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Haller and the Swiss scientific movement

RENATO G. MAZZOLINI

During the eighteenth century, foreign membership of one of the great scientific academies was considered recognition of the scientific quality of an individual's research. Between 1701 and 1786 at least 73 Swiss scholars were elected to one of the four following scientific academies: the *Royal Society of London*, the *Académie Royale des Sciences* in Paris, the *Königlich Preussische Sozietät der Wissenschaften* in Berlin and the *Academy of Sciences* in St. Petersburg (see fig. p. 477). Six of those 73 scholars were members of all four academies: namely Johannes I Bernoulli (1667-1748), Daniel I Bernoulli (1700-1782), Leonhard Euler (1707-1783), Albrecht von Haller (1708-1777), Théodore Tronchin (1709-1781) and Charles Bonnet (1720-1793). Eight were members of three academies: namely Jakob Hermann (1678-1733), Moritz Anton Kappeler (1685-1769), Jean Jalabert (1712-1768), George-Louis Le Sage (1724-1803), Johann Albrecht Euler (1734-1800), Giuseppe Piazzi (1746-1826) and Pierre Prevost (1751-1839). Compared to those of other European countries, these data on foreign academic membership are impressively high. And they are even more impressive if they are related to the overall population of Switzerland and other countries.¹ But other data on the migration of Swiss scholars as teachers at various European universities, such as those of Groningen, Göttingen, Padua, Pavia and Palermo, as academicians at well-funded academies, such as those of Berlin and St. Petersburg, and as medical doctors at various European courts, are equally impressive and highlight a phenomenon of greater significance: the existence of a Swiss scientific movement which spread outwards from the small confederated republics and the Republic of Geneva to permeate European scientific institutions. Albrecht von Haller was only one of the many Swiss scholars who left their homeland to make a living abroad by devoting their lives to scientific research and scientific institutions. Notwithstanding the groundbreaking study by Ed-

ward Fueter of 1941,² this extraordinary movement has attracted little attention from historians of eighteenth-century science and medicine, and little investigation has been made of both its origins and its overall impact upon the development of European science during the *ancien régime*.³

First to be noted is that during most of the eighteenth century, the study of the sciences was not highly regarded by the governing elites of the confederated republics, and few attempts were made to foster it. Scientific achievements had no real pay-off in either social or economic terms. For instance, throughout the century, the development of the University of Basel was hampered by a lack of funds, even though it was the cradle of one of the greatest schools of mathematics ever to have existed. Scientific activity was a free choice made by those individuals that could afford it, and if cultivated, was a reward in itself. Whilst the lack of significant scientific institutions in the republics, especially during the first half of the century, may well explain why so many able scholars left their homelands, it does not explain why and how scientific investigation attracted their passionate curiosity. One may speculate that this was due to social conditions and ideals such as the fruitfulness of a strict classical and religious education, the moderate financial independence achieved by a stratum of society, the immigration into the Swiss republics of foreign well-off families with cultural traditions, the geographical position of the confederated republics at the crossroads of different cultures and languages which gave them a cosmopolitan character, the spread of physico-theology which, by elevating the book of nature to the status of God's revelation, reinforced the idea that God could be also worshipped by the study of nature itself, and finally the expectation that by cultivating the new sciences a person could, in the long run, enhance the well-being of society at large, while, in the short run, he could construct a career.⁴ Whatever the interactions among social conditions, religious upbringing, ideals and personal ambitions may have been in individual biographies, it seems clear that a major scientific movement arose in the mountainous heart of Europe. On the one hand, this movement expanded out from the borders of the confederated republics; and, on the other – during the second half of the century especially – took part in the constitution of many local learned societies,⁵ which, on embracing the notion of the usefulness of science,⁶ often had a very strong interest in applied sciences⁷ and agricultural development.⁸ One of the major contributions of many Swiss natural philosophers and amateur naturalists – who devoted much time to extensive fieldwork on the geography, geology, plant life and fauna of the Alpine region – consisted in the cognitive appropriation of their own country.⁹ An appropriation which, by transforming what had hitherto been considered the fearsome landscapes of the Alps into manifestations of the sublime, became a



Membership in scientific academies is the most appropriate parameter to assess the scientific prestige of a person in the 18th century. Swiss scientists are a remarkably well-represented group of members. Haller was a member of 30 learned societies all over Europe, among them all the major academies such as those of London, Stockholm, Berlin, Bologna, Paris and St. Petersburg. – Haller's diploma of membership of the Academy of Sciences of St. Petersburg; 29.12.1776. – Burgerbibliothek Bern.

