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The tools used for teaching dermatology throughout history

Dermatology is the study of skin diseases. This is a full medical specialty since the end of the eighteenth century. In the course of the nineteenth century the three major schools of dermatology were in London, Paris and Vienna, according to the languages used to teach it. The first textbook of dermatology dates 1572 and was Italian, written by Girolamo Mercuriale. It was followed by the beginning of the eighteenth century by two textbooks written in English by Turner and Willan. In 1817, Bateman's was the first atlas of dermatology, enriched for the first time by engravings. A while later, Alibert was publishing a similar atlas written in French. In German-speaking countries, the first atlas was only published in 1856 in Vienna by Ferdinand von Hebra. In the meantime, moulages (mouldings) were another popular and very artistic way of teaching dermatology. They were mainly used in Europe, and we still possess various valuable collections in different places. Photography was first described in 1839 and used for the first time in medicine in 1845 by Donné in a textbook of bacteriology. In 1864 photography started to be applied to dermatology, and more and more books were published which were including photographs. From 1935 onward, the invention of diafilms permitted having the dermatological pictures on slides which could be easily projected to a great number of persons at the same time. In 1838 was published the first Journal of Dermatology in German, which was followed by analogues in French, Italian and English languages. The next and last revolution in the tools for teaching dermatology was the occurrence of Internet, mainly in 1995. This permits instantaneous connection, updating and sharing of knowledge all around the world. All the books and journals have now their electronic version, accessible by anybody anywhere. This is also the technical support for teledermatology.

Key words

Dermatology, teaching, textbook, atlas, moulage, photographs, internet, teledermatology.

Dermatology is the study of skin diseases. This is a medical specialty, i. e. a deepening of the medical knowledge occurred from the time when the magnitude of the knowledge regarding the skin was sufficient for keeping fulltime busy physicians.

From the beginnings of medicine skin diseases loomed large in the earliest literature of Egypt, and continued to be described right through Grecian, Roman and Arabic medicine [1].

The history of dermatology during the period between 1500 and 1750 is that of rapid increase in knowledge through the investigations of great physicians such as Paracelsus, Fernel, Falloppio, Mercuriali or Ambroise Paré [1]. In the seventeenth century, with the invention of the microscope, Jean Astruc (1684–1766) was able to identify the different structures constituting the skin, and can be considered as the founder of modern dermatology. About the same time in Great Britain, Daniel Turner (1667–1740) could be regarded as the founder of British dermatology, although Robert Willan (1757–1812), who followed at the end of

the eighteenth century, is the accepted holder of this title [1].

Pre-eminence of dermatology also went to France at that time, the old St. Louis Hospital in Paris becoming a dermatological hospital. Emerging from it appeared a group of brilliant dermatologists such as Jean-Louis Alibert (1768–1837), Laurent-Théodore Biétt (1781–1840), Pierre Rayer (1793–1867), Pierre-Louis Cazenave (1802–1877) or Ernest Bazin (1807–1878).

In Germany, dermatology developed from the beginning of the nineteenth century, the most famous dermatologist in this period being probably J.L. Schönlein (1790–1864). At the same time Vienna became a centre of medical teaching, and Ferdinand von Hebra (1816–1880) was the most brilliant dermatologist of his time, with Moritz Kaposi (1837–1902) directly succeeding Hebra's chair of dermatology. In Italy, dermatology was almost absent during the first half of the nineteenth century, except maybe through Francesco Bianchi and really developed in the second part of this

DE
MORBIS CUTANEIS.
ET
OMNIBVS CORPORIS HVMANI
EXCREMENTIS
TRACTATVS

Locupletissimi, variaque doctrina referti, non solum Medicis,
verum etiam Philosophis magnopere utiles,

EX ORB

HIERONYMI MERCVRIALIS
*Medici clarissimi diligenter excepti, atque
in Libros Quinque digesti.*

OPERA PAVLI AICARDII.

Quibus accessit alius libellus de DECORATIONE ex eiusdem
MERCVRIALIS Patavinis praelectionibus exceptus, & in
capita redactus à LVLIO MANCINO.



VENETIIS, APVD IVNTAS.
MDCXXV.

Fig. 1. «De Morbis cutaneis», the first textbook of dermatology ever published

century around famous practitioners such as Pietro Gamberini or Achille Breda. Hence, the history of dermatology can only be divorced from the history of medicine since the end of the eighteen century.

