Bernhard Weller: Balneology as an Academic Discipline in Germany: Genesis, Development and Significance

Bad Wildungen

Balneology is as old as medical science itself. Gathering information about the importance, the application and the healing effect of water accompanied the history of mankind. Humans cannot live without water. they can only survive for a short time without drinking. Beyond quenching human thirst, water has other beneficial effects, for example relaxing the body when having a bath. Water implies cleanliness, hygiene and therefore health. Particular kinds of water, i.e. mineral-rich waters, have distinctive curing effects.

In 1378, a "well-learned" man suggested channelling water from a spring outside the city walls into the small country town of Nieder-Wildungen in Germany to improve the daily supply of water needed for cooking, cleaning and, above all, for drinking. In the course of the years, the locals happily discovered that no citizen ever suffered from bladder stones. At the time, people attributed this fact to the healing properties of the water: it seemed to alleviate this metabolic disease. Such experience was generated purely by observation, and similar observations usually marked the beginning of the use of curative springs. Indeed, the assumption that nature possesses healing powers goes a long way back in history and stories about the origins of springs and their use are often shrouded in myths and legends. Attempts at explanations for such phenomena are not much younger. Already ancient Greeks and Romans, but also Germanic and Celtic tribes are known to have tried to use such springs for preventive and therapeutic bathing. Later medical justifications for balneotherapy are usually derived from these ancient observations.

Then again, the recognition of modern balneology and its integration into the medical cannon was hampered precisely by this dependence on the tradition of ancient observations, i.e. purely empirical examinations of the effects of water, which in many spas lay at the core of the use of the springs.

When a “miraculous healing” occurred in Pyrmont in 1556, the fame of the Pyrmont water curing diseases spread throughout Europe: Allegedly it made the lame walk, the blind see and the deaf hear again. The *hylige born*, the "holy spring" was said to have attracted tens of thousands of visitors in so-called "miracle walks". While these numbers were certainly exaggerated, there was a widespread trust and belief in the healing power of the spring, which Pyrmont certainly knew to exploit.

At the end of the renaissance period, the quest for better and more rational explanations of such phenomena led to a revival of spa medicine, which had largely fallen into oblivion during the Middle Ages. Only a few years after the Pyrmont miracle, scientific research began in Wildungen, too. A professor from Marburg University, Dr. Johannes Wolff, wrote a treatise "On nature, the forces and the sensible use of the Wildung acidulous springs" in 1580. Prof. Wolff distinguished between taking the waters and bathing. "If the liquors of your body are sufficiently softened, divided and purified by

previous drinking cures, you may consider bathing, too." He analysed the spring water on the spot and closely observed its effects. His conclusions were: the more, the better. According to his prescription, bathing times extended over a significant amount of time: three hours in the morning, strictly followed by a nap, and then another three hours of bathing in the afternoon. Such baths had to be taken for several weeks, if possible. A cutaneous reaction, the “bathing rash”, was taken as the visible proof of a successful therapy.

Drinking cures were also supposed to be effective mainly through the amount of water administered, as evidenced by the occurrence of diuresis and diarrhoea. Since during the 17th century “taking the waters” became increasingly popular, spa physicians elsewhere felt the need to document the healing effects of their local springs as well, as Wolff had done before.

The emerging competition between springs and also between spa physicians led to an implausible inflation of the indications against which cures were allegedly useful and prescribed locally. One single spring was supposed to be effective against weaknesses of the abdomen and the head at the same time. It could allegedly be used to treat kidney and bladder stones and help against infertility, prevent jaundice as well as consumption, cure mouth rot and make a stupid face look pretty. And this list is still incomplete. Such inflated lists of indications, the strong dependence on empirical observations, and the mythical legends about the discovery of local sources impaired the credibility of such balneological findings which were frequently questioned by contemporary doctors.

The transformation of some innocent bathing places into splendid health resorts in the course of the late 17th and early 18th centuries did not necessarily raise the academic standing of spa doctors, but the popularity of their resorts. The villages and small towns gradually became places of distinguished conviviality, allowing for new forms of social intercourse. The increased ease of travelling made a seasonal change of scenery possible. Various amusements, the pleasures of the table, or the possibility of new acquaintances attracted an ever-growing number of visitors. The occasional soothing bath notwithstanding, the fashionable spa began to dominate the health resort.

