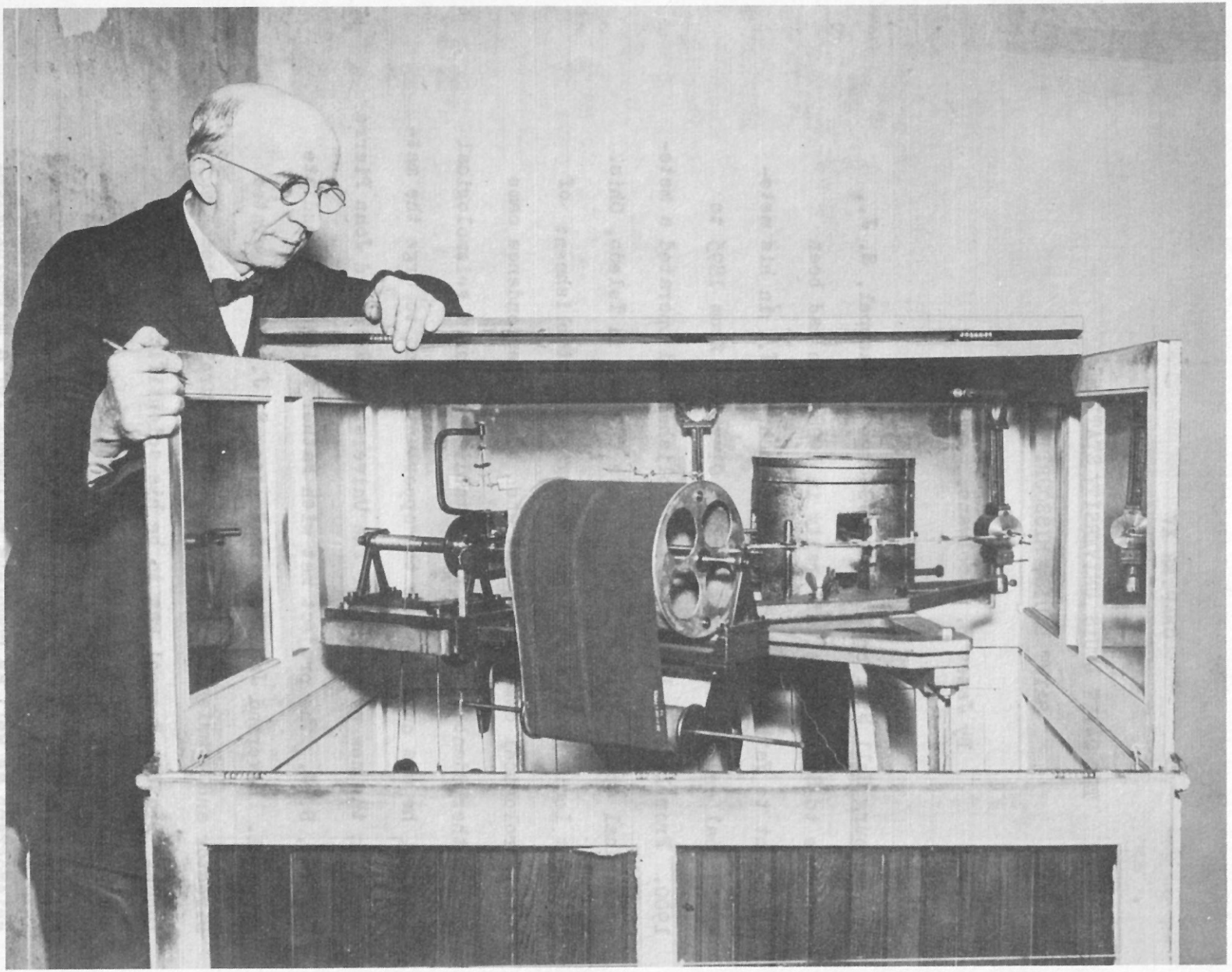
CHAPTER XV

THE SAINT LOUIS UNIVERSITY STATIONS

SAINT LOUIS, MISSOURI

By James B. Macelwane, S. J.

The DuBourg Hall Station - Brother George E. Rueppel, S. J., had come to Saint Louis University in 1908. He had been assistant to Father Frederick L. Odenbach, S. J., in his meteorological and seismological work in Cleveland from 1895 to 1900. From 1901 to 1908 he had established and operated a meteorological observatory at Saint John's College in Toledo, Ohio. In Saint Louis he at once began to urge the establishment of a meteorological observatory and when the correspondence came from Father Odenbach urging the establishment of a seismological station, he was quick to see the opportunity and to urge the matter with the new president of the University, Reverend John Pierre Frieden, S. J. The project met with Father Frieden's immediate approval. Reverend John Bernard Goesse, S. J., was appointed Director and commissioned to attempt to secure the necessary funds. Brother Rueppel was to be his scientific assistant. The mother of Father Goesse financed the purchase of a Wiechert 80 kilogram, horizontal-component, inverted pendulum seismograph as well as complete equipment for a meteorological



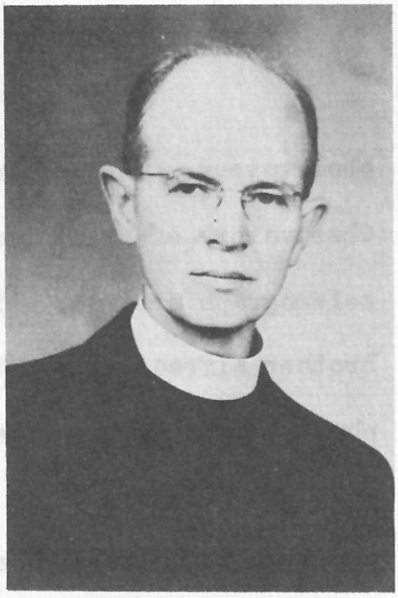
Brother George E. Rueppel, S. J. and the 80 Kg. Horizontal Component Seismograph in the DuBourg Hall Station

observatory. The combination was called the Geophysical Observatory of Saint Louis University. Some months later the seismograph arrived. With the expert help of the mechanician, Brother Alfred Zeller, S. J., the seismograph was set up in the physics laboratory while the vault and pier in the basement of DuBourg Hall were being prepared. The site selected was a vault which had been used as a safe. Soundings were made to a depth of some sixteen feet without locating bedrock. Hence it was decided to excavate only to the depth of a few feet and to pour a concrete pier large enough to take care of the Wiechert seismograph and to separate the pier from the building by an open space which was walled and sealed to prevent the entry of moisture. When the concrete had set, the seismograph was placed on the pier and recorded its first earthquake October 9, 1909.

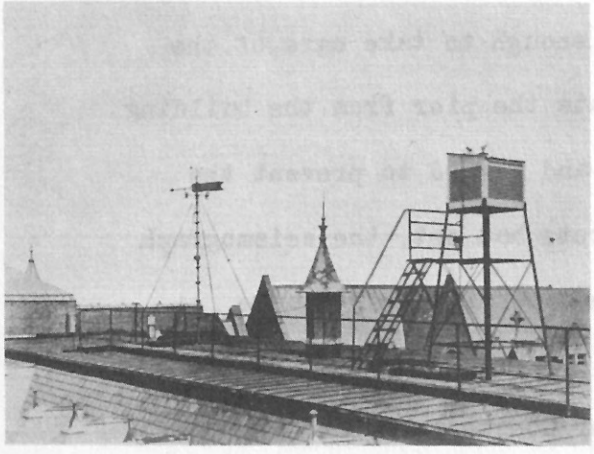
Shortly afterward, Father Goesse interested Fathers Joseph S. Joliat, S. J., Anthony R. Kuenzel, S. J., James B. Macelwane, S. J., and Alphonse R. Schmitt, S. J., then scholastics, in the new observatory and in a seminar in geophysics. This seminar resulted in a series of papers which were published in the Bulletin of Saint Louis University. In the following years a succession of young Jesuits were trained in this manner.

Later Father Goesse was transferred to other work because of difficulties with his eyesight, and Brother Rueppel carried on as Director of the Meteorological and Seismological

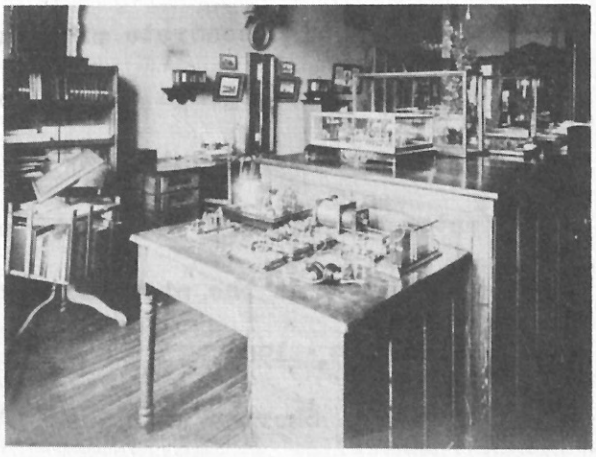
Reverend John Bernard Goesse, S. J.
Founder and First Director of the
Geophysical Observatory



Reverend Joseph S. Joliat, S. J.

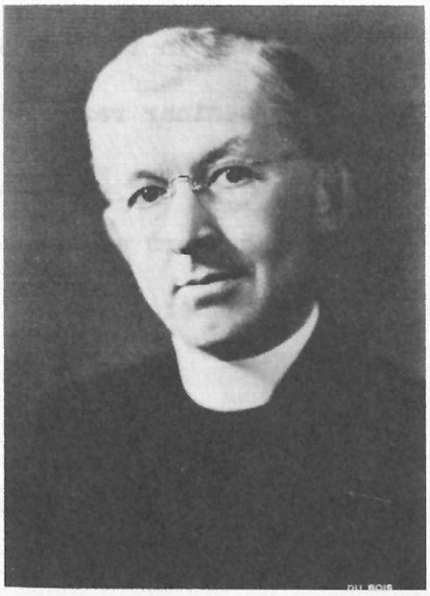


The Meteorological Instruments exposed
on the roof of DeSmet Hall

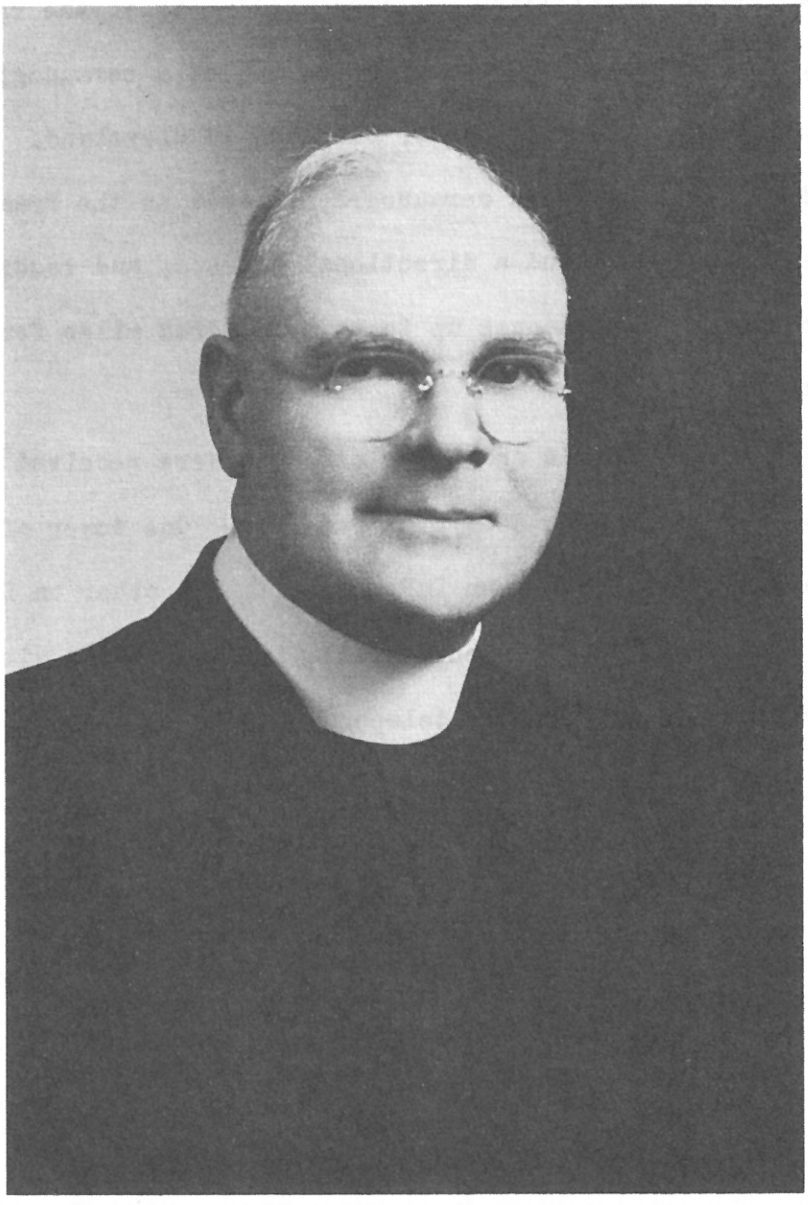


The Meteorological Office and Instrumentation
with the Ceraunograph in the foreground

Brother Rueppel with the first Radiophone Set,
Radio Station WEW



Reverend Alphonse R. Schmitt, S. J.



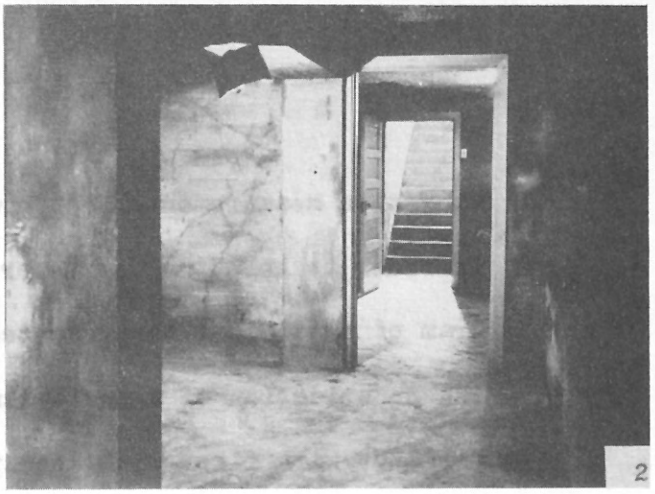
Reverend James Bernard Macelwane, S. J.