Pedagogic tools for teaching dermatology

Textbooks of dermatology

In 1572, Girolamo Mercuriale (1530–1606) of Forlì, Italy, completed *De morbis cutaneis* (translated «On the diseases of the skin») [2], which is known as the first scientific work to be dedicated to dermatology, and was published in Venice (Fig. 1). Its first part was encompassing hair diseases (effluvium, alopecia, lice and tinea) while the second part was describing whole body diseases such as pruritus, scabies, leprosy and lichen. In 1799, Francesco Bianchi wrote the book *Dermatologia* which is the first comprehensive textbook of modern dermatology written for the students of medicine [3]. Englishman Daniel Turner's *De morbis cutaneis* [4], published 1714, was the first full book in English — despite the title — dedicated to the subject of skin diseases. This pioneering work paved the way for the medical specialty of dermatology, and was very complete with 524 pages in total (Fig. 2). Robert

DE MORBIS CUTANEIS. *Rebb*

A
TREATISE
OF
DISEASES

John Incident to the *Crawford*
SKIN.

In TWO PARTS.

WITH
A short APPENDIX concerning the
Efficacy of Local Remedies, and the
Manner of their Operations.

By DANIEL TURNER,
of the College of Physicians, London.

The THIRD EDITION Revised and
very much Enlarged.

LONDON:

Printed for R. and J. BONWICK, J. WALTHOE,
R. WILKIN, and T. WARD,
M, DCC, XXVI.

18289

Fig. 2. «De morbis cutaneis», the first textbook of dermatology written in English

Willan (1757–1812) possibly made the greatest historical contribution to dermatology at that time through his rigorous classification of skin diseases. He identified eight categories of disease: papulae, squamae, exanthemata, bullae, pustulae, vesiculae, tubercula, and maculae, and based on this work, published in 1808 *On cutaneous diseases* [5]. In his preface he hopes that *the book «will be acceptable to the public, since it is generally acknowledged that the arrangement, description, and treatment of [the cutaneous diseases], form a part of medical science which has not been sufficiently cultivated. Few of the writers after Avicenna have given any information, on this subject, from their own observation and experience»*. Unfortunately, Robert Willan wasn't able to complete his work. Suffering from tuberculosis, he moved to Madeira for its more favourable climate, although he died there six months later. After Willan's death other writers — most notably his protégé Thomas Bateman (1778–1821) — finished compiling the categories of disease. Bateman's *A practical synopsis of cutaneous diseases according to the arrangement of Dr Willan* [6] was first published in 1813, and it became a hugely important textbook. It completed Willan's earlier work, while it also contained material original to Bateman himself.

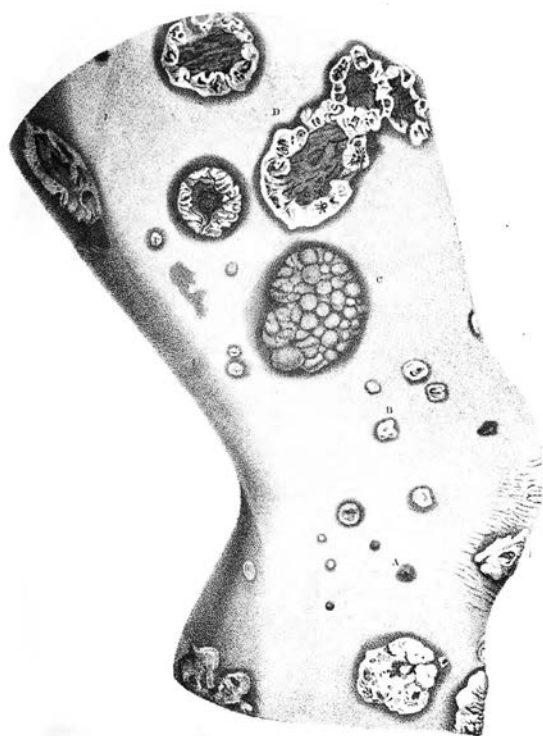


Fig. 3. *Leprosy vulgaris* in «Cutaneous diseases based on the classification of the late Dr Willan». Bateman, 1817