fundamental component in the republican and patriotic ideology of the members of the Helvetic Society.¹⁰

Although the Swiss scientific movement, like the French Enlightenment, was neither a coordinated nor a formalized movement, it was held together by the beliefs and ideals shared by its members, and it was reinforced by their strong and lasting personal ties. Such features are also very apparent among those scholars who left their homelands to become the prime movers of a number of scientific institutions, cases in point being Daniel I Bernoulli in St. Petersburg, Albrecht von Haller in Göttingen, Leonhard Euler in Berlin and St. Petersburg, Johann Heinrich Lambert (1728-1777) in Berlin, Johannes III Bernoulli (1744-1807) in Berlin and Giuseppe Piazzi in Palermo. It is interesting to note that these scholars, who had grown up in republics, were willing to serve monarchs as long as they could serve the scientific institutions funded by such monarchs and which were lacking in their own countries. Their devotion to these institutions – whether universities, academies or observatories – is astonishing. Today, it can be well documented, mainly by their correspondences¹¹ and by the number and quality of their published works, the production of which required constant working discipline, which also shaped the organisation of their scientific investigations. It was probably this very discipline that made them so sought after, because monarchs knew that their rigorous upbringing made them immune to the increasing frivolity of the century. For these same reasons Swiss scholars were also much appreciated as tutors in noble families. The only concern in their regard among monarchs and nobles was that they might be induced to return home by nostalgia, a term used in 1731 by Johann Jacob Scheuchzer (1672-1733) to describe homesickness as a specific Swiss malady.¹²

Indicative of the Swiss scientific movement's cohesion is the sponsorship of outstanding young scholars by the leading representatives of the movement itself. One example may suffice. At thirty years of age, in 1758, the self-taught Johann Heinrich Lambert, who had spent ten years as tutor in the home of Count Peter von Salis in Chur and who was an associate of the local Literary Society and of the *Societas Helvetica* of Basel, decided to leave his job and seek to build himself an academic career. He first turned to Albrecht von Haller to obtain his recommendation for a position as professor at Göttingen University. However, notwithstanding Haller's support, his application was unsuccessful (1759).¹³ He then turned to Euler, at that time in Berlin, who recommended him in 1760 for the position of Professor of Astronomy at the St. Petersburg Academy of Sciences. This attempt also failed. Later, in 1764, Euler invited him to Berlin in the hope of convincing Frederick II to appoint him to the Prussian Academy.¹⁴ The King was at first put off by Lambert's very humble and unconventional clothing and manners, as well as by his strong religious convictions. But as

he came to know him better, he was greatly impressed both by his versatility in physics, mathematics, astronomy and logic and by his deep insights. These qualities persuaded Frederick to appoint Lambert in 1765 to the Academy, where he became, until his death in 1777, the most dedicated academician and prolific contributor to its transactions.¹⁵

The non-Swiss correspondences of the Bernoulli dynasty, Johann Jakob Scheuchzer, Gabriel Cramer (1704-1752), Euler, Haller, Lambert, Bonnet, Horace-Bénédict de Saussure (1740-1799) and of many other members of the Swiss scientific movement testify that, for over eighty years, they constituted a large part, if not the bulk, of that intangible republic of letters which, in the name of tolerance and freedom of inquiry, united European scholars by overcoming religious, social and political barriers. This phenomenon demonstrates that the motto *«Helvetia mediatrix»* is not a stereotype when applied both to this period and to this movement. The phenomenon is even more evident when one considers the extraordinary scholarly networks established either by the naturalist Louis Bourguet (1678-1742) in order to publish the *Bibliothèque italique* (1728-1734),¹⁶ or by the physicist and astronomer Marc-Auguste Pictet (1752-1825) for compilation of the *Bibliothèque britannique* (1796-1815) in a period when contacts between continental science and British science were hampered by the Napoleonic wars.¹⁷