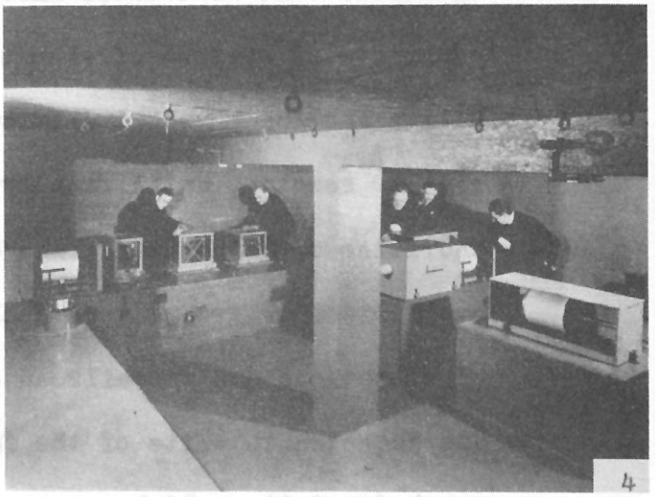
Observatories, maintaining complete continuity of the records through the years. He took over the idea of a ceraunograph from his experience with Father Odenbach in Cleveland. He designed and constructed a ceraunograph, based on the Branly coherer as detector and a directional antenna, and recorded thunderstorms at distances up to three hundred miles for several years.

Time signals and other messages were received over a long-wave radio with a crystal receiver. One tower of the long antenna was mounted on DuBourg Hall, the other on DeSmet Hall. In 1920 Brother Rueppel built, in cooperation with Father Carl Miller, S. J., a radio telephone and established the first radio broadcasting station west of the Mississippi River and the third in the United States. It grew in importance and became WEW.

In 1925 Father James B. Macelwane, S. J., was called back from the University of California and appointed Professor of Geophysics and Director of a new Department of Geophysics. The pre-existing Geophysical Observatory was assigned to this department, Father Macelwane becoming Director of the observatory and Brother Rueppel the associate director.

The Florissant Station - In 1927 Major Martin J. Connolly paid a visit to the University and the seismograph station. Many years before Fathers Joliat and Macelwane had spent much time with Major Connolly as consultants without remuneration and had assisted in the preparation of a model seismograph for his





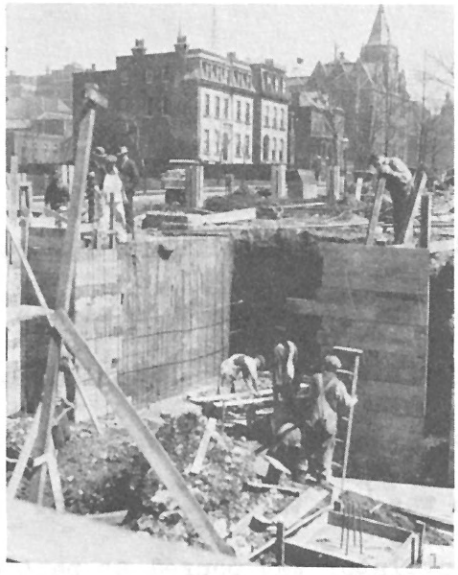
The Florissant Station

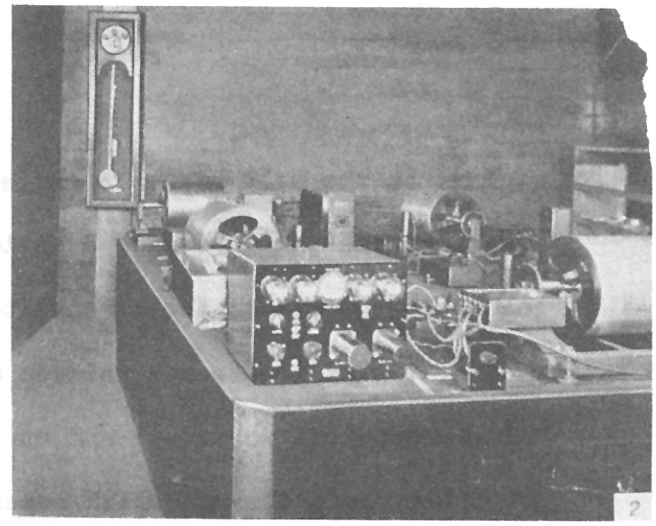
1) Concrete structure completed ready for cover; Fathers Shannon and Macelwane near the ventilator shaft; staircase beyond.
2) Stairway viewed looking north from instrument room through developing room.
3) Fill begun!
4) Instrument room looking southwest; left to right: Brother Haworth, Father Macelwane, Father Brunner, Doctor Dahm and Father Westland.
5) Instrument room, looking northeast; left to right: Father Westland, Brother Haworth, Father Macelwane and Doctor Dahm.
6) Battery room and shop (Brother Haworth)

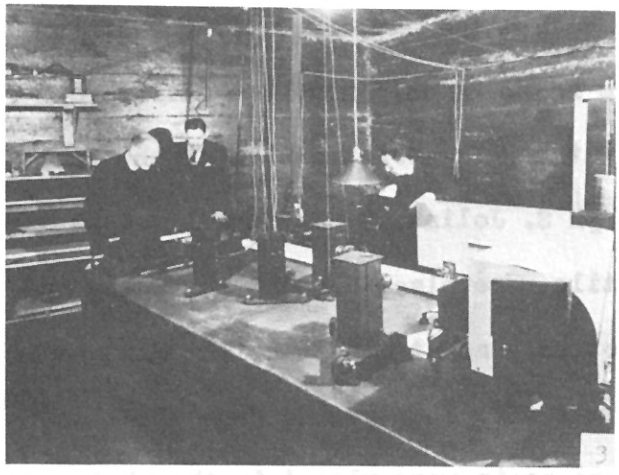
vibration measurements. In gratitude for this assistance and in order to help the new Department of Geophysics in its program of expansion, he presented two gifts of $5,000 each for the construction of a new seismological station for the University, with first-class equipment. Many possible sites were examined. One site after another was rejected because of the proximity of sources of vibration or on account of inaccessibility and the physical difficulty of procuring utilities and regular service, until finally an offer was made by the authorities of Saint Stanislaus Seminary near Florissant of a small piece of ground in a secluded spot, far from any source of vibrations due to railroad or highway traffic. The offer was accepted in spite of the fact that hard bedrock could not be reached and it would be necessary to place the underground vault in shales of Pennsylvanian age. Otherwise the location seemed excellent. There was sufficient fall from the site to the bed of a nearby creek to insure good drainage. Power could be brought over a special line from the Seminary and an all-weather road could be constructed to the site with comparative ease. Plans were drawn for a three-room building designed to be a concrete monolith to which the instrument piers could be rigidly attached. Provision was made in the plans for supporting a false floor but this was found to be unnecessary. The building was oriented in the meridian and the slope of the long staircase leading to the surface was such that an engineer's transit could be set up in the vestibule at the foot of the staircase and

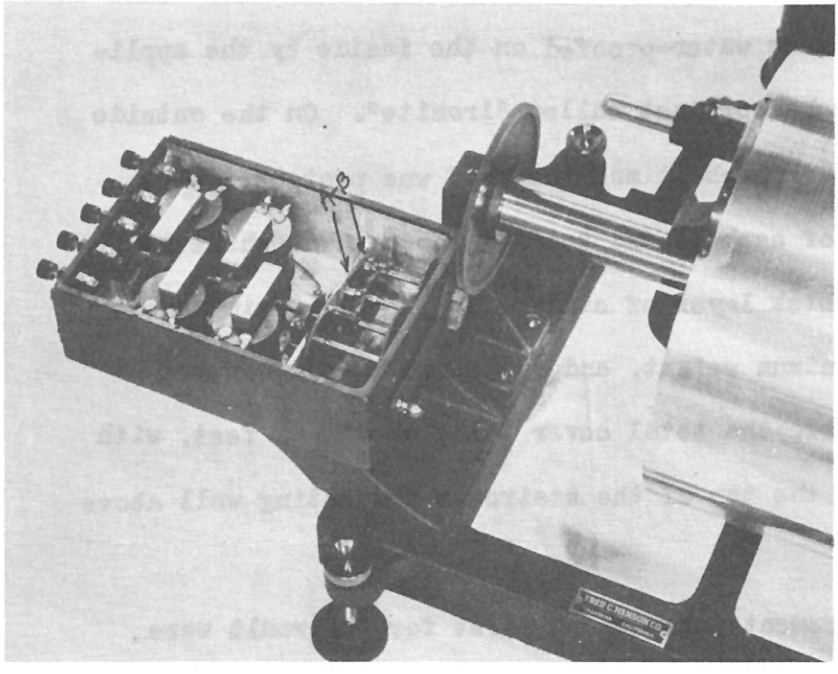
sighted on the pole star. A series of observations would thus make possible the laying of a meridian in the building by reversing the telescope of the theodolite. From the vestibule at the foot of the staircase one entered at the right into a combination battery room and workshop; and on the left into a photographic processing room through which access was had to the instrument room at the rear. A double shaft ventilator was poured as part of the building, one-half opening into the battery room, the other opening into the photographic room. A well near the vault provided an abundant supply of water. The construction of the vault was supervised by Father Joseph S. Joliat, S. J., who lived at the Seminary. Rows of drainage tile were placed around the walls outside the vault, one at the bottom, one at middle height and one at the top. A pump and sump was also constructed from the floor of the vestibule and a sink and drain were placed in the photographic room. As stated above, the fall from the floor of the building to the creek bed nearby was ample to carry off all drain water. The walls were water-proofed on the inside by the application of a commercial product called "ironite". On the outside they were coated with asphalt and the roof was protected with successive layers of asphalt and roofing paper. The whole vault was covered by a thick layer of cinders to provide maximum heat insulation with minimum weight, and the cinders were covered with a layer of soil, the total cover being about six feet, with the ventilator and the top of the staircase projecting well above ground.

The instruments planned at first for the vault were









The Gymnasium Vault

1.) The Gymnasium Vault under Construction
2.) The 1927 Layout on the Gymnasium Pier
3.) The 1930 Layout on the Gymnasium Pier
4.) The 1940 Layout on the Gymnasium Pier

10-Cycle Impulse Motor, Henson Drive

a set of five Wood-Anderson seismographs, two long-period, horizontal components, two short-period, horizontal components, and a vertical component which proved to be too insensitive and was eventually discarded. After a test run of the Wood-Andersons in the new Gymnasium vault in the city, the plans were changed and a set of three Galitzin-Wilip electro-magnetic seismographs were ordered from H. Masing in Tartu, Estonia. To provide the best possible time control, a Shortt Synchrome clock was ordered from Hope-Jones in London. In 1928 the equipment was all installed and began to operate continuously.

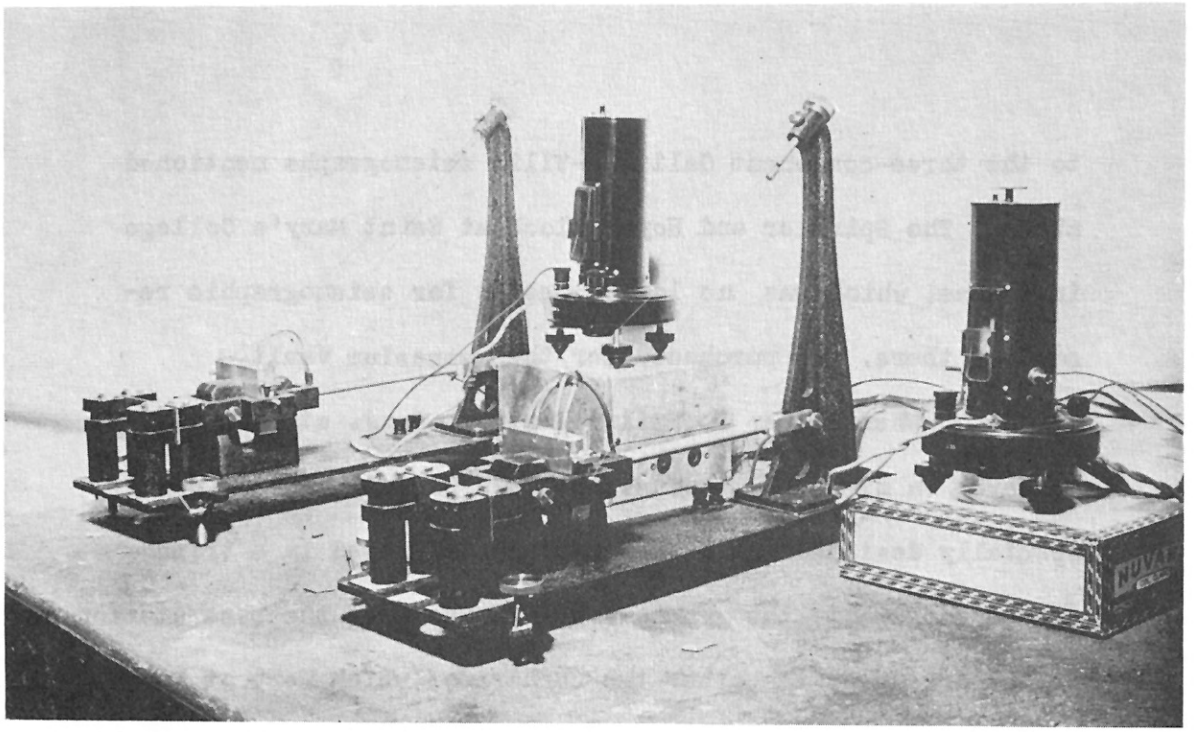
The Gymnasium Station - During the excavations for the footings of the new University gymnasium on the south side of West Pine Boulevard near Spring Avenue, Fathers Joliat and Macelwane noticed that the footing at the northwest corner penetrated through a weathered zone of limestone fragments which indicated that the surface of the hard Saint Louis limestone of Mississippian age would be very close to the surface in that neighborhood. A little probing indicated that actually the surface of the limestone rose to about the level of the basement floor in a portion of the space under the gymnasium which it was not planned to excavate. The proposal was formed and submitted to the President of the University, Reverend Charles H. Cloud, S. J. to utilize the presence of the steam shovel which was excavating the boiler room at the rear and had still to excavate a series of rooms at the west side, to excavate a seismograph vault toward the east where the hard rock approached closest to the surface. The plan

