to the vertical plates and 0.25 power unit of d to the horizontal plates. Under the influence of the fluctuating electrostatic forces, the beam traces out a scatterplot indistinguishable from the one for $r = 0.75$ produced, as described earlier, with two fluctuating voltages. Again, the dynamics of the situation display themselves dramatically when the various components are turned on and off individually.

The illustrations thus far have dealt with 'infinite' populations. The only equipment required has been a multichannel noise generator (see Fig. 3) and a cathode-ray oscilloscope. The next step is to draw random samples from the populations and thereby to illustrate the fluctuations of random sampling. What we want to do is to take, every now and then, a very quick look at the moving beam—a look so short that we can see only one 'case' per glance. In this way, we draw a random sample by making what is in effect a place selection from a collective. We must take care not to glance too often at the unfolding population, or we will encounter a technical difficulty,[3] but if our noises are good white noises (uniform spectra to 20 kilocycles), it is permissible to look as often as 2,000 times/sec. Then, the persistence of vision being what it is, we will see, at any one time, a sample of about 200 cases. If we have set up a correlation of 0.85, the scatterplot will look like the second to last photograph in Fig. 2C.

It is necessary, of course, to have mechanical or electronic assistance if we are to look, and then not to look, 2,000 times/sec. An episcotister can be set up in front of the oscilloscope. But it is much neater to modulate the brightness of the beam of the oscilloscope by using a train of pulses (instead of a steady potential) to accelerate the electrons. This reduces the pattern on the screen of the oscilloscope to a display of bright spots, each spot representing one 'case' in the scatterplot. By varying the repetition frequency of the pulses, it is possible to present random samples of almost any size (see Fig. 2). The demonstration is considerably more dramatic when viewed directly than it is in still photographs because the observer actually sees the scatterplot fluctuate.

[3] The beam must move far enough, between our glances, for the successive cases to be essentially unrelated. If we look too often, we will see the beam twice in nearly the same place, and this is clearly incompatible with random sampling.

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Book Reviews

Die deutschen wissenschaftlichen Bibliotheken nach dem Krieg. Georg Leyh. Tübingen: Verlag von J. C. B. Mohr (Paul Siebeck), 1947. Pp. 222.

In general, German scientific libraries have suffered much more heavily than other types of special libraries or the general university libraries encompassing the sciences as well as the humanities. During the war, scientific libraries were the legitimate objectives of Allied aerial attacks, and after the war they suffered particularly heavily from confiscation by one of the occupying nations.

Immediately after the war Georg Leyh, who recently retired as director of the University of Tübingen Library, conducted an extraordinarily careful survey of German research libraries. He examines the extent of damages sustained during the war to books, buildings, catalogues, and personnel and makes valuable suggestions for future policies. To summarize adequately Dr. Leyh's book would be too extensive an undertaking for the space at our disposal. However, a brief examination of the fate of the scientific and technological libraries will give some idea of what has happened to all types of research libraries in Germany.

Beginning alphabetically with Berlin-Charlottenburg, seat of Germany's leading Technische Hochschule, we have the dismal picture of a complete loss, the library, along with the main building of the university, having been completely destroyed in an air raid on November 22, 1943. The remains of the library were taken to Rossla, in the Harz Mountains, where many new purchases were added to the collection. In addition, some of the scientific books in the former Preussische Staatsbibliothek (now Öffentliche Wissenschaftliche Bibliothek) were sent to Rossla. However, in January 1946 everything except some of the catalogues was confiscated.

The great special libraries in Berlin proper are in a very serious condition, if they exist at all. The library of the Reichsministerium für Ernährung und Landwirtschaft exists today only in the form of 40,000 volumes in the libraries of the Reichsnährstand and the Landesbauernschaft. The remainder was stored near Küstrin and subsequently confiscated. Although most of the Deutsche Heeresbücherei was burned, some important parts are still in storage. The remains of the Statistisches Reichsamt and Reichspatentamt libraries were confiscated. The building of the Reichsgesundheitsamt was destroyed, and those parts of the library that were saved were taken over by the Deutsche Zentralverwaltung für Gesundheitswesen in the Russian zone. The Zentralbibliothek der Staatlichen Museen suffered heavily from bombardment and confiscation, and some of its holdings are still stored in western Germany. The irreplaceable library of the Botanischer Garten in Berlin-Dahlem was completely destroyed in 1943, and subsequent acquisitions are still in storage. Large

portions of African, Asiatic, and American material in the Museum für Völkerkunde and the entire collection of the Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte were confiscated. The Russians have revealed a special fondness for German medical literature and have confiscated those parts of the Deutsche Ärzte-Bücherei (at the Militärärztliche Akademie) which were not stored, as well as the remains of the library of the Berliner Medizinische Gesellschaft. Practically the entire library of the Institut für Geschichte der Medizin und der Naturwissenschaften was stored in eastern Germany and must be considered lost. Of all the great scientific special libraries in Berlin, only the collection of the Robert-Koch-Institut seems to have come through the war and postwar period unscathed.