Social distinction or sociability as central past-times did not necessarily correspond to the growing rationalisation of the medical indications for the stay in a spa. Of course, people sought the expertise of a spa doctor, too. Spa doctors remained a central port of call, so to speak, but their reputation suffered from the “contemporary” innovations, as expressed in the following poem:

Der Badearzt

Ein Mann, der äußerst elegant ist,
bei Frau´n beliebt und sehr gewandt ist,
der kann als Arzt in einem Bade auch ohne
höhere Wissensgrade
betreiben beste Therapie, mit reizender Galanterie.
Was soll er ärztlich denn auch tun?
Patient muss baden oder ruh´n.
Vielleicht noch promenieren, und will sich auch
noch amüsieren.
Das beste Mittel, das er kennt, das ist ein zartes
Kompliment!
Die Wirkung ist meist unvergleichlich, drum liquidiert
er dann auch reichlich.
Denn lukrative Klientel ist nötig, daraus macht er
kein Hehl.
Weil er, wenn die Saison am Schluss, ja auch noch
überwintern muss.
In dieser Zeit vergeht er fast, vor Sehnsucht nach
´nem Badegast.

Irene Schleicher, *Lachende Medizin*,
Leipzig 1941: 17 – 19.

The Spa doctor

A man who is extremely elegant,
Handsome and popular with women,
May as a spa doctor prescribe without higher qualifications
the best of therapies with charming gallantry.
What else should he do?
The patient has to bathe or rest,
maybe take a stroll and perhaps also have some fun.
The best remedy he knows is a gentle compliment!
The effect is usually outstanding; for which he can bill abundantly.
He needs his lucrative clientele, he makes no secret of it,
Since when the season ends, he has to overwinter.
During this phase he languishes,
longing for the clients.

A more rational view of the springs came to prevail in the first third of the 19th century, when Christoph Wilhelm Hufeland published his *Praktische Übersicht der vorzüglichsten Heilquellen Teutschlands* ("Practical overview of the most excellent mineral springs in Germany"). Hufeland (1762-1836) was one of Germany's most eminent practical physicians of his time, and his treatise was based on the principles of modern, if still experience-based, medical sciences. He explicitly and specifically prescribed the Wildungen springs for the cure of kidney and bladder diseases. In Hufeland's study, phrases like "praise and thanks to the Almighty, who gave us the wonderful gift of the healing source of Wildungen" at the same time betray the influence of contemporary romanticism.

Wildungen's *Georg Viktor* Spring is indeed closely associated with an important medical achievement. Due to the utilisation of this spring for the treatment of kidney and bladder problems, local doctors had over decades accumulated a substantial body of knowledge in urology and developed medical instruments to treat them in the mid-19th century. In collaboration with Professor Wilhelm Roser (1817 –1888) of the surgical department of the University of Marburg, one of the most outstanding surgeons of his time, the local spa physician Carl Rörig (1827-1919) performed the first lithotripsy, as the shattering of bladder stones came to be known, in 1869. Roser, Rörig and their students refined this procedure to such an extent that it went down in medical history as the "Wildungen surgery". Such fruitful co-operation between specific balneological knowledge in the spa and surgical competence from a university department was quite unique.

Generally, Emil Osann (1787 -1842) is considered to be the founding father of academic balneology in Germany. Osann studied medicine in Jena and Göttingen. He was a nephew of Hufeland and worked as his assistant. From 1814, Osann was an extraordinary professor for physiology at the Medical-Surgical Military Academy of the Clinical Institute in Berlin. He took his second doctorate in 1815 and was appointed chair of *Heilmittel* (medications). In 1833 he succeeded Hufeland as the director of the Clinical Institute.

Osann conducted research into the effects of healing springs and described the mineral springs of Franzensbad in 1822. Next, he worked for a long time on the publication "Physical-medicinal description of the known healing springs of the most excellent countries of Europe", which is considered the first comprehensive work of balneology. From 1837 he edited the periodical *Journal der praktischen Heilkunde*, followed by the *Balneologische Zeitung*, founded in 1847. At that time, the *Balneologische Zeitung* was the only dedicated balneological journal. After the creation of the *Verein der Kurorte- und Mineralquelleninteressenten Deutschlands, Österreich-Ungarns und der Schweiz* ("Association of Spa and Mineral Spring Prospects of Germany, Austria-Hungary and Switzerland"), it became the official organ of this spa association.