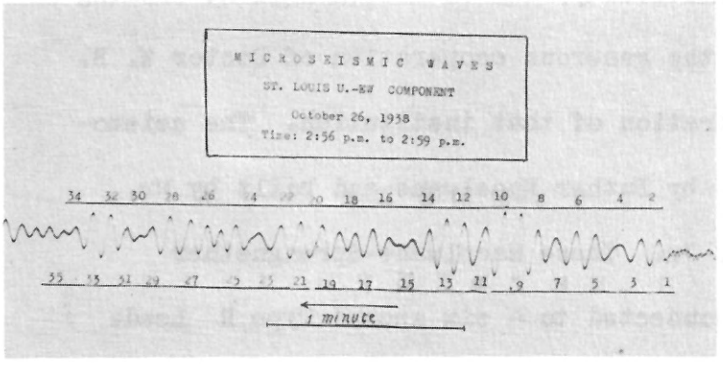
was approved and it was found that the limestone projected so far above the floor level in the vault space that the weathered rock could be chipped off down to a hard, unweathered surface of irregular configuration onto which the six-foot by ten-foot concrete pier could be poured. Before the northern wall of the gymnasium was built, a meridian was laid down and an east-west line was sighted across the vault for the orientation of the pier in a precisely north-south, east-west direction. A portion of a room on the next floor above was secured for auxiliary services, such as batteries, clock, radio and other equipment and it was connected by conduit with the vault below.

The vault was intended only for research and experimentation. The location was not thought suitable for routine recording because the small Wiechert seismograph under DuBourg Hall was recording so much city traffic, street cars, buses, trucks and the movements of the student body, that the site at Florissant had been chosen to escape from this background. However, when the vault had been completed and the seismograph equipment intended for the Florissant vault was installed for tests and trial runs, it was found, to the great surprise of everyone, that the pier was very quiet and that no city traffic was recorded by the much more sensitive Wood-Anderson seismographs. This discovery brought about a change of plan. The long-period Wood-Anderson seismographs and the short-period Wood-Anderson vertical would be retained in the gymnasium vault for routine recording and only the short-period, horizontal-component, Wood-Anderson seismographs would be sent to Florissant, in addition

to the three-component Galitzin-Wilip seismographs mentioned above. The Spindler and Hoyer clock at Saint Mary's College in Kansas, which was no longer needed for seismographic recording there, was purchased for the gymnasium vault.

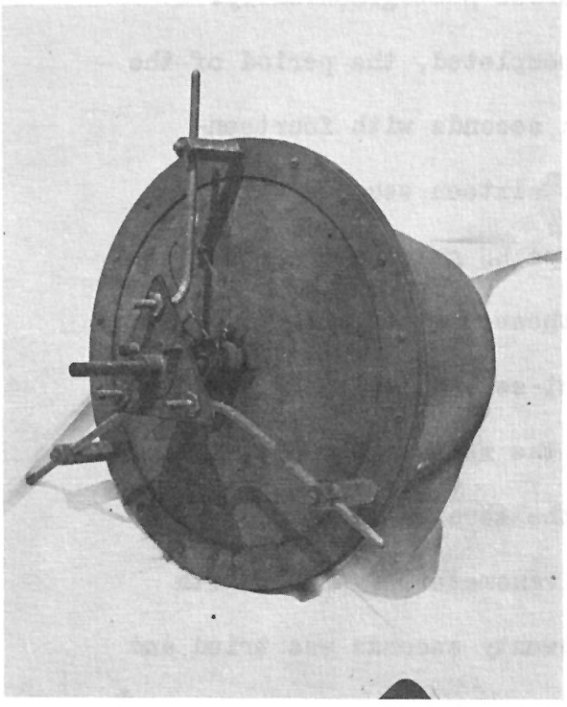
When Father J. Emilio Ramirez, S. J. started his research on microseisms of six-seconds period by means of a specially designed set of seismographs disposed in a tripartite arrangement, the gymnasium vault was made the base station of the triangle, the other two corners of which were at Maryville College of Saint Louis University, and in Wilson Hall at Washington University, through the generous cooperation of Doctor W. B. Shipton and the Administration of that institution. The seismographs had been designed by Father Macelwane and built by Mr. William F. Sprengnether, Jr. These Macelwane-Sprengnether seismographs were each connected to a six second Type R Leeds and Northrup galvanometer which recorded photographically. When Father Ramirez's research was completed, the period of the seismographs was changed to fourteen seconds with fourteen-second Type R galvanometers, then to sixteen seconds with a sixteen-second Leeds and Northrup Type HS galvanometer, but the microseisms were much too large at these periods with the magnification used. Next a thirty-eight-second Leeds and Northrup Type HS galvanometer was tried with the seismometer set for a like period; but it was found that the zero was much too unstable. Finally a twenty-second galvanometer, Type HS, with the seismometer set at a period of twenty seconds was tried and

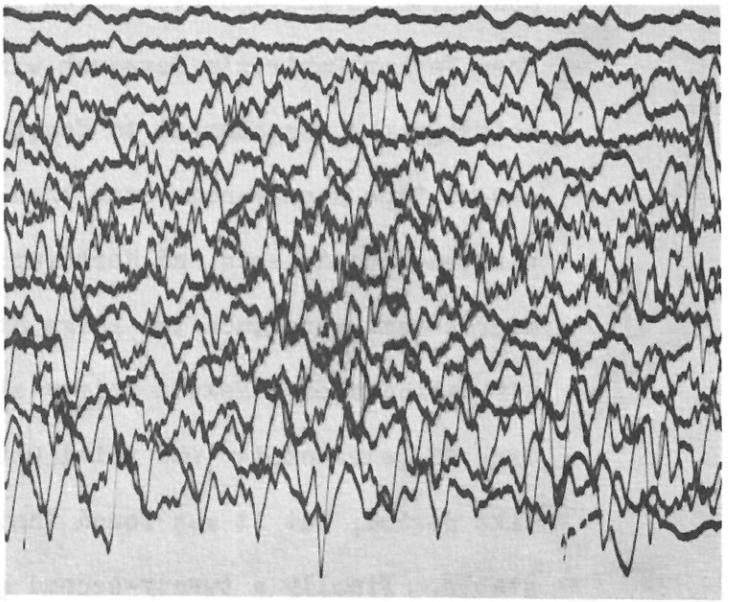




Top: Macelwane-Sprengnether Seismographs used by Father Ramirez in his Research on Microseisms

Left: Microseismic Waves

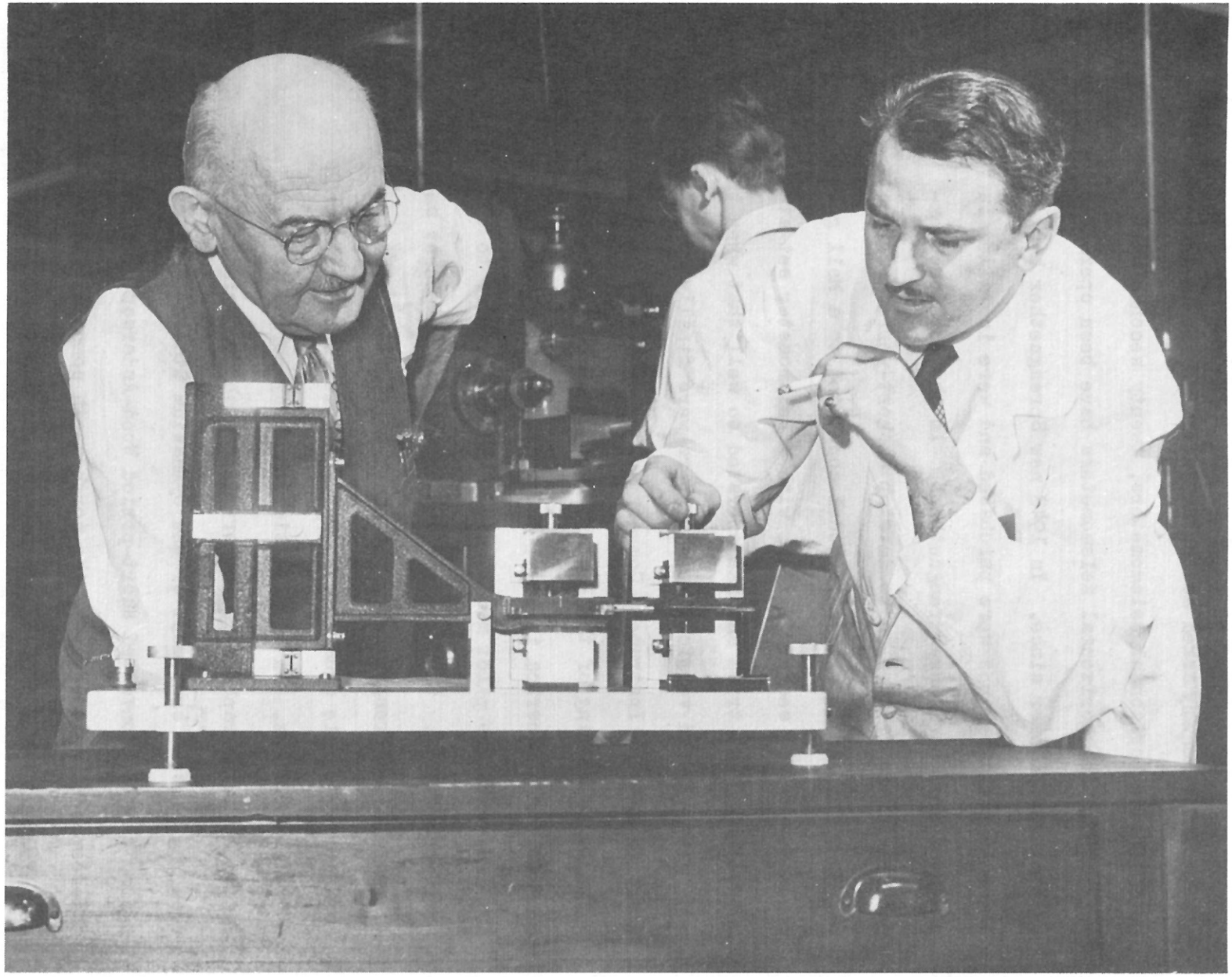




Top: Atmospheric Micro-Oscillations recorded by the Microbarograph

Left: Macelwane Microbarograph used by Father Ramirez

this seemed to be the overall optimum. Hence, when the Sprengnether Company asked advice as to the period to be used on their new horizontal seismometers, twenty seconds was suggested. The horizontal seismometers have been operating at that period ever since. In 1948 new Sprengnether horizontal-component seismographs were purchased and were installed in place of the Macelwane-Sprengnethers. In the meantime, experiments were carried on to develop a short-period vertical seismograph. An intermediate model connected to a Moll galvanometer of 1.3 seconds period, with a seismometer set at 2.6 seconds, was tried and has operated so well that when the new, short-period vertical seismometers were finally built by the Sprengnether Instrument Company and demonstrated at the Saint Louis meeting of the Eastern Section of the Seismological Society of America in 1945, Father Macelwane decided to continue with the pilot model rather than to go over to the new Sprengnether. The Sprengnether horizontal-component and the Macelwane-Sprengnether pilot model vertical-component record on the triple drum which had been built for the research of Father Ramirez. In the meantime the long-period Wood-Anderson seismographs were converted to a short period; so that the present equipment of the Gymnasium Station consists of (1) the two converted short-period Wood-Anderson horizontal-component seismographs, the north-south component being operated at a period of one second and the east-west component at a period of two seconds; (2) the two Sprengnether horizontal-



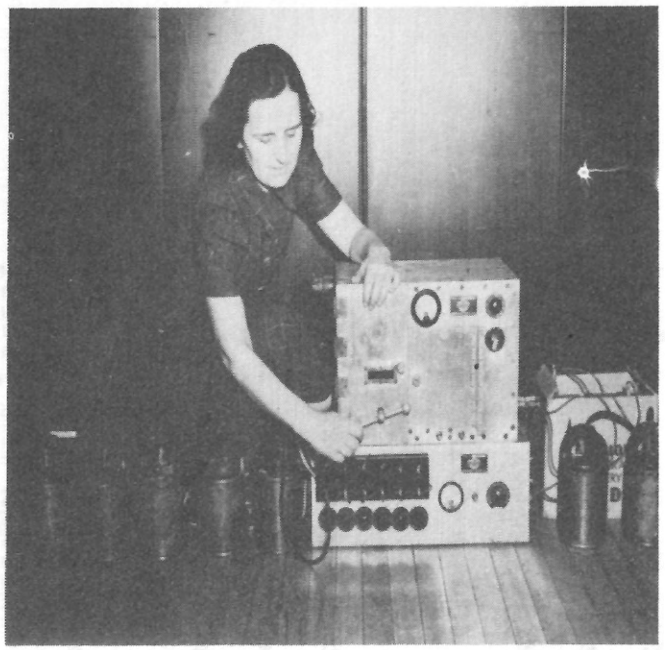
Mr. William F. Sprengnether, Sr. and Mr. William F. Sprengnether, Jr. examining their Long Period Horizontal Seismograph installed in the Gymnasium Vault in 1947

component seismographs, operating at a twenty-second period with twenty-second Type HS Leeds and Northrup galvanometers; and (3) the pilot model Macelwane-Sprengnether vertical-component seismometer coupled to the Moll galvanometer; (4) the Wiechert contact clock; (5) a Standard contact clock purchased through the Sprengnether Instrument Company.