The library of the Technische Hochschule in Aachen lost around 50,000 of its 108,000 volumes in a bunker fire. The lost books included runs of serials prior to 1935 and some 400 typewritten dissertations which had been presented at Aachen. Some parts of the building were severely damaged, but the book stacks are nearly intact.

The part of the building of the Technische Hochschule of Brunswick which was occupied by the library was destroyed. Fortunately, the books, but not the catalogues, had been evacuated. As of March 31, 1947, 5,300 volumes of the 120,000 which had been salvaged had been recatalogued.

The library rooms of the Technische Hochschule at Darmstadt were also burned out, and the library was removed to the basement. Parts of the library, including the catalogues, were evacuated, but nearly two-thirds of the holdings were destroyed. Fortunately, periodicals were saved for the most part, and losses consisted of material published prior to 1930 in the fields of architecture, structural engineering, mechanical and electrical engineering, history, geography, literature, law, economics, statistics, pedagogy, and dissertations. It will be interesting to observe whether the destruction of pre-1930 technological literature has seriously impeded library service, or whether this experience might not recommend a similar fate for related classes of material in other technological libraries.

The old building of the Dresden Technische Hochschule on the Bismarckplatz was completely destroyed in February 1945, but in the following summer the library was moved to a building immediately adjacent to the new building of the institution itself. In 1942 the library held about 111,000 volumes, some 30,000 of which (unhappily, largely the more recent material) were lost as the result of the *Reparationsentnahmeaktion* of the Red Army. The 40,000 volumes that remain consist largely of older material.

Thirty hours after the last book was evacuated from the Hannover Technische Hochschule in 1943, Allied aerial bombers found their mark, and the building was burned out. However, part of the book stacks can be restored, and the reading rooms are already in use again. Although some 35,000 of the 175,000 volumes were badly damaged by water when the Technische Hochschule burned for the first time in 1941, all but 231 were restored or replaced by 1943. As a result of the well-timed evacuation, the only losses have resulted from the unusual conditions under which circulation must be conducted at the evacuation points (Nörten-Hardenberg and Levershausen).

In 1942 the library of the Technische Hochschule in Karlsruhe had 191,000 volumes and a good building. The latter was completely destroyed, and only about 85,000 volumes remain. The most important sections of the library (mathematics, physics, chemistry, and technology) were not evacuated because of the heavy demand by patrons and, as a result, were destroyed along with the building.

The building of the Munich Technische Hochschule was also completely destroyed, but some 10,000 out of 210,000 volumes have been saved, and reference collections and catalogues are intact. The Deutsches Museum on the Museuminsel is still in a state of reconstruction and not yet open, but its library of some 270,000 volumes is intact.

On July 26, 1944, the library of the Stuttgart Technische Hochschule lost 50,000 of its 118,000 volumes. Losses included a large proportion of the technological reference works, but nearly all periodicals had been evacuated prior to the catastrophe. Of all the catalogues, only the shelf-list remained. The library is again open for circulation in the Schulhaus Tamm, recataloguing is being undertaken, and an active acquisition program is planned.

These notes taken from Dr. Leyh's survey represent by no means all the scientific and technological collections in German libraries. Most of the great state and university libraries, which were very rich, especially in the pure sciences, suffered almost in equal measure. German libraries as a whole have been the victims of a fate unparalleled in the history of science and learning.

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The second forty years. Edward J. Stieglitz. Philadelphia-New York: J. B. Lippincott, 1946. Pp. x + 317. (Illustrated.) $2.95.

Dr. Stieglitz has undertaken the difficult task of conveying to the layman a comprehensive picture of the present status of gerontology and geriatrics. In the major portion of the book, which is devoted to medical aspects of aging, the point of view of the old person is emphasized. This is done in a commendably lucid and informative style.

The early pages of the book are devoted to consideration of the biological aspects of aging. One can commiserate with Dr. Stieglitz in his real attempt to paint for the layman a coherent picture of the aging process. Modern science's deplorable lack of knowledge of this process makes this task well nigh impossible. The Foreword by A. J. Carlson must also have been designed for the layman, as judged by the following statement: "The fundamental biologic processes of growing old and the gradual impairments and infirmities which follow are as