Yet reliability, capacity for continuous work and European scholarly networks were not the only elements that the members of the Swiss scientific movement had in common. Indeed the Reformed members of this movement also shared similar attitudes towards the French Enlightenment. This they largely distrusted, not, of course, because of its attacks on Catholicism, but because of its assault on Christian ethics as the basis of human coexistence, and on religious beliefs more generally. There is a striking continuity between Leonhard Euler's and Haller's defence of revelation against free thinkers.¹⁸ Euler, however, did not experience such an extreme struggle over his own faith as Haller, who did not judge it to be as profound and monolithic as he wished.¹⁹ From this point of view they stood as steadfast *«defensores fidei»*, and they were furthermore convinced that there was no evident conflict between science and revealed religion. The two could exist hand in hand, since good science was, in their view a form of good religion. The notion put forward by some authors of the French Enlightenment that nature could be autonomous and not the work of a creator was abhorred. The expression *«Priester der Natur»*, used in 1749 by the physician and poet Paul Gottlieb Werlhof (1699-1767) to define Haller, highlights the strong connection perceived in his personality between science and religion.²⁰ This, however, was a feature which did not pertain to Haller alone but describes well many other Swiss natural phi-

losophers of the time.²¹ Also revealing are the battles fought by Charles Bonnet against the unbelievers²² and the fact that, when the conflict erupted between science and religion on geological issues concerning the age of the earth, the staunchest defender of a liberal, but not literal, sacred chronology applied to the history of the earth was the Genevan naturalist Jean-André De Luc (1727-1817), who called himself a *philosophe Chrétien*.²³

Given the high status that Swiss natural philosophers assigned to calculus, observation and experimentation, and the clear demarcation line that they drew in their published works between scientific and socio-political discourse, it is extremely difficult to decipher the political implications of their scientific theories and also their political leanings. However, drawing on their biographies and considering that they were brought up in small republics where politics was one of the main topics of concern and conversation among educated males, it is not surprising that they too took an active part in the political life of their time by applying mathematics to the problems of every-day life,²⁴ founding learned societies, writing political novels (Haller),²⁵ by compiling educational and moralising treatises (Abraham Trembley 1710-1784)²⁶ and by expressing their opinions at public assemblies (Charles Bonnet).²⁷ Central to their general view were the concepts of liberty and equality, generally conceived with the late-medieval meanings assumed by such concepts at the time when their republics were founded. Also significant was the practice of tolerance as a device to overcome the conflicts between Protestants and Catholics which for so long had vitiated the unity of the Swiss population.²⁸ Trembley's self-definition as a Christian with no further qualification, and his insistence on the concepts of virtue, simplicity, freedom of the will and benevolence, demonstrate the impact of a classical, religious and republican education reduced to its essence and drained of its theological superstructures.²⁹

From the vantage point of the present, shaped by so many subsequent political and social revolutions, most of the members of the Swiss scientific movement seem conservative in their outlook, also because we are often unable to understand that they had been brought up under forms of government which enabled at least selected groups of citizens to take part in the republic's affairs in a way unthinkable in the rest of Europe, dominated as it was by royalist forms of government. Furthermore their contemporary image as conservatives is also strongly suggested by their religious beliefs and attitudes. We fail to see that those very beliefs and attitudes lay at the heart of their commitment to science and of scientific work which established new standards of rigour and for which they were admired throughout Europe.

Albrecht von Haller has been one of the pinnacles of achievement by the Swiss scientific movement.

Notes

1 Alphonse de Condolle: *Histoire des sciences and des savants depuis deux siècles, d'après l'opinion des principales académies ou sociétés scientifiques*. Paris 1987, 181 (first edition 1873).

2 Eduard Fueter: *Geschichte der exakten Wissenschaften in der Schweizerischen Aufklärung (1680-1780)*. Aarau, Leipzig 1941. See also Cléopâtre Montandon, *The development of science in Geneva in the 18th and 19th centuries: The case of a scientific community*. Diss. Phil. Columbia University, New York 1973.

3 The impact of both teaching and theories by Swiss scholars cannot be dealt with in this short paper. But a few bibliographical references may be given. Euler's influence on European mathematics is commented on in several papers in Robert E. Bradley, C. Edward Sandifer (ed.): *Leonhard Euler: Life, work and legacy*. Amsterdam 2007. The extraordinary influence on the development of Italian mathematics by the teaching of Jacob Hermann at Padua University is thoroughly analysed by Silvia Mazzone, Clara Silvia Roero: *Jakob Hermann and the diffusion of the Leibnizian calculus in Italy*. Firenze 1997. The influence of Haller's theory of irritability on Italian experimental physiology is discussed in Renato G. Mazzolini, Giuseppe Ongaro (ed.): *Felice Fontana: Carteggio con Leopoldo Marc'Antonio Caldani 1758-1794*. Trento 1980, 17-36; and by Hubert Steinke: *Irritating experiments: Haller's concept on irritability and the European controversy on irritability and sensibility, 1750-90*. Amsterdam, New York 2005, 135-137, 153-157, 184, 342 f. Some aspects of Haller's teaching at Göttingen are discussed by Renato G. Mazzolini: *Le dissertazioni degli allievi di Albrecht von Haller a Göttingen (1736-1753): una indagine bio-bibliografica*. In: *Nuncius*, 2 (1987), 125-194.