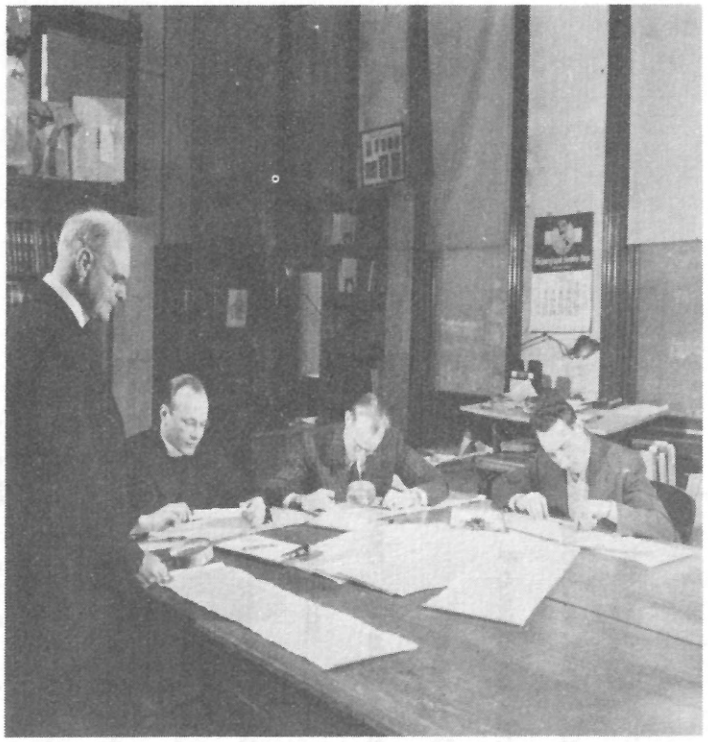
The Department of Geophysics - The personnel consisted at first of only Brother George E. Rueppel, S. J., meteorologist, Father Macelwane, seismologist, and a part time secretary. But before the opening of classes in the following year a geologist had been secured in the person of Mr. John Kennedy Walsh, a graduate of the University and of the Missouri School of Mines, and a former Professor and the President of the Oklahoma School of Mines. Use was made of the extensive mineralogical and geological collections in the University Museum and lecture and laboratory space for geology was permanently assigned in DuBourg Hall. Two years later the present Director of the Department of Geology, Doctor Victor Thomas Allen joined the faculty.

By January, 1926, the seismological research office in Dubourg Hall had been outgrown. The seismological research laboratory was then removed to Sodality Hall at 15 North Grand Boulevard where it remained until 1944.

The departmental faculty grew somewhat slowly and was subjected to a certain degree of turnover through the years. Father Joliat departed for John Carroll University in 1933 to

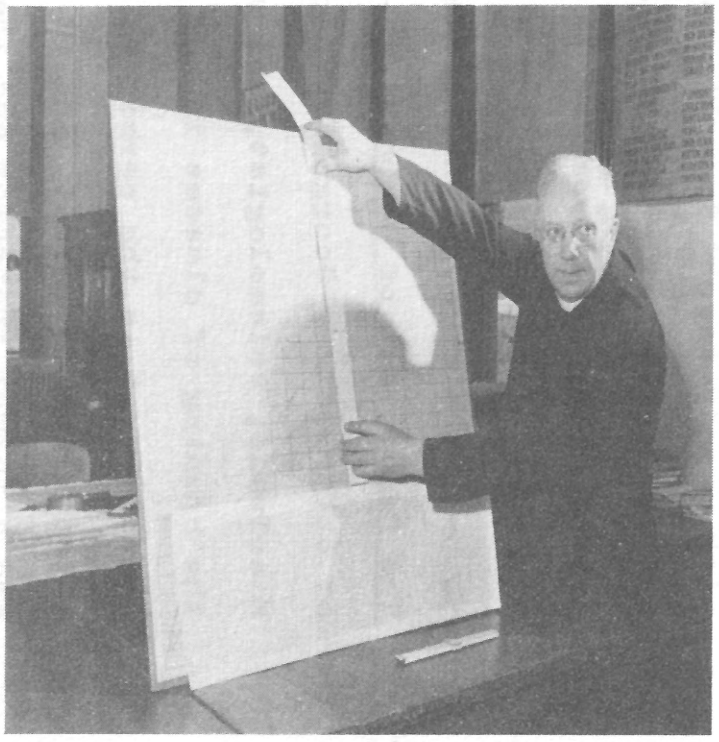


Dr. Florence Robertson with Geophysical Service, Inc. Apparatus for Seismic Prospecting

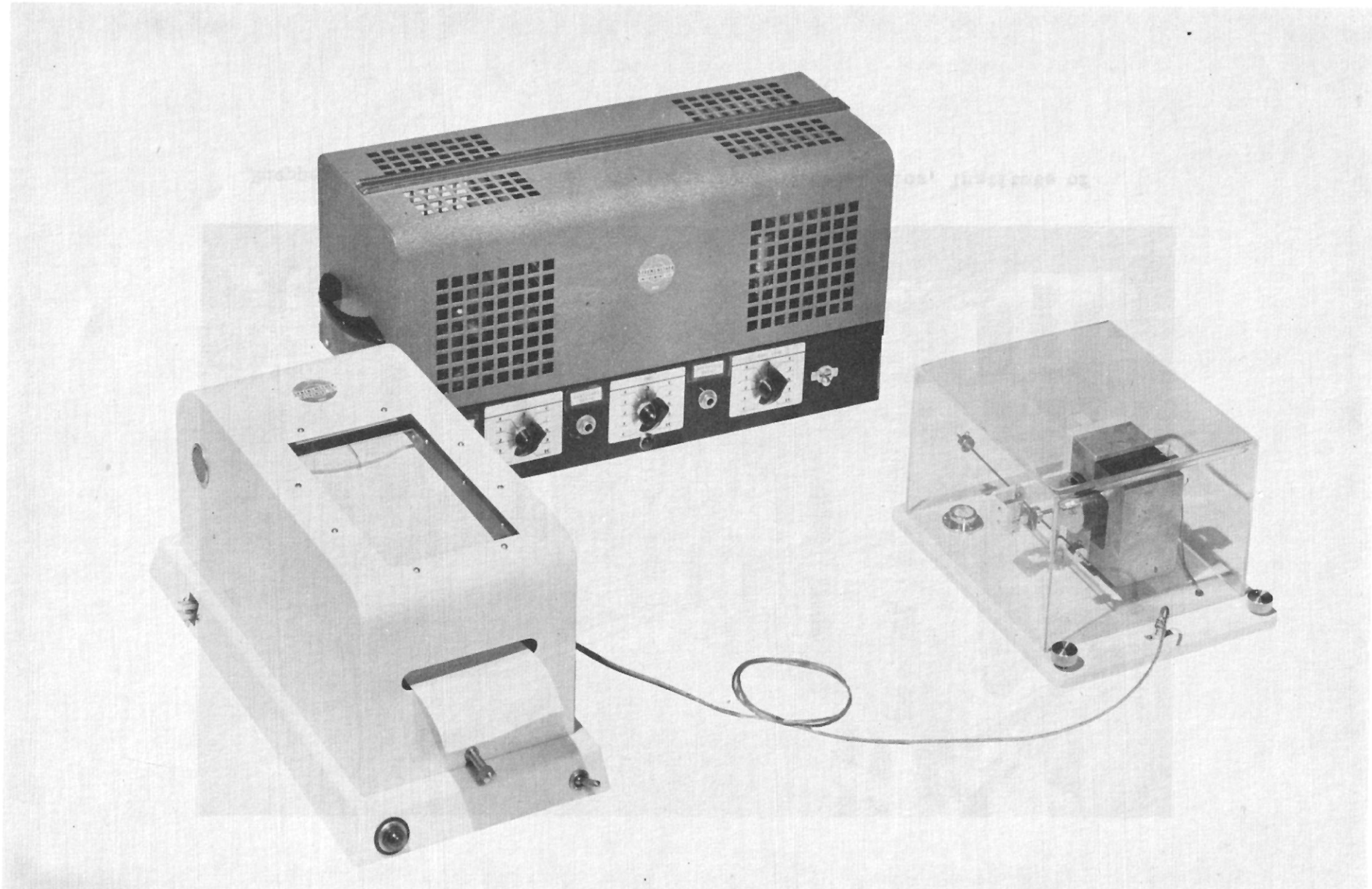


Earthquake Research - Fathers Macelwane, Blum and Doctors Heinrich and Walter

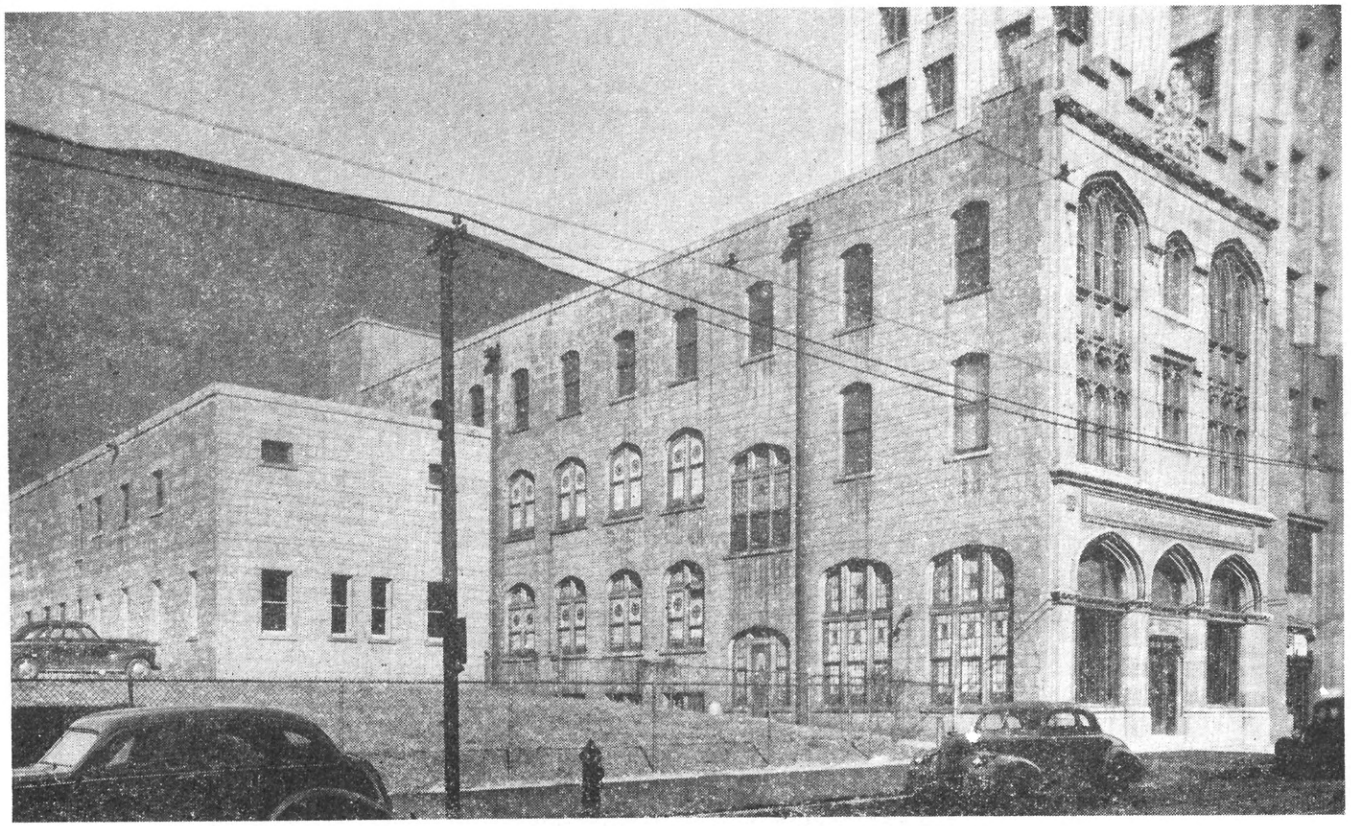
Vibration Recording Apparatus, Father Macelwane and Doctor Walter