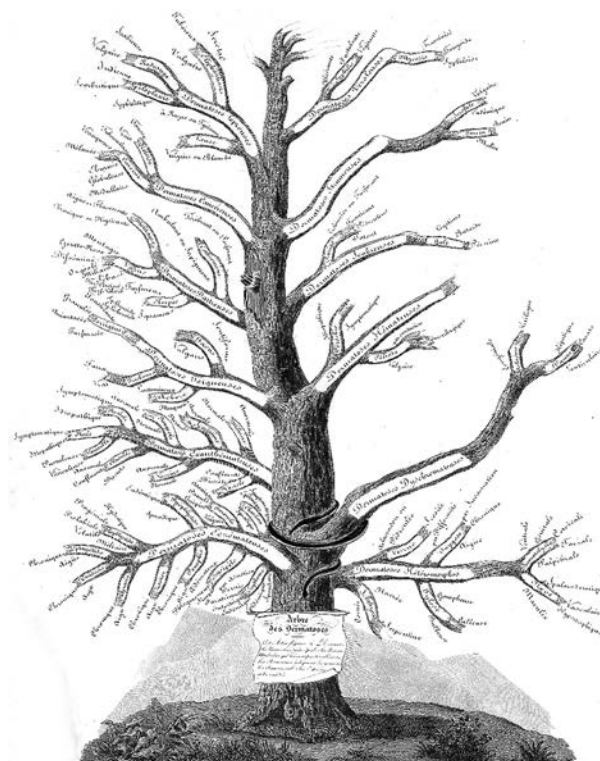


Fig. 4. *Dermatosen tree* in «Clinique de l'Hôpital St. Louis ou traité complet des maladies de la peau». Alibert, 1833

Atlases of dermatology

Till now, all the books previously published were rigorously textbooks and did not include pictures. Bateman reiterated in 1817 with *Cutaneous diseases based on the classification of the late Dr Willan* [7]. For the first time this book was enriched by a series of engravings from that author which were completed by comprehensive explanations for each plate (Fig. 3). Bateman's work was really the first atlas of dermatology ever published. In dermatology more than in any other medical specialty, iconography, and even imagery, play a leading role. All illustration methods were utilized to reproduce skin lesions for educational and scientific purposes. However, it is important to remember that despite the immediate visibility of the lesions that distinguishes cutaneous pathology of pathology of internal organs, the illustration is not enough for the description nor teaching [8]. As the French school was developing at St. Louis Hospital in Paris, J.L. Alibert who was titular of the chair of dermatology, published in 1825 a first grand in-folio titled *Description des maladies de la peau observées à l'Hôpital Saint-Louis* (Description of the skin diseases observed at St. Louis hospital) which was presumably the first atlas of dermatology in French language [9]. It was illustrated with 53 colour engravings, and the classification used was that inherited from the ancient authors, i.e. first the

scalp diseases followed by the whole body ones. He reiterated in 1833 with his major work, *Clinique de l'Hôpital St. Louis ou traité complet des maladies de la peau* [10] (Clinic of St. Louis hospital or complete compendium of skin diseases). It featured a grand in-folio comprising 481 pages, divided in six sections: overview of skin diseases; modifications to dermatoses caused by age, sex, mood, seasons and climate; causes influencing the development of skin diseases; physiological phenomena revealed by the study of dermatoses; general considerations about treatments; and methodology of writing.

Sixty-three engravings were part of this book, the most famous being certainly the *Dermatosen tree* (Fig. 4). In German-speaking countries, Ferdinand Von Hebra is considered as the founder of classical dermatology. Hebra was born in Moravia, and received his medical degree from University of Vienna. He published in 1856 *Atlas der Hautkrankheiten* [11] (Atlas of skin diseases), which was the first atlas of dermatology published in German language. It was including over one hundred engravings depicting various skin conditions.

Most of them were very realistic, for instance the whole body tattoo displayed in Fig. 5.

Since then, atlases were widespread and exist in most languages. They probably still constitute to date one of the most essential tools for teaching dermatology.



Fig. 5. **Body tattoo in «Hautkrankheiten».** Von Hebra, 1856



Fig. 6. **Polymorphous acne.** Moulage. St. Louis Hospital Museum



Fig. 7. **Neurofibromatosis. Moulage.** St. Louis Hospital Museum

Moulages

Moulage (French: casting/moulding) is the art of applying mock injuries for the purpose of training medical students. The modelling of the soft parts of dissections, teaching illustrations of anatomy, was first practised at Florence during the Renaissance. The practice of moulage, or the depiction of human anatomy and different diseases taken from directly casting from the body using (in the early period) gelatine moulds, later alginate or silicone moulds, used wax as its primary material (later to be replaced by latex and rubber) [12].

