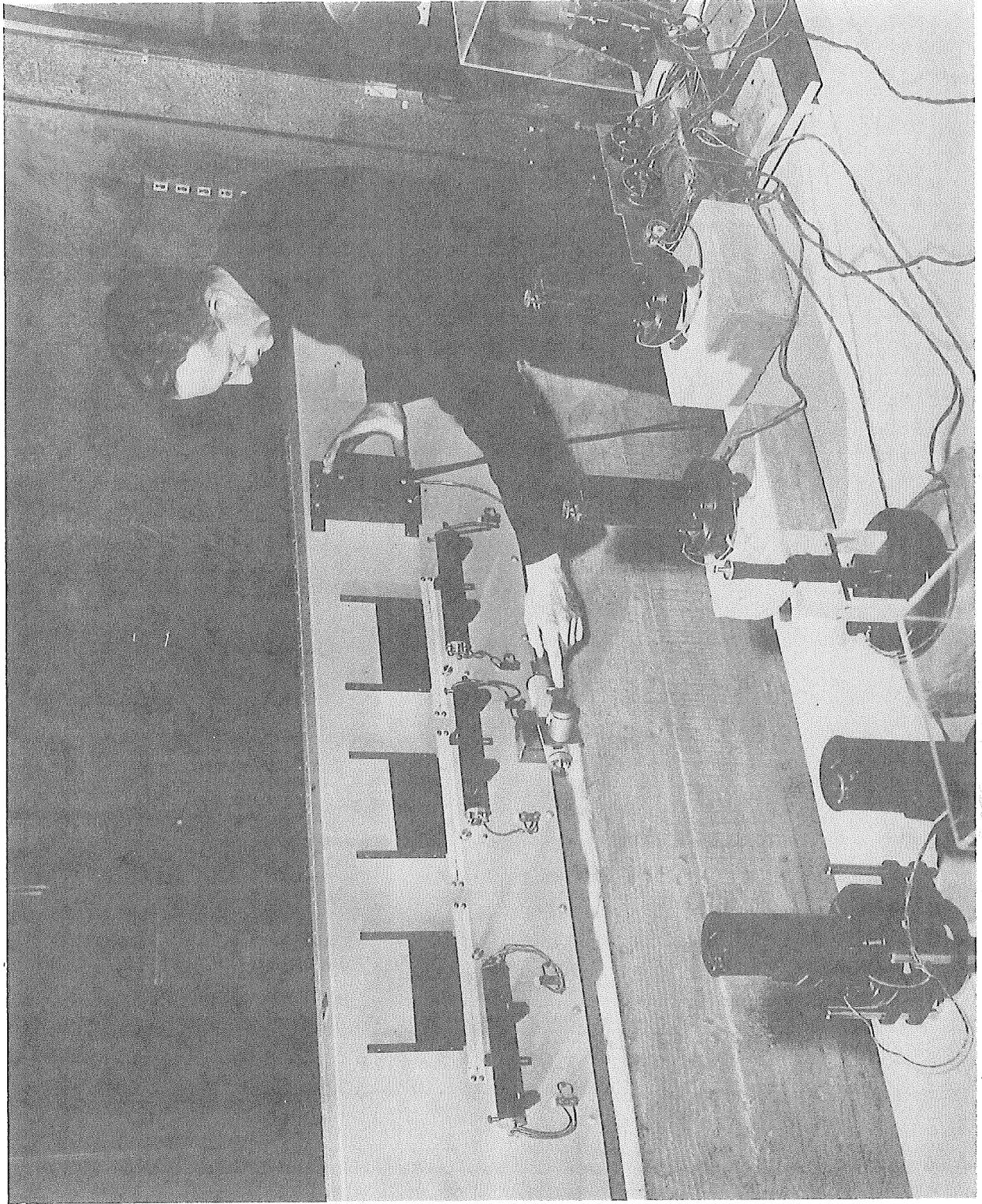
Leeds and Northrup Galvanometer and Controls



View of the John Carroll Buildings Used in the Second Federal Bank Display



View of the five Sprengnether seismographs and the Sprengnether triple recording drum



Detail View of the Sprengnether Triple Recorder - Father Birkenhauer is pointing to the visible indicating device designed by Mr. Edward Carome.



