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(East and West Germany)

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THE FATE OF THE PHYSICO-TECHNICAL INSTITUTE

E. Brüche, Editor

[Note: Translation of an article which appeared in the September 1950 copy of "Physikalische Blätter"].

In 1943 when the aerial attacks on Berlin increased in force, the Administration of the Physikalisch-Technische Reichsanstalt (PTR) decided to decentralize. The main part of the institute opened laboratories in Thüringen, especially in Weida, Ilmenau, Zeulenroda, and Ronneburg, but some individual laboratories moved to other parts of Germany - West and East. The remainder stayed in Charlottenburg where the PTR gradually dissolved during the fighting and the final Russian occupation. The buildings had been the center of the fighting for three or four days and after that were taken over by a Russian Commander as his Headquarters. About 12 soldiers guarded the place, a Russian kitchen was established, and a cow peacefully grazed in the gardens.

A part of the decentralized laboratories later assembled near Braunschweig in West Germany. The others at first remained in their old locations. After the Russian occupation of Thuringia the laboratories again began work until a thorough dismantling ended further activities. One year after the end of the war, therefore, the one-time glory of PTR was gone and a great effort was necessary to keep the laboratories going at all.

PTR Charlottenburg

At the beginning of the Russian occupation only Prof. Kösters, Dr. Lampe, Dr. Engelhardt, and Dr. Janicki remained, to be later joined by Dr. Zipler and about 20 other members of the PTR.

- 1 -

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The thorough dismantling which was usual in Berlin took place; when the British forces took over, nothing was left of the valuable laboratory equipment - everything, including the quartz clock, having been taken away. Even the well-stocked library had suffered greatly during and after the war.

As soon as the occupation forces had changed, it became possible to recondition the installations. Fortunately some of the very valuable instruments had been so deeply buried under the rubble that they had been completely hidden. They formed the nucleus of scientific equipment with which the scientists tried to re-establish the institute. Prof. Kösters finally succeeded in obtaining some funds from the Berlin authorities so that to a certain degree work was assured. Two years passed thus under the leadership of Prof. Kösters, who then accepted an appointment to the Department of Economics and to the Preparatory Committee of the Physikalisch-Technische Anstalt located in Braunschweig. In the midst of the blockade Diplom Engineer Johannsen, the then Chief of the Berlin coordinating department of the German Office of Weights and Measures, became head of the PTR in Charlottenburg. After the end of the blockade money began to flow somewhat more freely and it became possible to re-equip some of the laboratories. Some of the buildings - especially the main buildings and the high-voltage buildings - which had not suffered very much because of their solid construction were put in order again. The Berlin PTR is therefore functioning at present at a pace which resembles very nearly that under peace-time conditions.

A report on the work being done in the PTR Charlottenburg was made on 1 Feb. 1950 (published on 19 Feb. 1950 in a report of the Berlin Administration).

The PTR had been commissioned in writing as follows: The PTR is to calibrate measuring instruments, calibration to be based on paragraph 9 of the laws governing weights and measures; standardize ships for inland

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waterways; check the instruments used by authorized inspectors and industry as well as those measuring apparatus that come up to standards established by the PTR; check mechanical toys; conduct tests in the entire measuring field of physics and engineering.

The following instruments, tools, and materials may be submitted for testing to the PTR:

I) Mechanics: final measurement rods, precision-gauge blocks, slip gauges, other gauges, line standards, tape measures, pilot wires, instruments to measure distances and areas, planimeters, analytical weights, scales, grain measuring apparatus, liquid meters including water meters, hydrometers, liquor gauges, butyrometers and other apparatus used in scientific research, hematometers and medical syringes.

II) Electricity: Standard resistances, potentiometers, standard cells, alternating-current measuring sets, electrometers, measuring transformers, measuring units from electric meters and transformers, other electrical apparatus, electrical materials, such as cables and electrical wires, x-ray dosimeters, radium preparations.

III) Heat and Pressure: spirit thermometers including fever thermometers, electrical thermometers, manometers, barometers, vacuum meters, hygrometers, flash point testers, petroleum testers, viscosimeters.

IV) Optics: Incandescent lamps, searchlights, photographic lenses, telescopes, mirrors, prisms, determination of indices of refraction.

Thus new life arose from the ruins. An institute has been created which is able to take care of standardization in all branches of the economic life of West Berlin. The fast increase in orders for the services of the institute is proof of the increasing health of economic conditions.

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Whereas the Berlin PTR was dismantled immediately after occupation the decentralized laboratories in Weida were still able to continue their work; but then a most thorough dismantling followed: all but a few precision instruments which had survived the war were taken away. The laboratories were now converted to calibration, and this group formed the nucleus of the German Office of Weights and Measures. Vice President Prof. Kussmann succeeded in assuring the original staff members, who had been bombed out in Berlin and were now staying in Weida, a certain permanence of employment (see report of the DAMG 1947, No. 1).

Later the laboratories and those members who had not gotten established farther west were returned to Berlin. Near the Spittelmarkt (Niederwallstrasse 18/20) a building is being remodeled this year which will house the central offices of the DAMG. The interior is not quite finished and it is difficult to carry out the experiments under the circumstances, but since the spring of 1950 half the employees have worked in Berlin. President Steinhaus, Vice-president Kussmann, as well as the administration moved from Weida to Berlin in the first months of the year. The other employees will follow. Other buildings in the Oberwallstrasse have been earmarked for the Eastern Reichsanstalt.

Corresponding to the economic structure of East Germany, the tasks given to DAMG as the responsible technical authority are different from those in the West. DAMG consists of not only the central office but also the subordinated calibration office and test offices in the "Länder" [districts]; in other words it is a zonal authority. It guards the trustworthiness of measuring units and the accuracy of instruments to be standardized, and also the quality of norms used in industry; that is to say, tests which had been only optional under PTR are now a must in the East Zone.