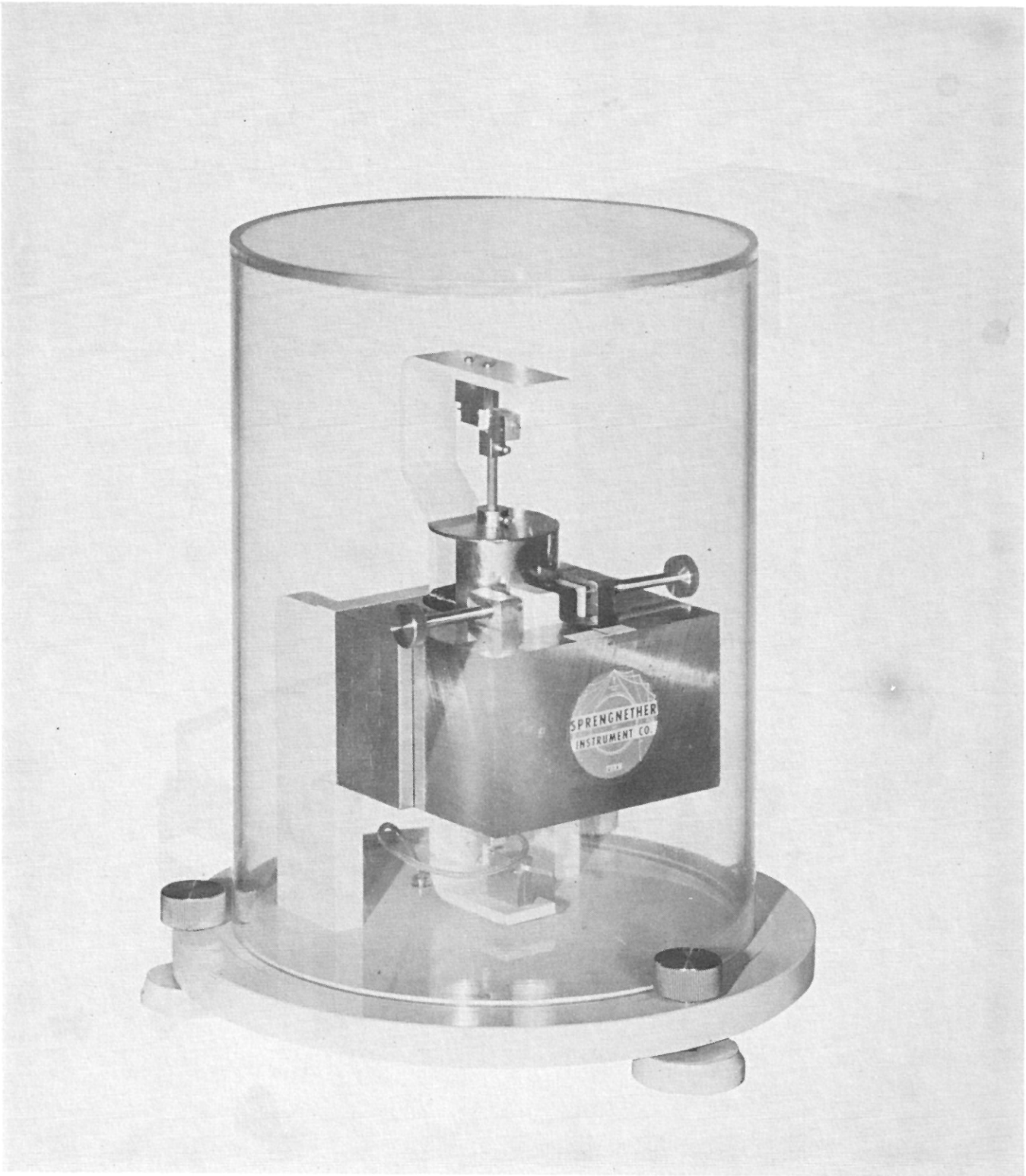
Father George J. Brunner using his Brunner Depth Chart



The Volk-Sprengnether Impulse-Magnetic Vertical Component Seismometer with Volk Amplifier and Sprengnether Ink Recorder



Rueppel Hall, Headquarters of the Department of Geophysics, Institute of Technology, 3621 Olive Street



The Volk-Sprengnether Horizontal Component Impulse-Magnetic Seismometer

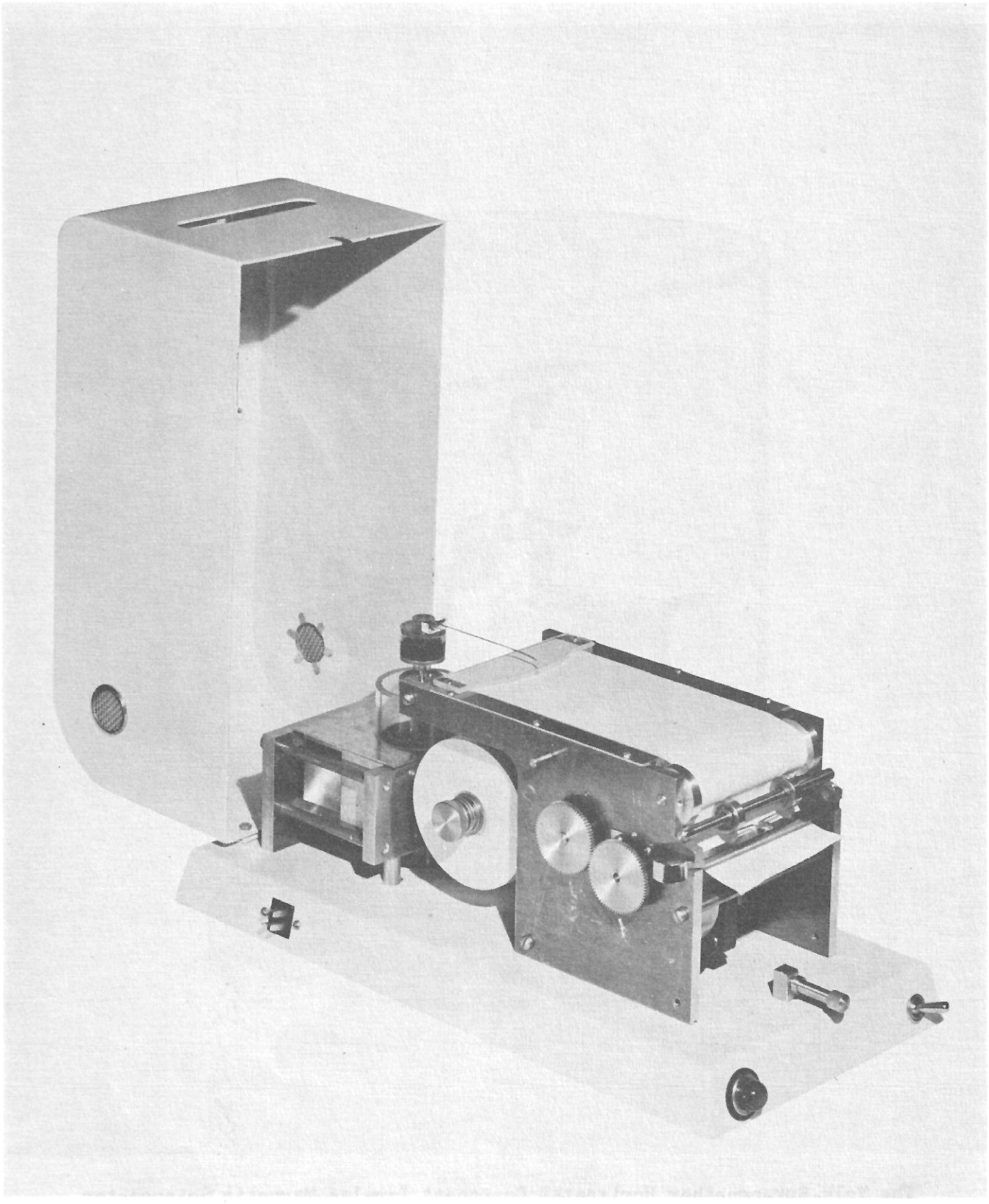
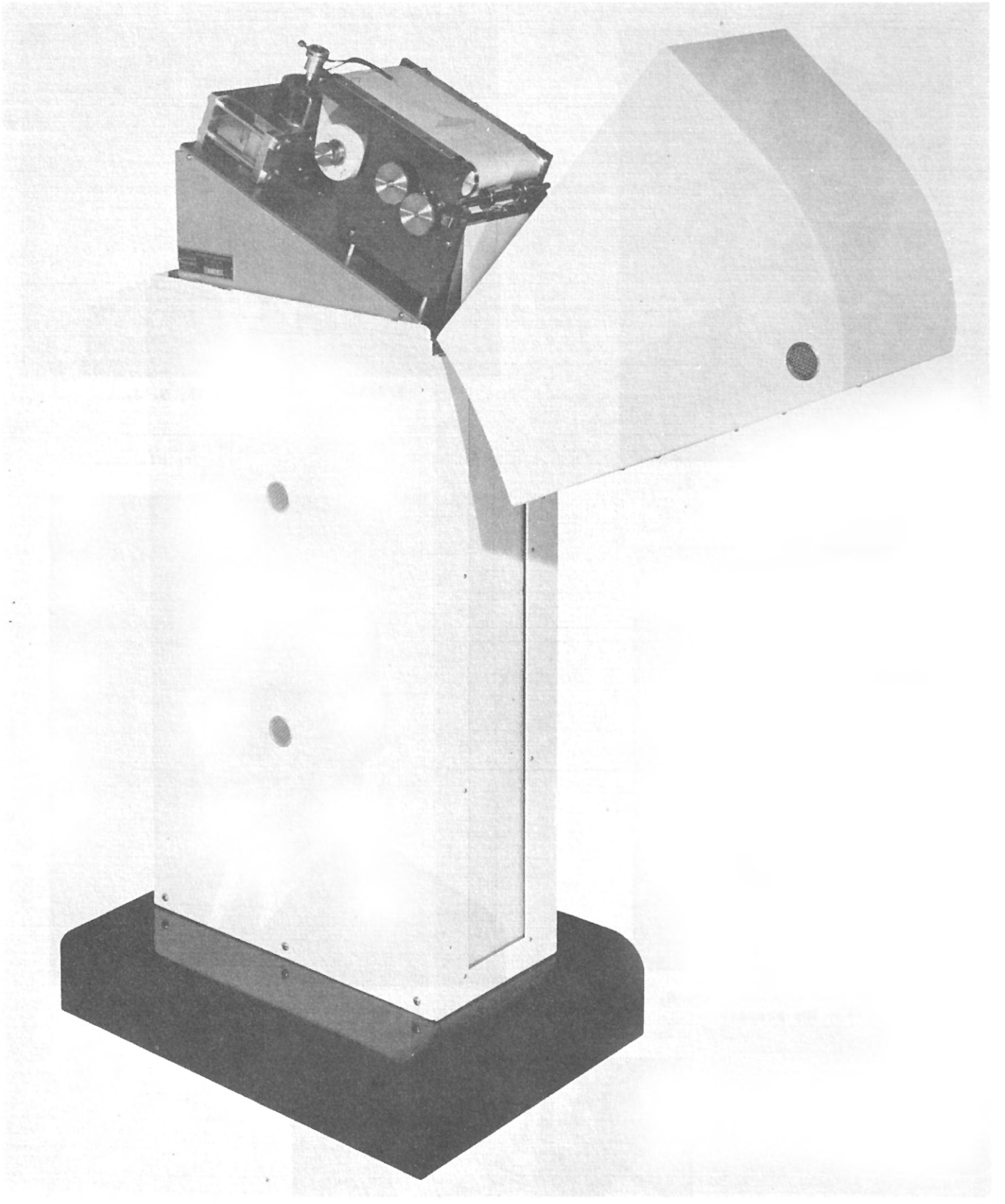
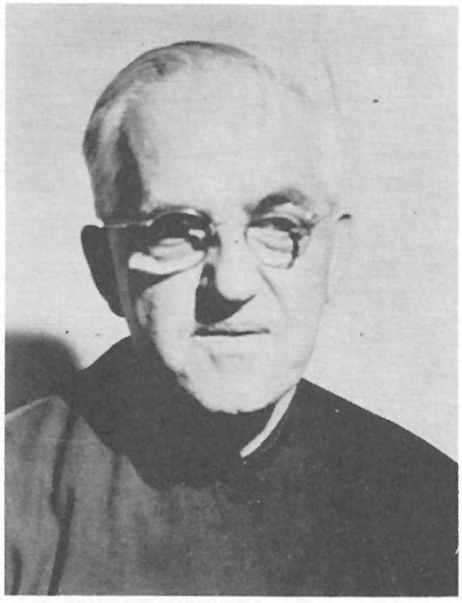


Table Type Pen and Ink Recorder for Visible Recording of Earthquakes



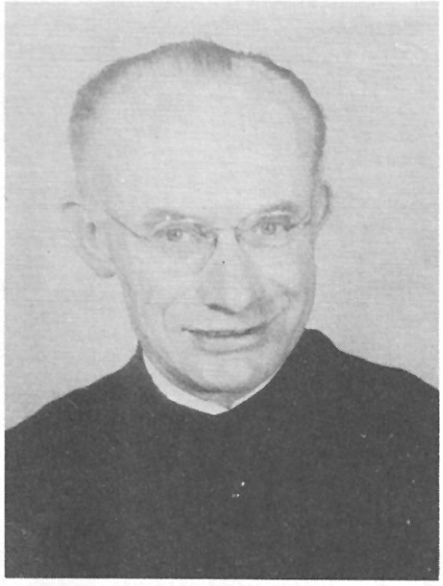
Pedestal Type Pen and Ink Recorder for Visible Recording of Earthquakes

JESUIT TECHNICIANS OF THE DEPARTMENT



Brother John J. Renk, S. J.
1936 - 1939

Brother Ellis W. Haworth, S. J.
1939 - 1941



Brother William Knochenhauer, S. J.
1949 - the present

Brother Nicholas P. Reeff, S. J.
1939 - the present

Brother Sylvester Staber, S. J.
1941 - 1949

Some of the Members and Personnel of the Geophysics Department: First Row - Brother Nicholas P. Reeff, S. J., Father Victor J. Blum, S. J., Father James B. Macelwane, S. J., Doctor Ross R. Heinrich; Second Row - Miss Virginia Hediger, Mr. Lewis Oriard, Miss Margaret Hediger, Doctor Florence Robertson; Third Row - Mr. Vincent Mackle, Mr. Charles Holmes, Mr. Otto Nuttli and Mr. George Garland

succeed Father Odenbach. Father George J. Brunner came from Loyola University in Chicago in 1931 and began his well-known research on deep focus earthquakes. Other faculty members who participated in the geophysical work of the department are Doctors Cornelius G. Dahm, Edward J. Walter, Ross R. Heinrich, Florence Robertson and Edward M. Brooks. Brother Nicholas P. Reeff succeeded the late Brother George E. Rueppel as meteorologist and general assistant to the director in 1947 after several years as technician first at Florissant and then in Saint Louis. Other Jesuit Lay Brothers who have been connected with the department as technicians for varying lengths of time were Brothers George B. Blum, Eugene Leber, John J. Renk, Ellis W. Haworth, Sylvester J. Staber, and lastly Brother William Knochenhauer, the present technician of the Florissant Station.