4 On the presence of physico-theological arguments in Swiss science of the eighteenth century, see Robert Felfe: *Naturgeschichte als kunstvolle Synthese:*

Physikotheologie und Bildpraxis bei Johann Jacob Scheuchzer. Berlin 2003; Michael Kempe: *Wissenschaft, Theologie, Aufklärung: Johann Jacob Scheuchzer (1672-1733) und die Sintfluttheorie*. Epfendorf 2003; Monika Gisler: *Göttliche Natur? Formationen im Erdbebediskurs der Schweiz des 18. Jahrhunderts*. Zürich 2007; Burghard Weiss: *Zwischen Physikotheologie und Positivismus: Pierre Prevost (1751-1839) und die korpuskularkinetische Physik der Genfer Schule*. Frankfurt am Main 1988.

5 Emil Erne: *Die schweizerischen Sozietäten: Lexikalische Darstellung der Reformgesellschaften des 18. Jahrhunderts in der Schweiz*. Zürich 1988. In the preface to the first volume of the *Mémoires de la Société des sciences physiques de Lausanne*, 1 (1783, but published 1784), p. v, it is written: «Il n'est plus nécessaire de faire l'apologie des Académies de provinces. Le temps n'est plus, où l'on sourioit dédaigneusement de ces Lycées, & où l'on osoit dire que les grandes Capitales seules étoient le centre des lumières & le berceau des vrais talents. Notre patrie a été vengée de cet injuste reproche. Depuis longtemps elle offre l'exemple de plusieurs savantes Académies. Berne, Zurich, Bâle, ont leurs Sociétés économiques, physiques, & médicales. Les Bernoulli, un Euler, un Haller, et tant d'autres encore, ont prouvé qu'en Suisse les sciences naturelles pouvoient être cultivées avec autant de succès qu'à Paris ou à Londres.»

6 A good example is provided by [Hans Kaspar] Hirzel: *Rede von dem Einfluß der gesellschaftlichen Verbindung, auf die Beförderung der Vortheile, welche die Naturlehre dem menschlichen Geschlecht anbietet, und dem Nutzen, den unser Vaterland von der Naturforschenden Gesellschaft erwarten kann*. In: *Abhandlungen der Naturforschenden Gesellschaft in Zürich*, 1 (1761), 1-76.

7 See, e. g., [Johann Friedrich] Gmelin: *Über den Einfluß chemischer Kenntnisse auf das Wohl der Staaten, besonders in Rücksicht Helvetiens*. In: *Magazin für*

die Naturkunde Helvetiens, 2 (1788), 153-176.

8 See the contribution of Martin Stuber and Regula Wyss in this volume. A credible witness of the intellectual climate of the time is the Italian reformer Carlo Antonio Pilati (1733-1802) who spent several years at Chur. In his *Voyages en différens pays d'Europe en 1774, 1775 et 1776*. La Haye 1777, 170 f. he stated: «Les Suisses cultivent beaucoup les sciences, et ils ont un grand nombre de savants: l'esprit de liberté règne chez eux dans les sciences, comme dans l'état politique: chacun suit son goût, et s'attache par préférence à la science pour laquelle il a plus d'inclination; mais il est remarquable que tous ces savants dirigent, autant qu'il leur est possible, leurs études vers le bien public [...] ils n'approfondissent la théorie, que pour l'appliquer à la pratique: leur esprit entièrement tourné vers le bien de l'humanité et de la patrie, ne leur permet pas de se borner, à la speculation.»

9 See, e. g., the preface by Albrecht Höpfner to the *Magazin für die Naturkunde Helvetiens*, 1 (1787), iii-xviii; and [Jakob Samuel] Wyttenbach: Einige Betrachtungen über den gegenwärtigen Zustand der Naturgeschichte Helvetiens, und insbesondere des Kantons Bern. In: *Magazin für die Naturkunde Helvetiens*, 2 (1788), 1-22. A list of natural history cabinets is provided by [Gottlieb Emanuel] von Haller: Catalogue raisonné des auteurs qui ont écrit sur l'histoire naturelle de la Suisse. In: *Acta Helvetica, Physico-Mathematico-Botanico-Medica*, 7 (1772), 181-330, at pp. 208-212, and a good description may be found in Jean III Bernoulli: *Lettres sur différens sujets, écrites pendant le cours d'un voyage par l'Allemagne, la Suisse, la France Méridionale et l'Italie; en 1774 et 1775*. 3 vols., Berlin 1777-1779, I: 121-210.