Further associations of representatives of spas and health resorts sprang up on a regional level, for example in Silesia in 1872.

This brings us to a very important milestone in the incipient respectability of balneology, the founding of the "Balneological Section" of the *Gesellschaft für Heilkunde* ("Medical Society") in Berlin in 1878. The latter had existed since 1855 and the "Section for Balneology and Medicine" was established under its auspices. The physician Dr Georg Thilenius (1868 –1937) from the spa town of Bad Soden am Taunus was elected as the first chairman of the association, he was supported by the secretaries Oskar Liebreich (1839 – 1908), a pharmacologist, and a Dr Heinrich Brock from Berlin, the city in which the first public meetings took place. A fundamental concern of the section was to substantiate the effects of healing springs and climatic conditions with scientific methods, transcending the empirical stage of balneology and firmly integrating it into the overarching system of academic medicine. At the time, this endeavour still met with scepticism outside the community of spa doctors and practitioners.

In 1889 the *Gesellschaft für Heilkunde* merged with the *Hufeland-Gesellschaft* and was re-baptised as *Balneologische Gesellschaft* ("Balneological Society") in 1889. As a result of historical developments and medical progress, the Society continuously expanded its tasks and objectives. The following list of name-changes is quite revealing as far as the constant pressure for legitimation, also in the face of political and economic changes, was concerned:

1934 *Deutsche Gesellschaft für Bäder und Klimakunde*

1964 *Deutsche Gesellschaft für Physikalische Medizin*

1975 *Deutsche Gesellschaft für Physikalische Medizin und Rehabilitation*

1995 *Deutsche Gesellschaft für Physikalische Medizin und Rehabilitation – wissenschaftliche Gesellschaft für Physikalische Medizin und Rehabilitation, Balneologie und Medizinische Klimatologie*

2018 *Deutsche Gesellschaft für Physikalische und Rehabilitative Medizin*

Around 1900, besides the *Balneologische Sektion*, further associations and interest groups emerged, such as the *Standesvereinigung Reichsdeutscher Badeärzte* (1894), the *Kneippärztebund* (1894), the *Ständiger Ausschuss für die gesundheitlichen Einrichtungen in den Kur-und Badeorten* (1904), the *Zentralstelle für Balneologie* (1912 -1916), meant to centralize balneological research, the *Mittelrheinische Studiengesellschaft für Klimatologie und Balneologie* (1924), and finally the *Arbeitsgemeinschaft für wissenschaftliche Heilquellenforschung* (1928).

At the beginning of the 20th century, balneology had thus reached a substantial degree of organisation at level of association. The founding of the overarching *Deutscher Bäderverband* ("German Spa Association") 1892 was just as important for the health resorts, as it linked the representations of the scientific progress with the emerging economic interests of the German resorts.

The *Bäderverband* defined its aims as follows:

- Improvement of the German spa resorts.
- Promotion of scientific balneology.
- Facilitating close co-operation between the spa doctors and the spa administration in all legal, administrative, technical and economic matters.
- Establishment of permanent relations with the quality press at home and abroad and combatting advertisement that damages the reputation of German spas.

- Maintaining constant exchange with representatives of academic medical and natural sciences.

In order to implement these goals, four departments were created in 1913:

Department A: Spa Management

Department B: Spa Doctors

Department C: Stakeholders in medical springs

Department D: Balneology and bathing technology

A fifth department E was added in 1926 and dealt with municipal interests in German health resorts.

After the Nazis took over in 1933, the existing associations were forced to merge into the *Bund Deutscher Verkehrsverbände und Bäder* ("Association of German Transport Associations and Spas"). In 1947, this association was re-established as *Deutscher Bäderverband* (German Spa Association). The name was slightly changed into *Deutscher Heilbäderverband* in 1999, and currently the organisation represents eight regional spa associations.

The spa associations published a number of periodicals, such as the *Deutsches Bäderbuch*, a yearbook first printed in 1907 and continued under the title *Deutscher Bäderkalender* from 1923 onwards. In 1926, the first issues of the *Zeitschrift für Wissenschaftliche Bäderkunde* were produced in Berlin, replaced by the *Zeitschrift für angewandte Bäder-und Klimaheilkunde* from 1953. Between 1949 and 2008, the journal *Heilbad und Kurort* dealt both with medical questions and the management and promotion of resorts.