The first recipient of the degree of Doctor of Philosophy in the Department of Geophysics in 1928 was the Reverend William C. Repetti, S. J., who discovered the Repetti discontinuity at the depth of about 600 miles in the earth and who held the position of Chief of the Division of Seismology and Terrestrial Magnetism in the Philippine Weather Bureau from 1928 until the invasion of the Philippines by the Japanese in 1941. Other recipients of Doctorates conferred in the Department were the Reverend George A. O'Donnell, S. J., now Dean of the Graduate School at Boston College; Doctor Ernest A. Hodgson,

Rev. William C. Repetti, S.J., A.B., B.S., A.M., Ph.D.

Rev. George A. O'Donnell, S.J., A.B., A.M., Ph.D.

Ernest Adkinson Hodgson, A.B., A.M., Ph.D.

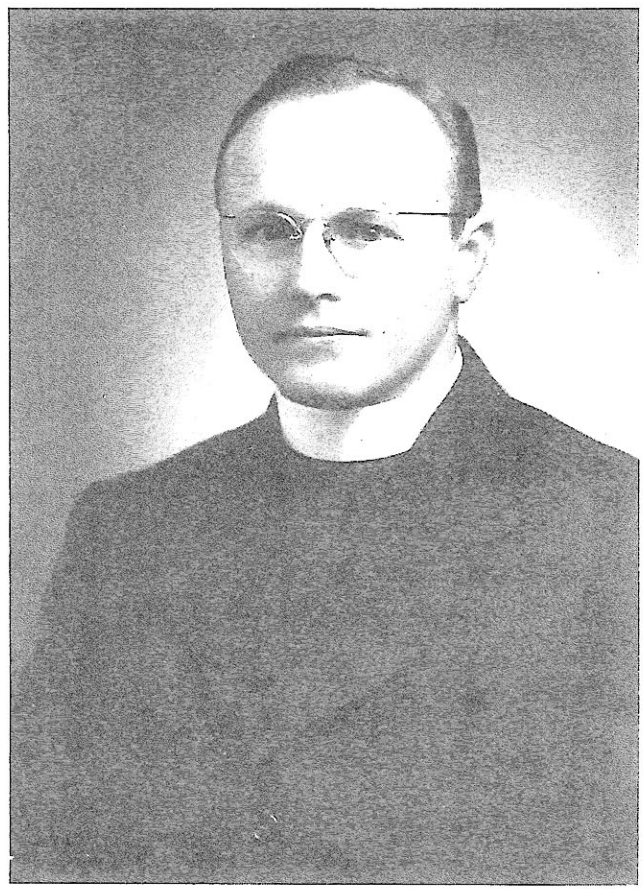
Ross R. Heinrich, A.B., M.S., Ph. D.

Cornelius G. Dahm, A.B., M.S., Ph. D.

Edward J. Walter, B.S., M.S., Ph. D.

Reverend J. Emilio Ramirez, S. J.
A.B., M.A., M.S., Ph. D.

Reverend Henry F. Birkenhauer, S. J.
A.B., A.M., M.S., Ph. D.



Reverend Victor J. Blum, S. J.
A.B., A.M., M.S., S.T.L., Ph. D.

Dominion Seismologist, and Assistant Dominion Astronomer and Assistant Director of the Dominion Observatory in Ottawa, Canada (1932); Doctor Cornelius G. Dahm, Research Geophysicist with the Magnolia Petroleum Company in Dallas, Texas (1934); Father Victor J. Blum, S. J., now Assistant Dean of the Institute of Technology and Director of the Department of Engineering and Secretary-Treasurer of the Jesuit Seismological Association (1944); Doctor Ross R. Heinrich, Associate Professor of Geophysics at Saint Louis University and Assistant to the Director of the Central Station of the Jesuit Seismological Association (1944); Doctor Edward J. Walter, Associate Professor of Mathematics at John Carroll University, Cleveland, Ohio (1944); Doctor Florence Robertson, Associate Professor of Geophysics at Saint Louis University (1945); Father Henry F. Birkenhauer, S.J., Director of the Seismological Observatory and Dean of the Graduate School at John Carroll University, Cleveland, Ohio (1945); Doctor Albert J. Frank, Assistant Professor of Geology at Saint Louis University (1948); Doctor Joseph A. Volk, Chief Engineer of the Saint Louis University Radio Station WEW and Professor of Engineering at Saint Louis University (1950); and Doctor Pierre M. Honnell, Professor of Electrical Engineering at Washington University, Saint Louis, Missouri (1950).

Photo: Stix Baer Fuller

Florence Robertson, A.B., A.M., Ph. D.

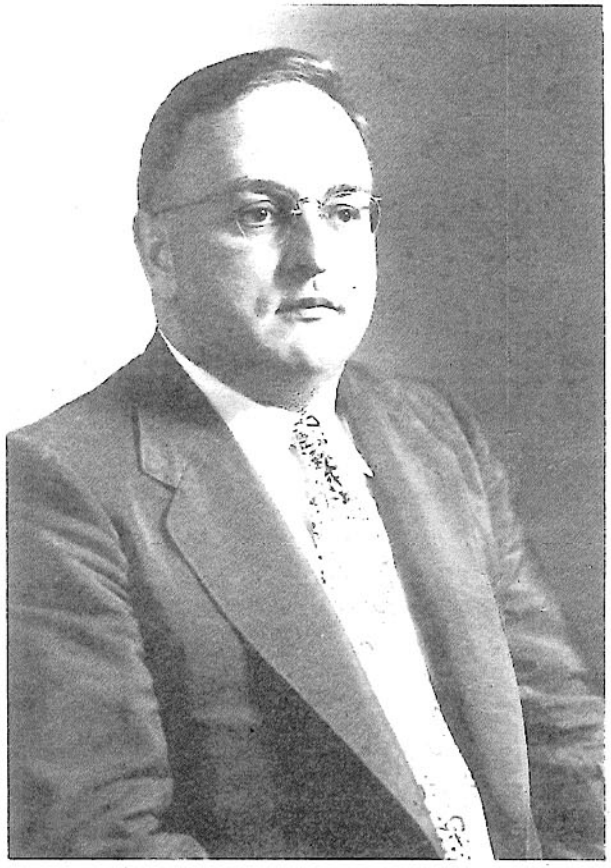


Photo: Todd Studios

Albert J. Frank, B.S., M.S., Ph. D.

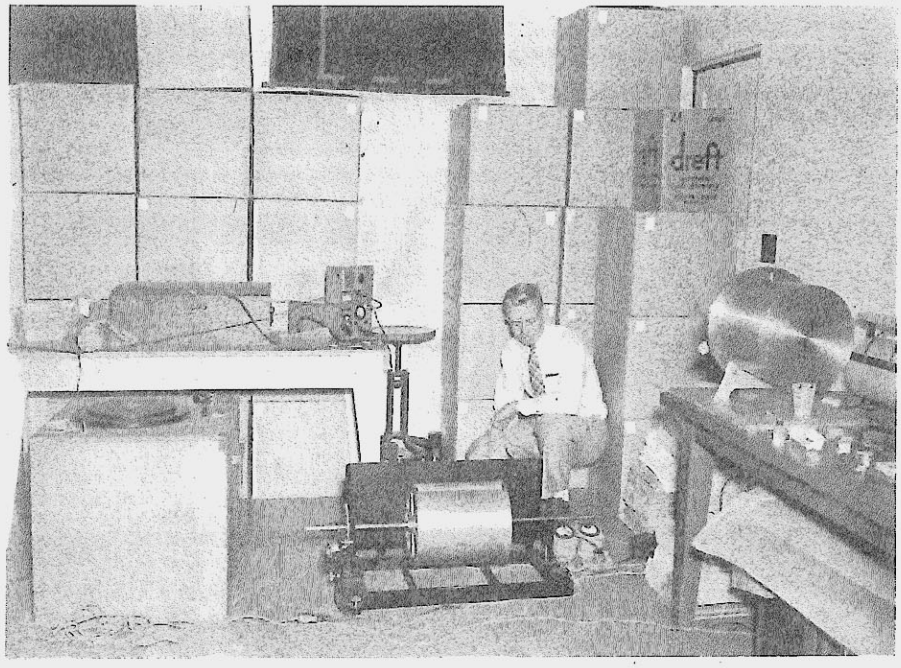
Photo: Todd Studios

Joseph A. Volk, Dipl.-Ing., Technische Hoschschule, Stuttgart, Germany, Ph. D.

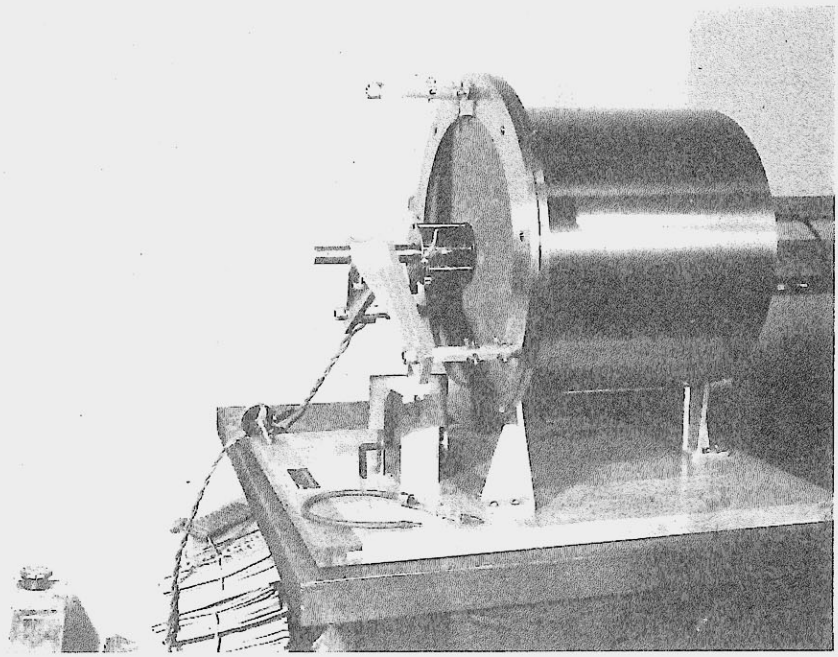
Pierre M. Honnell
B.S., E.E., M.S. in E.E. (Mass. Inst. of Tech.),
M.S. in E.E. (Calif. Inst. of Tech), Ph. D.

Besides the classified research in geophysics which was carried on for various government agencies, two major research projects on the borderline between meteorology and seismology have been prosecuted since 1947 on contract with the Office of Naval Research.

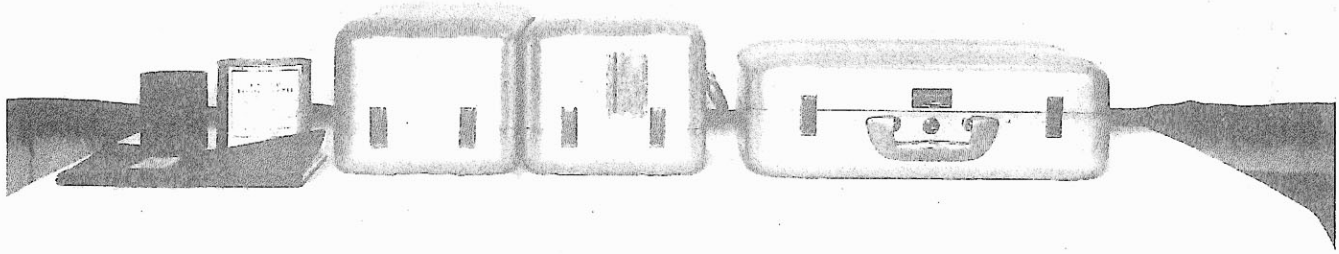
One of these is a study of microoscillations in the atmosphere by means of a network of Macelwane and Benioff types