John Carroll Exhibit in the Second Federal Bank Building, 1949

In 1945, Reverend Thomas F. Donnelly, S. J., Rector of John Carroll University, approached the members of the Louis D. Beaumont Trust and the Cleveland Foundation to obtain grants for the purchase of new equipment. Grants totaling \$3000.00 were supplied in 1946. In the spring of that year, Father Joliat helped to excavate a new room in part of the unfinished basement of Rodman Hall. Excavation of this room was completed in the summer of 1946, at which time two long-period horizontal component seismographs and a short-period vertical seismograph were ordered from the W. F. Sprengnether Company in St. Louis.

Dr. Edward J. Walter joined the staff of the station as assistant director in the summer of 1946. In July, 1947, Father Henry F. Birkenhauer, S. J., came to relieve Father Joliat as director of the observatory.

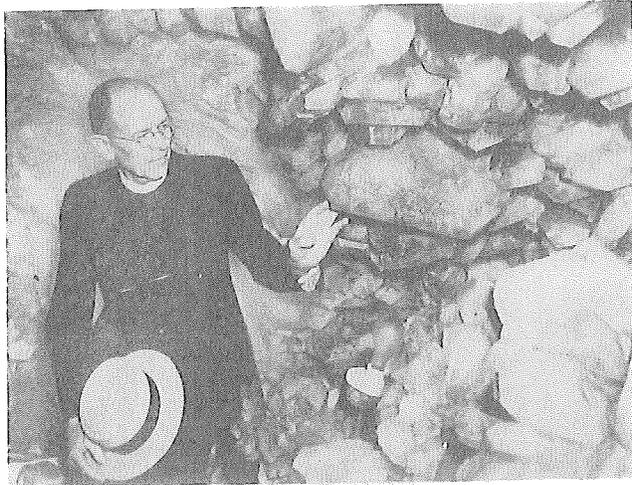
A concrete pier was poured during that month and the new Sprengnether instruments were installed in August and September, 1947. An additional grant from the Cleveland Foundation made possible the purchase in December, 1947, of two short-period Sprengnether horizontal seismographs. With the beginning of the operation of the Sprengnethers, the Wiechert was retired from active service. The station bulletin has been published monthly since September, 1947.

Besides the routine publication of its monthly bulletins and the research in microseisms and other problems incidental to the operation of the station, the staff has

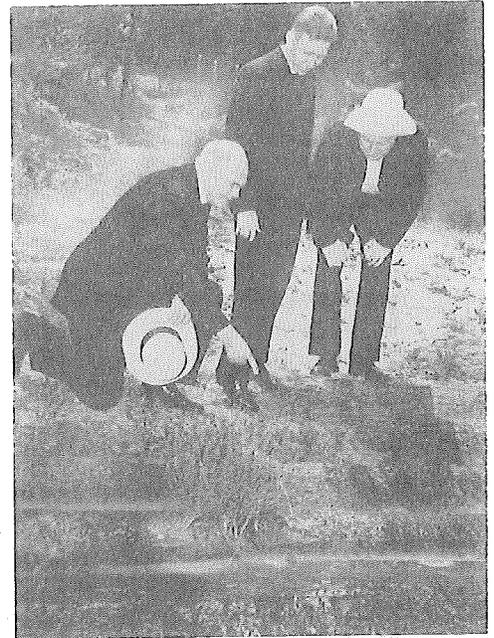
developed several types of vibration measuring instruments and makes its services available for such measurements on a consulting basis. The present staff includes, besides Fathers Birkenhauer and Joliat and Doctor Walter, Mr. Edward F. Carome, technician, and Miss Jeanne Garrabine, secretary.

The Jesuit Seismological Association met at John Carroll University in 1948 jointly with the Eastern Section of the Seismological Society of America for technical sessions and separately for business sessions and an excursion to points of geological interest in Lake Erie. The delegates proceeded by automobile along the old beaches of the glacial lakes Maumee, Whittlesey and Warren from Cleveland to Sandusky and across the Sandusky Bay through the gypsum region to Port Clinton. There they boarded a chartered boat for Put-in-Bay on South Bass Island where they visited Crystal Cave and the glacial striations in the exposed Bass Islands dolomite of Silurian age. After lunch the party again boarded their chartered boat and transferred to Kelley's Island to see the giant glacial grooves cut in dolomite at the north end of the island. On the return voyage the party had a good view of the limestone cliffs of Marblehead and Catawba Island as they skirted the north shore of the Ottawa County peninsula. They left the boat at Port Clinton and arrived in Cleveland in the evening.