Wax anatomical models were first made by Gaetano Giulio Zumbo (1656–1701) who first worked in Naples, then Florence, and finally Paris. Later, Jules Baretta (1834–1923) made more than 2000 splendid wax models in Hospital St. Louis, Paris, where more than 4000 wax models were collected (Fig. 6 and 7). Moulages were very useful during decades for the education of dermatologists around the world, but were eventually replaced by colour photographs and slides. There are still significant and beautiful collections of moulages in museums, mostly in Europe. The most complete and astonishing is certainly that held at St. Louis Hospital, Paris, France, with more than 4000 pieces. Let's also mention the collections of Andreas Syngros Hospital in Athens, Greece (1660 pieces), Dermatology Clinic in Wrocław, Poland (313 pieces), Erlangen, Germany (136 pieces), Kiel, Germany (455 pieces), Tübingen, Germany (around 200 pieces), Zürich, Switzerland (around 1200 pieces) and San Juan de Dios Hospital in Madrid (850 pieces).

Photography in dermatology

The first workable photographic processes were publicized on 7th January 1839, in a report to the

French Academy of Sciences by the physicist Arago. He described the work of Daguerre and Niepce (although Daguerre received the majority of the credit since Niepce had died in 1833) [13]. The first application of photography to medicine appears to be in the field of photomicrography, where Alfred Donné (1801–1878), a bacteriologist, was reported to have exhibited the apparatus for making individual daguerreotypes [13]. He published in 1845 his *Cours de microscopie* [14] (Lessons of microscopy) copying there his eighty-six photomicrographs (Fig. 8). Alexander John Balmanno Squire (1836–1908) was apparently the first dermatologist applying photography to his science, around 1864. From 1864 to 1866, he published in series *Photographs (coloured from life) of the diseases of the skin* [15] (Fig. 9). This was the first photographic atlas in dermatology. In 1868, Balmanno Squire published *A manual of the diseases of the skin* [16] which was a textbook of dermatology illustrated by thirteen photographs in colour, most of them previously published in his first work, and thirteen wood engravings. In the same period, Alfred Hardy (1811–1893), Head of Dermatology at St Louis hospital in Paris, committed to one of his residents, A. de Montmeja, the project of adapting the new technic of photography to dermatology. They published together *Clinique photographique de l'hôpital St Louis* [17] in 1868. This is a complete textbook of dermatology richly illustrated by fifty photographs retouched at hand to add them colour.

In the history of dermatology, we find an outstanding example of scientific collaboration of leading dermatologists leading to an international publication in the late 19th century [18]. Published by Malcolm Morris, Paul Gerson Unna, Henry-

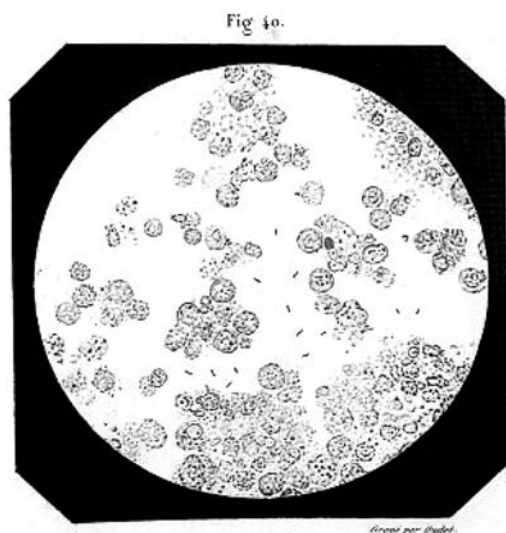


Fig. 8. Pus from a syphilis lesion, in «Cours de Microscopie», Donné, 1845



Fig. 9. Squamiae in psoriasis. In «Photographs (coloured from life) of the diseases of the skin». Balmanno Squire, 1864

Camille Chrysostome Leloir and Louis Adolphus Duhring in the «International Atlas of Rare Skin Diseases» focused on rare and unique cases in dermatology. Numerous first descriptions are found in the «International Atlas», such as porokeratosis of Mibelli, acanthosis nigricans of Pollitzer and Janovsky and also psorospermiosis of Darier. Since then, from the beginning of the twentieth century, with the progress of photography, appeared the first colour atlas of dermatology which are now widespread. In parallel, from 1935 onward, appeared the reversal film, a type of photographic film that produces a positive image on a transparent base. The film is processed to produce transparencies or diapositives (abbreviated as «diafilm» in many countries) instead of negatives and prints. This permitted having the dermatological pictures on slides which could be easily projected to a great number of persons at the same time.