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Since specialists were available in most scientific branches, it was possible to build up a fairly complete organization. As far as administration is concerned the structure of DAMG is homogeneous and guarantees harmony in the cooperation between the central office and the five standardization stations in the East Zone.

Since sufficient funds are on hand, physical research is also being carried out concurrently as can be seen from the imposing number of scientific publications. The current move back to Berlin and changes in personnel here slowed down the work somewhat, as does the far reaching planning (establishment of work plans and reports on activities). It is not necessary at present to go into the details of the work being done currently. Works extend from the determination of the constant c_2 in Planck's radiation law, the problem of high frequency (quartz clock), and optical research, to systematic experiments with grain hygrometers, thus proving the superiority of the objective over the subjective approach in science.

At mid-year the personnel of the central office consisted of about 200 people of which 50 were scientists. Aside from their specialties which in the central office cover four departments with about 30 laboratories, the personnel is also being schooled in political seminars. Differences between East and West are especially evident in the office since a large part of the employees live in West Berlin and have to cross the border. This presents a difficult problem which affects the very existence of the office.

PTA Braunschweig

After the collapse in Western Germany the Physikalisch-Technische Anstalt, independent, but still closely related to the PTR in Berlin-Charlottenburg, has emerged as the strongest of the successors of the old "Reichsanstalt".

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The laboratories which were relocated in what is today West Germany, a few laboratories of the Chemisch-Technische Reichsanstalt, and the Physikalische Versuchsanstalt der Marine [Physical Experimental Station of the Navy] combined after the collapse into the "Physikalisch-Technische Anstalt". They were given a building near Braunschweig in Watenbütteler Holz, formerly the property of the Wehrmacht.

The most important PTR parts out of which the PTA was created were the decentralized parts in Göttingen and Heidelberg, to which were added some smaller groups from Herbstein, Kiel, and Ockstadt. Prof. Grützmacher from Göttingen and Dr. Scheibe from Heidelberg were especially busy in getting the various forces together. Negotiations were especially fruitful in the British Zone since in Minden the Administrative Office of Economics had been created. Having been a Reich department it was much better adapted to exercise supervisory functions over the PTA than any municipal or district organization could have been. City Manager Schmidt of Göttingen took especial interest in the proceedings and saw to it that Dr. Fraser was given the necessary powers. Dr. Fraser caused a President's committee of the Deutsche Physikalische Gesellschaft to be formed in the British Zone. Professors von Laue, Pohl, Heisenberg, Kopfermann were members of this committee. Prof. Grützmacher was unable to find quarter in Göttingen itself, but the former quarters of the Aeronautical Research Institute in the Watenbütteler Holz proved to be well suited for the purpose. In mid 1946 these buildings were requested from the authorities and the city of Braunschweig was very cooperative. In 1947, therefore, the first employees of the station were able to move in. Prof. Grützmacher's efforts thus were successful and the scattered PTR laboratories were now united. The move was finished in early 1950 and work is in full swing in the well-equipped laboratories. Dr. W. Kösters, a scientist of wide repute, had been appointed director of the

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institute. He moved from Charlottenburg to Braunschweig and assumed directorship in mid 1948. He is well known for his work on the relation of the wavelength of light to the standard meter and was able to develop the internal organization of the new institute by drawing on his earlier experiences with the old Reichsanstalt (see official report of the PTA 1950 No. 1). In 1950 he represented the PTA as the German member of the International Committee of the Bureau International des Poids et Mesures during Paris meetings of the standard meter conventions. He was thus able to re-establish his old ties with the National Bureau of Standards (Washington) and the National Physical Laboratory (Teddington). In the summer of that year he died. The post of director has been unfilled since then.

As of the summer of 1950 the Physikalisch-Technische Anstalt comprises 45 laboratories with 60 scientists, 90 technicians, and 100 miscellaneous workers. To list a few: the Director's division with 5 laboratories is working on such projects as the wavelength standard of the meter, metallography, structure studies, X-Ray dosimetry, radioactivity.

Division I: 13 laboratories: final measures, line standards, industrial measuring technique, distance and area measuring instruments, liquid meters, gas meters, weight and grain testing instruments, scales, hydrometers, material testing machines, gauge technique, toys).

Division II with 10 laboratories: electrical standard units, alternating-current measuring sets, chronometers, high-frequency meters and other apparatus, electric meters, measuring transformer and electrical apparatus, electrical machines, high voltage, magnetic materials.

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Division III with 8 laboratories: thermometry, heat radiation, barometry and measuring of pressures, heat and cold techniques, viscosimetry, test apparatus for mineral oils, general chemistry, combustible fluids, and technical gases, primers and explosives.

Division IV with 5 laboratories: photometry, optics, total radiation, polarometry, photochemistry, and sensitometry.

Division V with 4 laboratories: public address systems, sound analysis, sound recording, sound frequency measuring and elastic constants, ultrasonics. In addition there is a committee on standardizations and publications which takes over general tasks belonging to the field of standardization and official testing, physical measuring units, official publications and the library; the PTA has also a legal department to handle various legal problems. The PTA supervises the electrical testing stations and tests and approves electric meters.

Because of the reorganization in Germany, the old Physikalisch-Technische Reichsanstalt which had functioned for more than a century in Berlin is now divided into three parts which work together as amicably as present circumstances permit. Their task is to function as official technical supervising agencies for the German Federal Republic (Bundesrepublik), the German Democratic Republic (DDR), and West Berlin. All three agencies also carry on a more or less intensive program of research.

Submitted 10 Aug 1950.

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- 8 -

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