10 On the Alps and the sublime, see Paola Giacomoni: *Il Laboratorio della Natura. Paesaggio montano e sublime naturale in età moderna*. Milano 2001, and Gabriella Belli, Paola Giacomoni, Anna Ottavia Cavina: *Montagna. Arte, scienza, mito da Dürer a Warhol*. Milano 2003. An early patriotic statement connecting

national pride and republicanism may be found in Johann Georg Zimmermann's *Von dem Nationalstolze*. Zürich 1758, 210 where he wrote: «Der gerechte, der erlaubte und vernünftige Nationalstolz ist in den Republiken die Liebe des Vaterlandes, und die Liebe des Vaterlandes ist der eigentliche Nationalstolz». See also pp. 177 and 128-131. On the *Helvetic Society*, see Ulrich Im Hof, François de Capitani: *Die Helvetische Gesellschaft*. 2 vols, Frauenfeld, Stuttgart 1983.

11 See, e. g., Wilhelm Stieda: *Johann Albrecht Euler in seinen Briefen 1766-1790: ein Beitrag zur Geschichte der Kaiserlichen Akademie der Wissenschaften in St. Petersburg*. Leipzig 1932. Samuel-Auguste Tissot's (1728-1797) work, *Essais sur les moyens de perfectionner les études de médecine*. Lausanne 1785, was occasioned by the request (February 1782) made by Count Carlo Firmian (1718-1782), plenipotentiary minister of Lombardy, to Tissot to express his views on medical teaching and hospital organization when he was teaching at Pavia University.

12 Johann Jacob Scheuchzer: *De Nostalgia*. In: *De Bononiensi Scientiarum et Artium Istituto atque Accademia Commentarii*, 1 (1748), 85-88, 307-313.

13 Urs Boschung et al. (ed.): *Repertorium zu Albrecht von Hallers Korrespondenz 1724-1777*. 2 vols. Basel 2002, I: 593.

14 Karl Bopp (ed.): *Leonhard Eulers und Johann Heinrich Lamberts Briefwechsel*. Berlin 1924.

15 Max Steck: *Bibliographia Lambertiana*. Hildesheim 1970.

16 Francesca Bianca Crucitti Ullrich: *La «Bibliothèque italique». Cultura «italianisante» e giornalismo letterario*. Milano, Napoli 1974.

17 David M. Bickerton, Marc-Auguste and Charles Pictet: *The «Bibliothèque britannique» (1796-1815) and the dissemination of British literature and science on the continent*. Genève 1986.

18 [Leonhard Euler:] *Rettung der göttlichen Offenbarung gegen die Einwürfe der Freygeister*. Berlin 1747; republished in Euler's *Opera omnia*. III/12. Zürich 1960, 267-286. For a list of the various translations and editions of this

work, see Euler's *Opera omnia*. III/11. Zürich 1960, lxxi. [Albrecht von Haller:] *Briefe über die wichtigsten Wahrheiten der Offenbarung*. Bern 1772; [Id.:] *Briefe über einige Einwürfe noch lebender Freygeister wider die Offenbarung*. 3 vols. Bern 1775-1777. For a list of the various editions and translations of these works, see Hubert Steinke, Claudia Profos (ed.): *Bibliographia Halleriana*. Basel 2004, 59-64.

19 Haller's extreme struggle is evident in [Johann Georg Heinzmann (ed.):] *Albrechts von Haller Tagebuch seiner Beobachtungen über Schriftsteller und über sich selbst*. 2 vols. Bern 1787, II: 219-319.