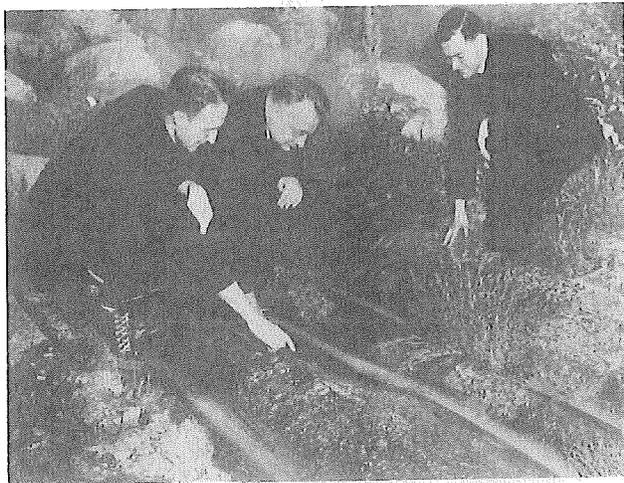
In June, 1950, John Carroll University sponsored a civic celebration of the Golden Jubilee of Father Odenbach's first efforts in seismology in Cleveland.



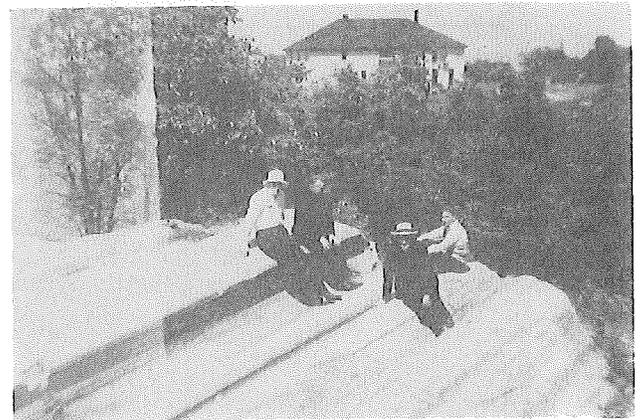
Father Joliat in Crystal Cave, Put-in-Bay,  
Lake Erie



Fathers Macelwane, Stechschulte and  
Lynch examining glacial grooves at  
Put-in-Bay, Lake Erie



Fathers Birkenhauer, Schon and Ramirez  
examining glacial grooves at Put-in-Bay,  
Lake Erie



Fathers Lynch, Schon, Macelwane and Stechschulte  
in the giant grooves at the north end of Kelley's  
Island, Lake Erie

Meeting of the Eastern  
 Section of the Seismo-  
 logical Society of  
 America held jointly  
 with the Jesuit Seismo-  
 logical Association,  
 John Carroll University,  
 Cleveland, Ohio.  
 Left to right:

First row:  
 Rev. Frederick W. Schon, S. J.,  
 Dr. Robert Stonely,  
 Rev. Alphouse R. Schmitt, S. J.,  
 Dr. Perry Eyerly,  
 Mrs. R. R. Heinrich,  
 Mrs. W. F. Sprengnether, Jr.,  
 Dr. Florence Robertson,  
 Mrs. Mary C. Rabbitt,  
 Dr. Edward J. Walter,  
 Dr. James T. Wilson;

Second row:  
 Mr. Adams,  
 Mr. Jules E. Jenkins,  
 Rev. J. E. Ramirez, S. J.,  
 Rev. V. C. Stechschulte, S. J.,  
 Mr. W. F. Sprengnether, Jr.,  
 Rev. James B. Macelwane, S. J.,  
 Mr. William Thomas McNiff,  
 Dr. William A. Lynch,  
 Rev. Antonio Due, S. J.,

Third row:  
 Rev. Henry F. Birkenhauer, S. J.,  
 Mr. Paul H. Zimmons,  
 Mr. Bergquist,  
 Mr. William G. Milne,  
 Dr. R. R. Heinrich,  
 Dr. Dean S. Carder,  
 Mr. Thomas H. Pearce,  
 Rev. J. Joseph Lynch, S. J.,  
 Mr. Frank Neumann,  
 Dr. John N. Adkins