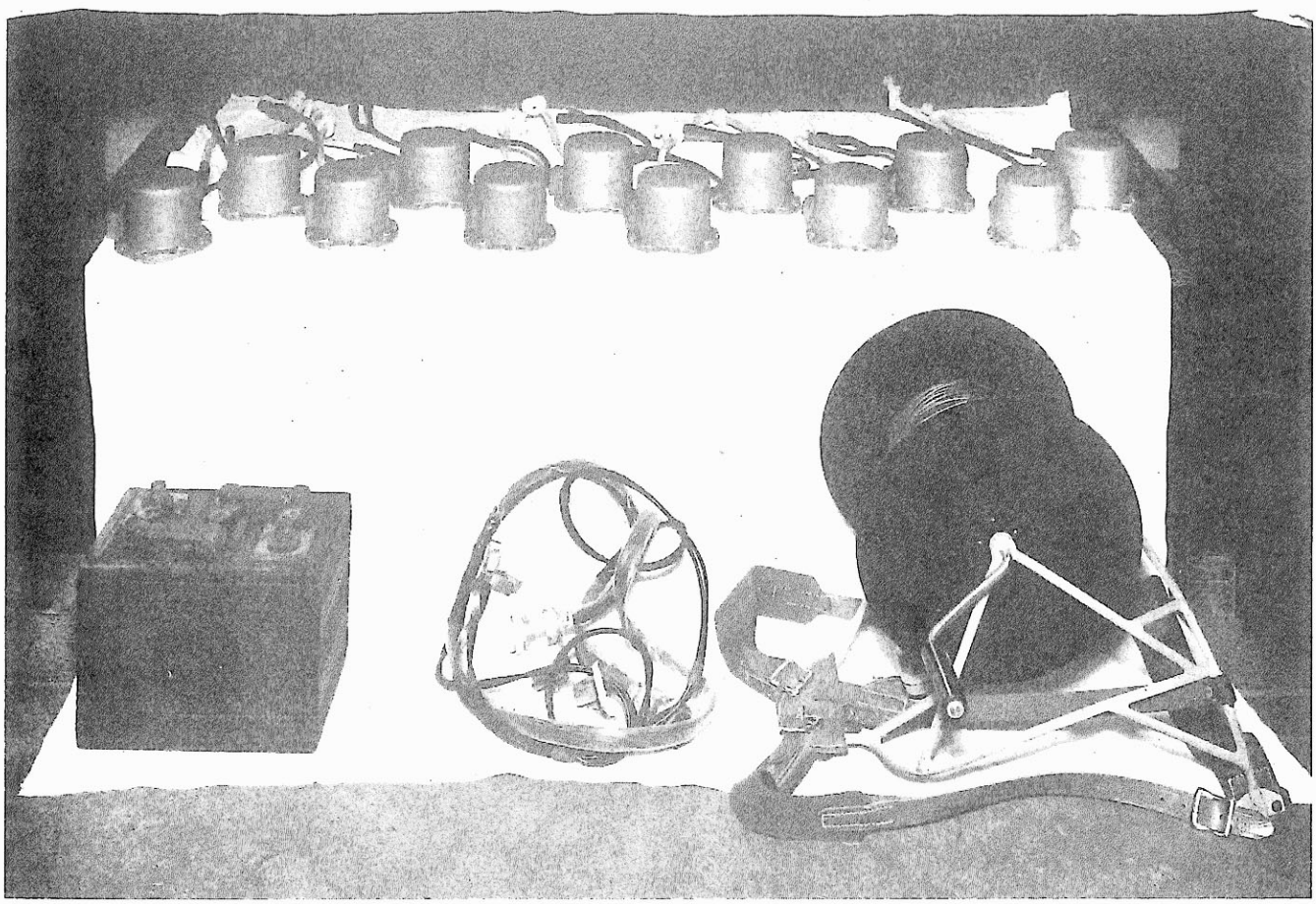


Macelwane Microbarograph on Table at Right;
Benioff Microbarograph at Lower Left



Detail of Macelwane Microbarograph showing the
Transducer System

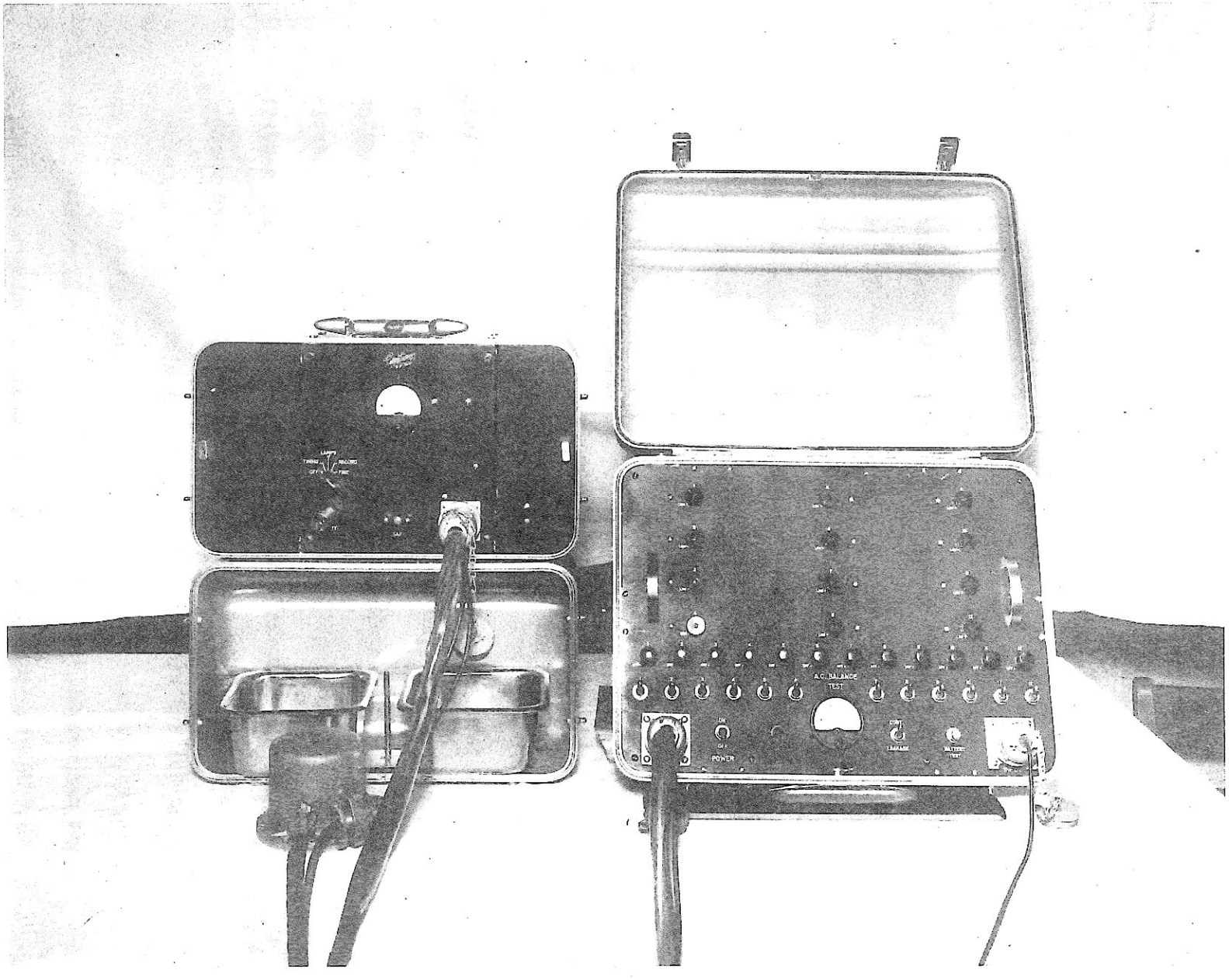




-----Todd Photo

Century Portable Seismic Exploration Equipment

Above, left to right: spare power take-up magazine and paper supply, daylight developer, twelve-channel camera, amplifiers; second level: twelve seismometers; below: six-volt battery, connectors, 600 ft. cable reel.

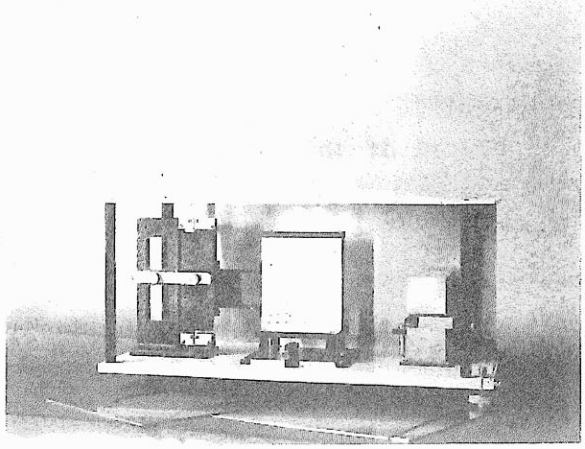


------Todd Photo

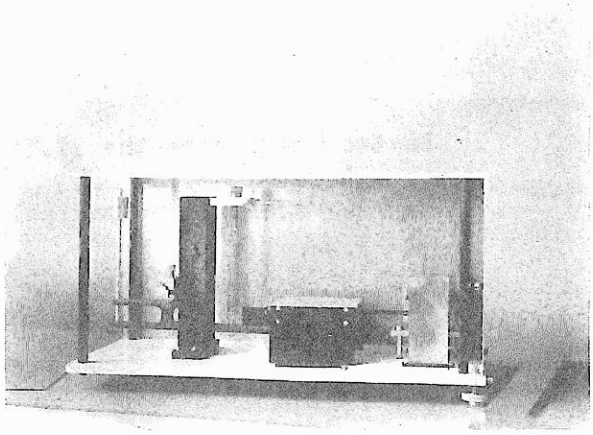
Century camera and amplifier connected for operation; daylight developing chamber open.

of electro-magnetic microbarographs extending from a Florissant tripartite station to Ottawa, Canada and Bozeman, Montana. This research project is an outgrowth of the Ramirez tripartite station research on storm microseisms in 1937 - 1938 which was taken over by the United States Navy in 1943 and has spread through the Caribbean area and the western Pacific Ocean.

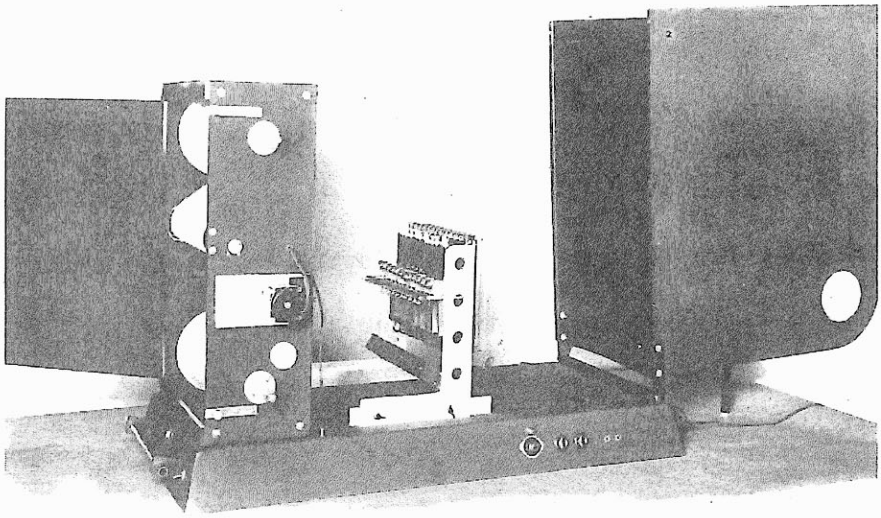
The second major research project is an investigation of very small microseisms of one-third to one-half second period. For this purpose an entirely new instrumentation was required. This layout was designed and developed by Doctor Joseph A. Volk with the cooperation of Doctor Florence Robertson. Two small temperature insulated stations were built by Brother Sylvester Staber at distances of 600' and 800' respectively from the main seismographic vault, thus constituting with it a small tripartite station. On a concrete pier in each of the small stations a vertical component and two horizontal component Volk-Sprengnether capacity seismometers are mounted. Each of these seismometers is connected to a Volk capacity-modulated, carrier wave pickup and amplifier. An identical three-component station is set up in the main vault. The system has an overall magnification of one million. The nine seismographs and three short-period Benioff microbarographs are connected to a Sprengnether photographic tape recording unit with a paper speed of about one foot per second. Brother Reeff and Mr. Harvey E. Essmann, director of our machine tool laboratory, designed and built a motor driven processing unit which develops, fixes, washes, dries and rolls up



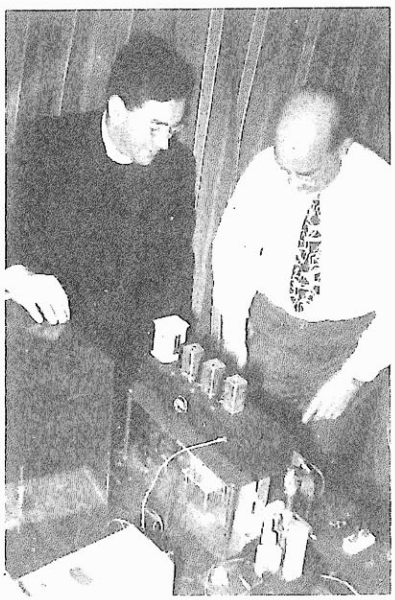
Volk-Sprengnether Electronic Seismograph,
Horizontal Component

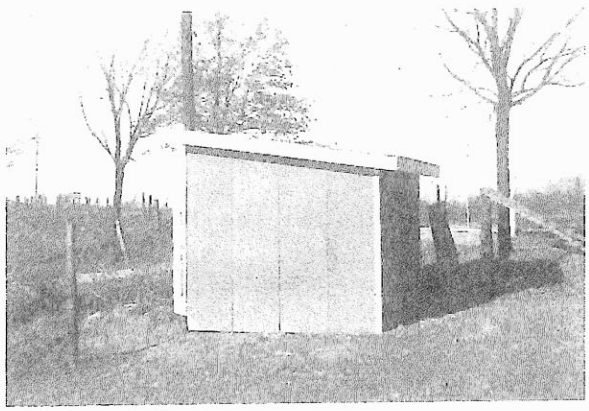


Volk-Sprengnether Electronic Seismograph,
Vertical Component



12-Channel Tape Recorder





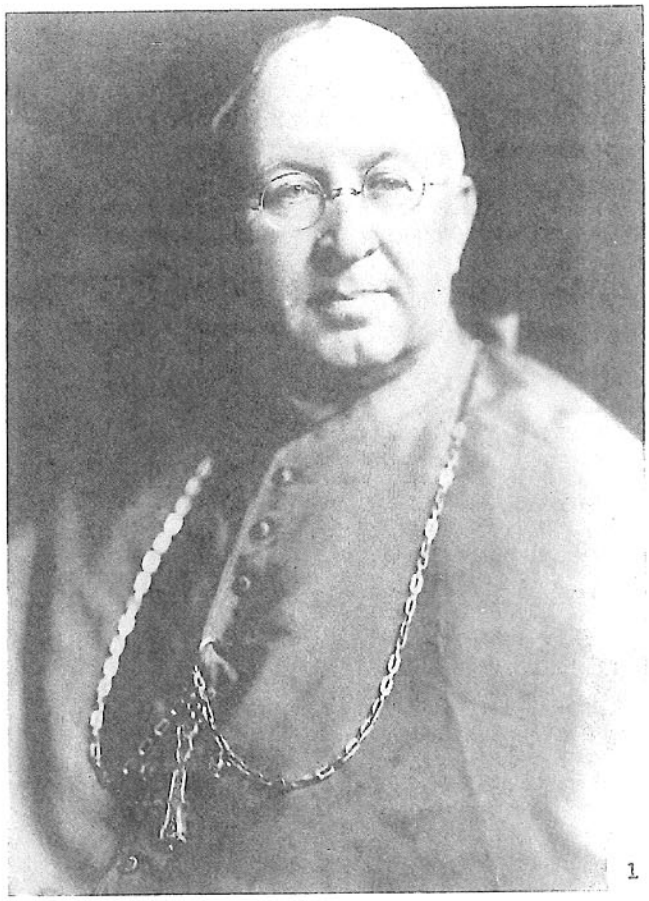
Top: Auxiliary Vault of the Tripartite
Station at Florissant