20 Paul Gottlieb Werlhof: *Gedichte*. Hannover 1749, 121.

21 See, e. g., the following statements made in 1746 by Johannes Gessner: «Es ist unser Vorhaben die Natur recht kennen zu lernen, und diese Erkenntniß zu nützlichem Gebrauch anzuwenden. Verhoffentlich kann niemand seyn, der nicht unsern Entschluß guteissen werde, indem wir die körperliche Geschöpfe, oder die Werke des weisen Schöpfers betrachten, und die von ihm angeordnete Gesetze, nach welchen derselben Wirkungen erfolgen. Wir sind überzeugt, dass er alles auf das beste gemacht; es ist also nichts das uns könnte ein Vergnügen gewähren welches mehr begründet oder dauerhafter seyn sollte. Wir lernen hier die natürliche Gottsgelahrtheit durch die überzeugendste Erfahrungen von der Weisheit, Güte, und Allmacht des Schöpfers, und werden zugleich zu wahrer Ehrfurcht und brünstiger Liebe gegen ihm angestammt, und bey allen Vorwürfen welche uns die Natur darbietet auf die wahre Tugendbahn geleitet.» Quoted from his *Entwurf von den Beschäftigungen der Physicalischen Gesellschaft, oder von den Wissenschaften, welche sich dieselbe zu behandeln vornimmt*. In: *Abhandlungen der Naturforschenden Gesellschaft in Zürich*, 3 (1766), 1-22, here 3 f. (this paper was read in 1746 but published in 1766).

22 Renato G. Mazzolini, Shirley A. Roe: *Science against the unbelievers: The correspondence of Bonnet and Needham, 1760-1780*. Oxford 1986.

23 Jean-André De Luc: *Lettres physiques et morales sur l'histoire de la terre et de l'homme, adressées à la Reine de la Grand Bretagne*. 5 vols. in 6 parts. Paris, La Haye 1779-1780; Martin J. S. Rudwick: *Bursting the limits of time: The reconstruction of geohistory in the Age of Revolution*. Chicago, London 2005, 150-158.

24 Nicolaus I Bernoulli: *Dissertatio inauguralis mathematico-juridica de usu artis conjectandi in jure*. Basel 1709; Jakob I Bernoulli: *Ars conjectandi, opus posthumum. Accedit Tractatus de seriebus infinitis, et Epistola Gallicè scripta De ludo pilae reticularis*. Basel 1713. Both works are republished in David Speiser, Joachim Otto Fleckenstein (ed.): *Jacob I Bernoullis Werke*. Vol. 3. Basel 1975, 107-286, 287-326.

25 [Albrecht von Haller:] *Usong. Eine morgenländische Geschichte in vier Büchern*. Bern 1771; Id.: *Alfred, König der Angel-Sachsen*. Göttingen, Bern 1773; [Id.:] *Fabius und Cato: ein Stück der römischen Geschichte*. Bern, Göttingen 1774.

26 Abraham Trembley: *Instructions d'un père à ses enfans, sur la nature et sur la religion*. 2 vols. Genève 1775; Id.: *Essai sur la vérité, la liberté, le souverain, la patrie, la religion, le bonheur*. 2 parts, Genève 1777-1779.

27 Renato G. Mazzolini: *Discorsi e scritti politici di Charles Bonnet negli anni della crisi ginevrina (1762-1768)*. In: *Annali dell'Istituto storico italo-germanico in Trento*, 13 (1987), 353-410.

28 On the relevance of tolerance as a way to overcome religious conflicts, see Johann Georg Zimmermann: *Über die Einsamkeit*. 4 vols. Leipzig 1784-1785. In the early eighteenth century these conflicts were still evident. For instance, in writing about botanising to Augustus Quirinus Rivinus (1652-1723), Scheuchzer stated: «Anderer Meinung und Veranlagung allerdings sind die meisten Ärzte in den papistischen Kantonen der Schweiz, die sich keinen Pfifferling um die Botanik kümmern, obwohl sie am Fuß der Berge und Alpen wohnen. Statt die vor ihrer Nase liegenden Berge zu besteigen, schauen sie dieselben kaum an, geschweige denn, dass sie diese wundervolle Gelegen-

heit, zu botanisieren, mit beiden Händen gierig erfassen. Sie hätten es meiner Ansicht nach ganz und gar verdient, dass sie aus dem Kräutergarten, in dem sie wohnen, quasi als Geistesgestörte hinausgeworfen würden, um Platz zu machen für andere, forschbegierigere und die Botanik pflegende Ärzte.» Quoted from Rudolf Steiger: *Johann Jakob Scheuchzer (1672- 1733). I. Werdezeit (bis 1699)*. Zürich-Selnau 1927, 80 f. Swiss Catholic

natural philosophers were few, but some of them quite significant as in the case of Moritz Anton Kappeler (or Cappeller) (1685- 1769), who authored *Prodromus crystallographiae de crystallis improprie sic dictis commentarium*. Luzern 1723, and *Pilati montis historia in pago Lucernensi Helvetiae siti*. Basel 1767.

29 John R. Baker: *Abraham Trembley scientist and philosopher 1710-1784*. London 1952, 218-240.