During the second half on the twentieth century this was the preferred tool for teaching dermatology and communicating in congresses, till the advent of computers.

Journals of dermatology

Of course, during the nineteenth century the newspapers were very common and popular, as they brought everyday news to the people. It is not surprising that the dermatological community thought about this media of communication for spreading knowledge to his members and transmitting all the discoveries made in this golden period of dermatology.

For this reason, medical periodicals specialized in dermatology and sexually transmitted diseases

were first published during the second half of the nineteenth century. Their goal was to promote the diffusion of medical knowledge, among specialists (clinical research), as well as towards general practitioners (medical education). The first of these dermatological journals was *Syphilidologie*, founded in 1838 in Leipzig by Friedrich Jacob Behrend. *Annales des maladies de la peau et de la syphilis*, the first truly dermatological journal, was published in Paris from August 1843 to 1852 by Alphée Cazenave and *Annales de dermatologie et de syphiligraphie*, founded in Paris in 1868 by Adrien Doyon, is still published now. *Giornale italiano delle malattie veneree e delle malattie della pelle*, was founded in 1866 in Milan by Giovanni Battista Soresina. *Journal of cutaneous medicine and diseases of the skin*, created in London in 1867 by Erasmus Wilson, lasted only four years but was later relayed by the *British Journal of Dermatology* which was established in 1888. *Archiv für Dermatologie und Syphilis*, was first published in Prague in 1869 by Heindrich Auspitz and Filipp Josef Pick. The *American Journal of Syphilography and Dermatology*, the first non-European dermatological periodical at that time, was created in 1870 in New York by Morris H. Henry. Since then, the journals of dermatology have flourished elsewhere, and almost any national society has created its own communication tool [3, 19].

The revolution of internet

The Internet is the global system of interconnected computer networks that use the Internet protocol suite (TCP/IP) to link billions of devices worldwide. Research into packet switching started timidly in the early 1960s, but since 1995 the Internet

has tremendously impacted culture and commerce, including the rise of near instant communication by email, instant messaging, telephony, two-way interactive video calls, and the World Wide Web with its discussion forums, blogs, social networking, and online shopping sites. Obviously, this has changed the face of teaching dermatology, and since then, all medical and dermatological libraries are equipped with computers and internet connections. Visiting in 2016 such libraries, one cannot see any more students or teachers working on hard copies of books or magazines, but rather in front of their computer. Of course, all the books and journals have now their electronic version, which permits consulting them online and without need of waiting the reception of hard copy. This permits an immediate access to much information, which can be instantaneously updated.

Teledermatology

Teledermatology is a subspecialty in the field of dermatology and probably one of the most common applications of telemedicine and e-health. In teledermatology, telecommunication technologies are used to exchange medical information over a distance using audio, visual and data communication. The dermatologists Perednia and Brown were the first to coin the term «teledermatology» in 1995. In a scientific publication, they described the value of a teledermatologic service in a rural area underserved by dermatologists [20]. Besides its role in

healthcare, which is not a topic for this paper, Medical education/continuous education are a major advantage of telemedicine/e-health. Numerous universities offer online courses, computer based training and Web applications in this field principally aimed at medical students. Specialist training courses via internet are also available, particularly in dermoscopy. General medical/health information may be accessed by non-professionals, such as individuals affected by a skin condition, and their relatives, through the internet. They are also able to join peer support groups with others affected by the same condition.

Conclusions

Dermatology was born, as a full medical specialty, at the beginning of the nineteenth century, merely two centuries ago. In spite of this short period of time, compared to the millenaries that accounts medicine, there was a tremendous evolution in the ways of teaching it and the tools used for this purpose. The textbooks used at the origin of the specialty for teaching dermatology were rapidly enriched with engravings, and further photographs in order to depict the symptoms and diseases. Regular specialized publications appeared in the course of the second half of the nineteenth century, which are now replaced by electronic versions accessible by anybody at any time with a constantly updated content. Teledermatology is now a routine in our practice. Which will be the next step?