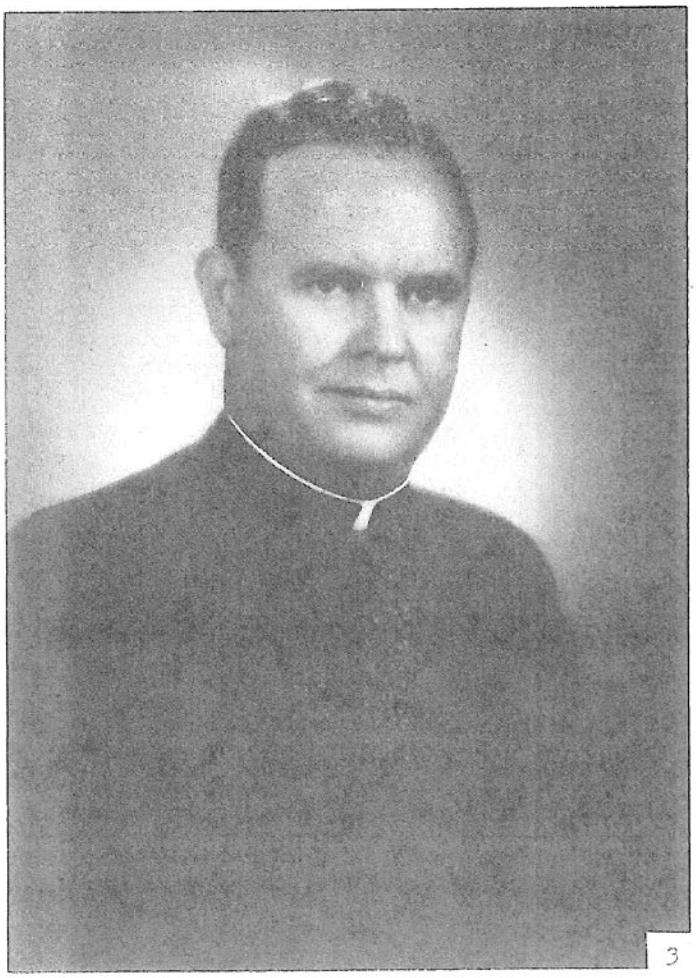
Left: Father Ramirez and Doctor Volk
Examining the Volk Electronic Pick-Up

in two hours time the 11.5" x 350' record of this camera. Two Taylor-Macelwane mechanical-optical seismographs and one Texas-Macelwane six-channel set for vibration measurement, and five complete sets of equipment for seismic prospecting are used also for research.

Little Rock Station - In the summer of 1929 a grant of $4,000 was made by the National Research Council to Saint Louis University to provide auxiliary stations for the purpose of more precise location of the epicenters of Mississippi Valley earthquakes. Father Macelwane thought at once of Little Rock, Arkansas, as one of the vertices of the proposed triangle of stations. The late Bishop of Little Rock, the Most Reverend John B. Morris, had been in correspondence with Father Macelwane concerning the establishment of a seismograph station, but lack of funds had prevented its realization. Now the proposal was made to the Bishop to utilize a part of this grant to purchase seismographs and to establish a station on a cooperative basis, Saint Louis University furnishing the instruments, the supplies and overall care and publication of results and Saint John's College furnishing housing and care. The Bishop accepted at once. Four short-period Wood-Anderson seismographs with gravity-drive recording drums were ordered from the Fred C. Henson Company in Pasadena. Two of these were to be placed at Little Rock.

However, before the arrangements for the station had been completed, the Bishop was forced by lack of funds to close the College and transfer the Saint John's Home Mission Seminary





1.) Most Reverend John B. Morris, Founder

2.) Right Reverend Monsignor John J. Healy
First Director

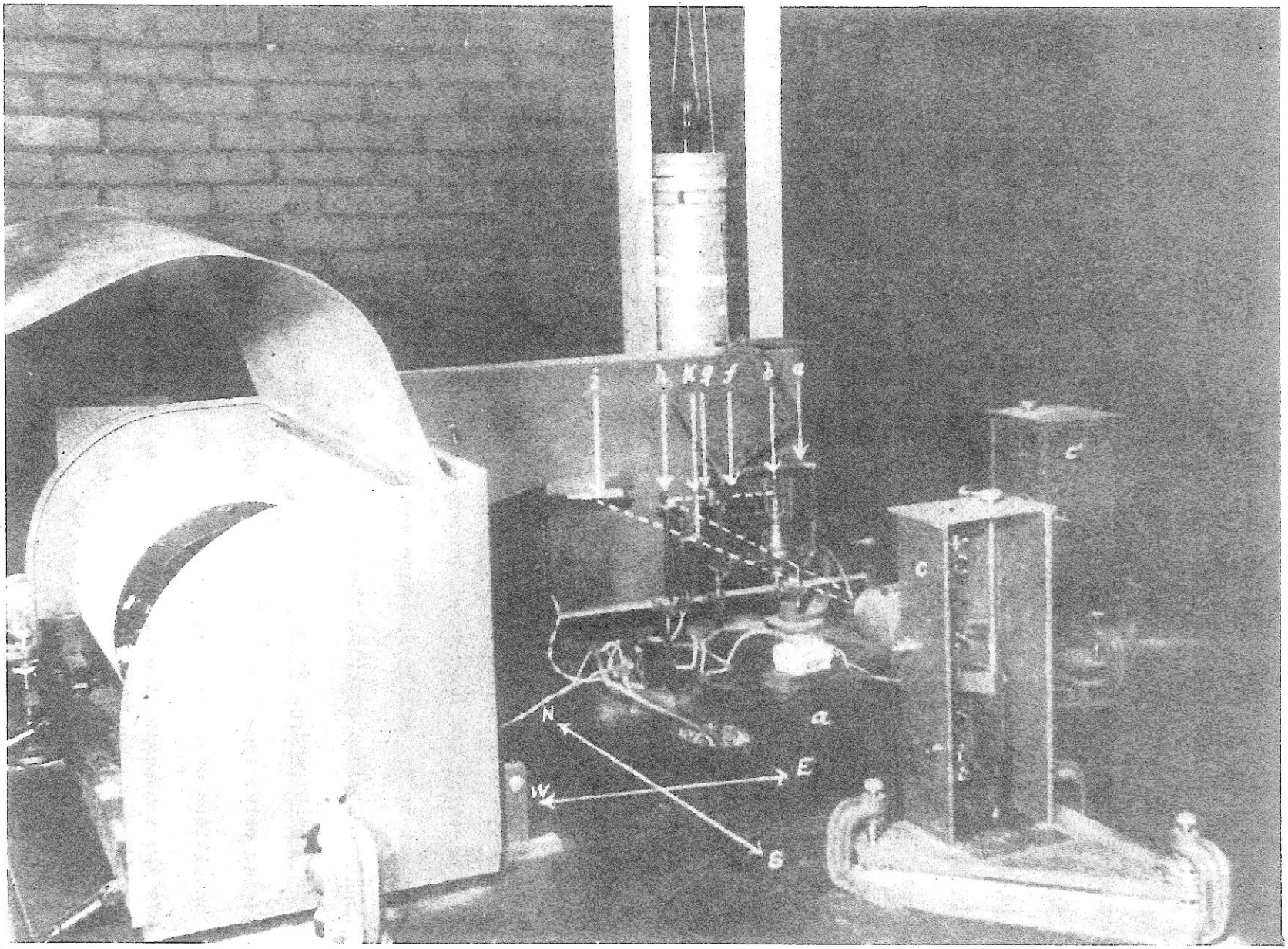
3.) Right Reverend Monsignor Joseph A. Murray
Director, 1930 - present

Most Reverend Albert L. Fletcher, Present Bishop of Little Rock

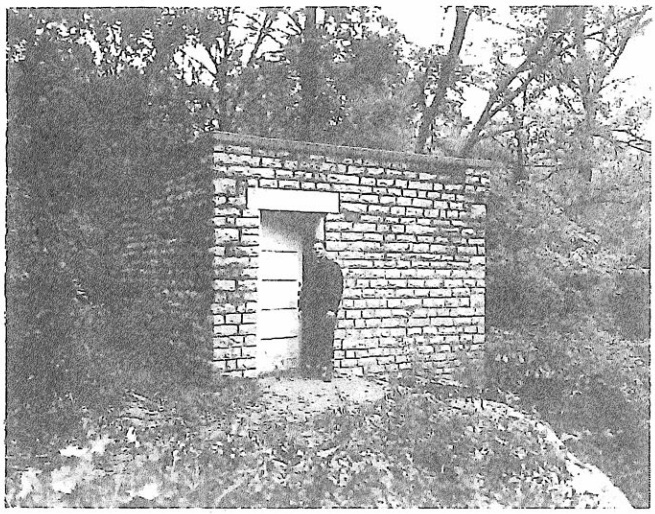
from the old seminary building down town to the former College buildings at the head of Tyler Street, Pulaski Heights. This change, however, in no wise affected the arrangements for the new seismographic station. A suitable vault was constructed in the basement of one of the buildings and a six-foot by six-foot pier was poured on solid sandstone which crops out at the surface. In 1930 the vault was ready for occupancy and the two Wood-Anderson short-period seismographs with gravity drive were shipped to Little Rock and set up by Father Joseph S. Joliat, S. J., and Monsignor John J. Healy. Shortly thereafter Monsignor Joseph A. Murray was sent to Saint Louis University for a year of preparation and then became the Director of the station. He gave much of his time and care to the station and trained a succession of seminarians to service the instruments and to change and process the photographic records.

In 1949 the original seismometers were remodeled by the Sprengnether Instrument Company. The station is managed at present by Mr. Milton R. Lange who had been a practicing chemical engineer before entering the Seminary.

The Cape Girardeau Station - While the station at Little Rock was being established, a suitable location on bedrock under similar conditions of cooperative housing and care was sought somewhere to the southeast of Saint Louis. Sites were examined in western Tennessee and in southern Illinois but each of the projects eventually came to naught until finally in 1937 Southeast Missouri State Teachers College became interested. The President of the

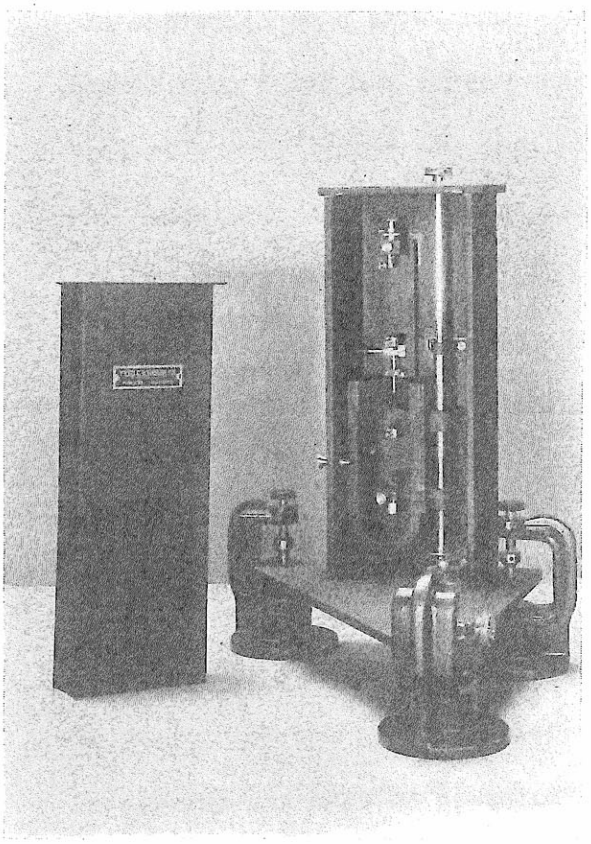


The Gravity Drive Wood-Anderson Seismographs in the Little Rock Station
(Similar seismographs are used in the Cape Girardeau Station)



Cape Girardeau Seismological Observatory Vault

Doctor A. C. Magill



The Wood-Anderson Seismograph in use at the station

Doctor John Harty

Professor Antoine

College was approached by Doctor A. C. Magill, Professor of Chemistry and head of the Science Department. The President reacted favorably to the project and negotiations were begun which culminated in agreement similar to that with the Seminary in Little Rock, whereby the College would furnish housing and care and would be able to make use of the records for local publicity, and Saint Louis University would furnish the instruments, photographic paper, supplies and overall care and would publish the results. A site was found with hard limestone exposed at the surface and a masonry vault was built upon it and a six-foot by six-foot concrete pier was poured on the fresh surface of the rock. During the years that had intervened the two seismographs were set up and operated in the gymnasium vault of Saint Louis University and had been thoroughly tested before they were transferred to Cape Girardeau. The new station began to function in 1938 with Doctor Magill as Director. After some years, the head of the Physics Department, Doctor John Harty, took over and kept the station in excellent operating condition until his departure in 1946. From 1946 until the present the station has been once more under the management of Professor Magill. Since 1949 Professor Antoine has immediate charge.

In 1949 these instruments, like those at Little Rock, were remodeled by the Sprengnether Instrument Company. Difficulty was experienced because of excessive moisture in the vault; but that difficulty has been overcome through the installation of an air-conditioning unit.