These publications discussed the changing perception of what made up a *Kurort* ("health resort") and reflected upon these debates at the annual general meetings of the associations, the so called *Bädertage* ("Spa Days"), from 1892 to the present day. They also featured academic presentations from these meetings, which otherwise would have been accessible only in offprints. Such articles contained profound and sophisticated discussions of questions pertaining to the application of medical waters, gases, and peloids; treatises on climatology, thalassotherapy or spa hygiene. Spa doctors refined their scientific descriptions of natural healing resources, detailed their physical application and suggested the use of balneotherapy for the treatment of rheumatic and gynaecological diseases.

In sum, German balneologists managed to inscribe their historically deduced and empirically justified experiences into the canon of academically respected preventive and curative medicine. Academic respectability grew further with the fundamental chemical research carried out by the professors Robert Wilhelm Bunsen (1811–1899) and, above all, Justus von Liebig (1803–1873) at Giessen University, or the source analyses provided by Carl Remigius Fresenius (1818–1897) for spas such as Wiesbaden, Bad Nauheim, Bad Homburg, Bad Schwalbach, Schlangenbad, or Bad Soden am Taunus. All of this advanced the standardisation and systematisation of balneological knowledge. Despite these efforts and despite the increasing economic importance of the spa industry in Germany at the turn of the 20th century, balneology, physical therapy and spa medicine as a whole remained on the fringes of academic respectability in German universities.

Max Hirsch, editor of the *Zeitschrift für Wissenschaftliche Bäderkunde*, wrote in 1927 that "one cannot help the impression that the universities and institutes have not embraced balneology in their research activities to the extent that the baths would deserve, due to their importance for therapy and public health." Heinrich Vogt advocated the foundation of "balneological academies" in health resorts in the same year, without intending to detach academic

teaching from the universities. Only there, he suggested, the subjects were complementing each other, allowing for a close exchange with disciplines such as physiology and pathology, or with experimental laboratories, and with the natural sciences in general, above all the disciplines of physical chemistry, chemistry, physics and geology. A balneological institute in a nearby spa, however, could supplement research and teaching with a solid empirical foundation.

27 years later, in 1954, an opinion piece in the *Zeitschrift für angewandte Bäder- und Klimaheilkunde* still complained that "balneology and climatology are rarely subjects at our universities." Similar complaints about the lack of acceptance of balneology and all spa-related medical knowledge were certainly not unfounded, and they would not be today. It should be conceded, however, that the 20th century finally saw the establishment of university chairs in the field. While before 1914 no university institutes for physical medicine had existed in Germany, the period between 1917 and 1975 witnessed the creation of no less than 11 such institutes:

1917 *Institut für Physikalische Medizin und Balneologie* at the University of Gießen (at Bad Nauheim)

1923 *Institut für Angewandte Physiologie und Medizinische Klimatologie* at the University of Kiel

1934 *Abteilung für Physikalische-Diätetische Therapie im Zentrum der Inneren Medizin* at the University of Frankfurt am Main

1950 *Institut für Medizinische Balneologie und Klimatologie* at the University of Munich

1957 *Institut für Balneologie und Klimaphysiologie* at the University of Freiburg

1962 *Abteilung für Balneologie und Medizinische Klimatologie* at the II. Medical Hospital of the University of Hamburg

1965 *Institut für Arbeitsphysiologie und Rehabilitationsforschung* at the University of Marburg

1969 *Abteilung für Physikalische Therapie im Klinikum Steglitz* at the Free University Berlin

1973 *Klinik und Poliklinik für Physikalische Medizin* at the University of Munich

1975 *Institut für Balneologie und Klimatologie* at the University of Hanover

Balneology hence became the object of teaching and research at 11 German universities. In addition to that, it seems to have been taught also at Breslau during the interwar period. Moreover, there have been 18 smaller "associated institutes" until the mid-1980s, most of which were located in spa towns connected to the medical faculties through the directorship of a university professor. Such institutes existed in Aachen, Baden-Baden, Bad Berleburg, Bad Elster, Bad Krotzingen, Bad Lauterberg, Bad Lippspringe, Bad Nauheim, Bad Nenndorf, Norderney, Bad Oeynhausen, Bad Pyrmont, Bad Salzuflen, Timmendorfer Strand, Bad Waldliesborn, Westerland, Bad Wildungen und Bad Wörrishofen.