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К. Діа

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Матеріали, що використовуються в навчанні дерматології протягом усієї історії

Дерматологія — це вивчення шкірних захворювань. Вона є повноцінною медичною спеціальністю з кінця XVIII ст. У XIX ст. три основні школи дерматології знаходилися в Лондоні, Парижі та Відні, якщо судити з того, якими мовами її викладали. Перший підручник з дерматології був написаний Джироламо Меркуріале в Італії у 1572 р. Потім на початку XVIII ст. з'явилося два підручники англійською мовою, написані Тернером (Turner) та Уїланом (Willan). У 1817 р. вийшов перший атлас з дерматології з гравюрами (автор Бейтман (Bateman)). Через деякий час Аліберт (Alibert) видав подібний атлас французькою мовою. Перший атлас у німецькомовних країнах був опублікований лише в 1856 р. у Відні Фердинандом фон Гебра (Ferdinand von Hebra). У той же період ще одним популярним і майстерним способом навчання дерматології були муляжі. Вони використовувалися переважно в Європі, і деякі цінні колекції таких муляжів збереглися до наших днів у різних місцевостях. Фотографія вперше була описана в 1839 р. і вперше використана в медицині в 1845 р. вченим Донне (Donné) у підручнику з бактеріології. У 1864 р. фотографія стала застосовуватися в дерматології, і згодом почали публікувати все більше й більше книг, що містили фотографії. Починаючи з 1935 р., винахід діафільмів дав змогу робити дерматологічні фотографії на слайдах, які можна було легко проектувати для великої кількості осіб одночасно. У 1838 р. було опубліковано перший дерматологічний журнал німецькою мовою, за яким вийшли аналоги французькою, італійською та англійською мовами. Наступна й остання революція в інструментах для навчання дерматології відбулася в 1995 р. з появою Інтернету, який дає змогу миттєвого підключення, оновлення та обміну знаннями по всьому світу. Всі книги й журнали тепер мають електронну версію, доступну для всіх у будь-якому місці. Це також є технічною підтримкою теледерматології.

Ключові слова: дерматологія, навчання, підручник, атлас, муляж, фотографії, Інтернет, теледерматологія.

К. Діа

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Материалы, используемые в обучении дерматологии на протяжении всей истории

Дерматология — это изучение кожных заболеваний. Она является полноценной медицинской специальностью с конца XVIII в. В XIX в. три основные школы дерматологии находились в Лондоне, Париже и Вене, исходя из того, на каких языках ее преподавали. Первый учебник по дерматологии был написан Джироламо Меркуриале в Италии в 1572 г. Затем в начале XVIII в. появилось два учебника на английском языке, написанные Тернером (Turner) и Уиланом (Willan). В 1817 г. вышел первый атлас по дерматологии с гравюрами (автор Бейтман (Bateman)). Через некоторое время Алиберт (Alibert) издал подобный атлас на французском языке. Первый атлас в немецкоязычных странах был опубликован только в 1856 г. в Вене Фердинандом фон Гебра (Ferdinand von Hebra). В тот же период еще одним популярным и качественным способом обучения дерматологии были муляжи. Они использовались в основном в Европе, и некоторые ценные коллекции таких муляжей сохранились до наших дней в разных местностях. Фотография впервые была описана в 1839 г. и впервые использована в медицине в 1845 г. ученым Донне (Donné) в учебнике по бактериологии. В 1864 г. фотография стала применяться в дерматологии, и со временем все больше и больше книг содержали фотографии. Начиная с 1935 г., изобретение диафильмов позволило делать дерматологические фотографии на слайдах, которые можно было легко проектировать для большого количества людей одновременно. В 1838 г. был опубликован первый дерматологический журнал на немецком языке, после которого вышли аналоги на французском, итальянском и английском языках. Следующая и последняя революция в инструментах для обучения дерматологии состоялась в 1995 г. с появлением Интернета, который позволяет мгновенное подключение, обновление и обмен знаниями по всему миру. Все книги и журналы теперь имеют электронную версию, доступную для всех людей в любом месте. Это также является технической поддержкой теледерматологии.

Ключевые слова: дерматология, обучение, учебник, атлас, муляж, фотографии, Интернет, теледерматология.

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