This allowed for a broad cooperation between spa institutes and university departments. Numerous dissertations covering all areas of balneological and spa medicine bear testimony to the enormous increase in quantitative output and qualitative improvement, which German balneology experienced during this period. Their authors analysed the quality of springs, not only referring to medicinal springs but examining mineral waters intended for broader distribution, too. A growing number of studies were conducted on the therapeutical use of

bog peat, brine and carbon dioxide, examining the effects of such natural remedies and climate on the human biorhythm. As a rule, such studies recommended at least a four-week stay at the resort to warrant the effectiveness of the treatments.

The results are not always undisputed; as for example spa doctors, struggling to recruit a sufficient number of test patients produced non-representative statistics, with maths obviously not necessarily representing their core competences.

That said, the professional standards for acquiring the qualifications of "spa doctor" or "doctor of physical therapy and balneology" were homogenised and appropriate training programmes offered. Incidentally, this is a very important topic today, because many German health resorts are finding it increasingly difficult to hire trained spa doctors. As a matter of fact, the presence of at least one trained specialist is a pre-requisite for retaining the state-recognized label of spa town (German: “Bad”).

Established experts in the field, such as the professors Amelung, Gutenbrunner, Hildebrandt, Schmidt or Schmidt-Kessen, published reference books and compendia in the field and set the standards for scholarly articles in spa journals and other periodicals.

In the Federal Republic of Germany, however, the institutional development of the discipline reached its peak in the 1970s and 1980s. The period that followed was epitomized by the so-called “health resort crisis” peaking in 1995/96, when the health insurance companies stopped paying for natural remedies and treatments at the health resorts. With the financial deprecation that followed, many scientific institutes were closed or re-oriented.

In the German Democratic Republic, by contrast, balneological research was highly centralised in the *Forschungsinstitut für Balneologie und Kurortwissenschaft Bad Elster.* It was the only state-run institution in the country and employed at times more than 50 scientists. After reunification, the institute continued to work under its former director Prof. Karl-Ludwig Resch as a subordinate institution of the Free State of Saxony, albeit with reduced budgets and staff. In the course of administrative reforms, the institute was disbanded in 2006 and replaced by a new *Deutsches Institut für Gesundheitsforschung* in 2007. The newly founded institute is tasked with systematic reviews and the conduct of clinical studies on non-pharmacological healing procedures, with a focus on medical tasks like prevention, rehabilitation and (out)patient care. Moreover, the institute develops new strategies and concepts for the implementation of scientifically proven preventive measures and treatments into the German health system. Against the backdrop of demographic developments, the prevention of diseases among the elderly and their subsequent rehabilitation is a priority.

This development seems to be quite symptomatic. The number of chairs in balneology has decreased significantly, only those at the universities of Berlin, Munich, Rostock and Hanover seem to be secure for the foreseeable future. We should also not forget that research into balneology is carried out at the private Fresenius University in Idstein. However, the institutional embedding of balneological research has diminished sharply during the recent decades and several facilities were closed completely, including dedicated balneological libraries. We have attempted to bring their collections to Bad Wildungen, and the local Balneological Library currently owns the largest collection of scientific literature on spa medicine.

It would seem that at present, medical practice and applied research at the German health resorts is increasingly geared towards rehabilitation, which certainly mirrors the changing medical needs of contemporary German society. There is a growing demand for the cure of psychosomatic

diseases, the treatment of which does not necessarily require a longer stay at a place with springs or other natural remedies.

Health resorts, however, have always been special places in which medical therapy, relaxation and cultural or social exchange reinforced each other. Their combination with the curative forces of nature, be that springs or climate, constitute the traditional "selling points" of spa culture. Maintaining and promoting all of them is an important asset for the marketing of the resorts. During the heath resort crisis of the mid-1990s, the German health insurance companies cut the payments for natural remedies and cures in a short-sighted attempt to reduce costs. In the resorts, this has caused the resignation of many people involved with spa medicine and led to an over-emphasis on "modern" forms of therapy. At times German health resorts even excluded the use of the allegedly dated term *Kur* ("cure") in the portrayal of their comprehensive medical and recreational resources.

This amounts to throwing out the baby with the bathwater. It is high time to realise that without re-vitalising and re-appraising their historically grown balneological expertise and the local spa heritage, the German resorts will lose their distinction from other places offering contemporary medical services.

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