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**SYMPOSIUM: BRONCHOSCOPY AND ESOPHAGOSCOPY.
THEIR INDICATIONS AND CONTRA-INDICATIONS.**

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SECOND PAPER:—DOCENT OTTO KAHLER, Vienna.

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THE HISTORY OF BRONCHOSCOPY AND ESOPHAGOSCOPY.*

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It is a matter of pleasure and satisfaction to contemplate the remarkable development of the direct methods of examination of the upper-air tract. Not only may this be regarded as an important progress in laryngology, but the entire field of medical science has been influenced by this research.

By its aid our specialty has been thoroughly rejuvenated and has received an impetus to develop along broader lines.

The progress of laryngology has not only found recognition in medical circles by its means, but the laity has also awakened to its advancement.

We are only in the beginning of its development. A vast amount of material has accumulated which must be tested, observed and arranged. Day by day this scientific data increases so that it will soon be difficult to keep pace with it. It was quite an undertaking to conscientiously gather the complete literature; the time was too

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limited to attempt a detailed analysis. I present to-day, therefore, a general review. A more detailed consideration of this field will be developed by my confrères.

From the time that Kussmaul (1868), and v. Mikulicz (1881), first took up the question of esophagoscopy and gastroscopy until the end of the year 1910, 410 publications on esophagoscopy and 34 on gastroscopy have appeared. Direct laryngo-trachea-bronchoscopy, first developed by Kirstein, in 1895, and Killian, in 1896, has already produced 672 publications; an aggregate, therefore of 1,116 articles have appeared.

I desire to present a brief review of the subject as participated in by the various countries:

Of the 410 publications on esophagoscopy, 351 have appeared in Europe, 58 in America and 1 in Japan. The European countries have participated in varying proportion to their size, the numerical strength of their laryngologists and the interest which they have developed in this new field. Germany leads with 116 publications, France 76, Austria 51, and Spain with 46. In contrast to this, some countries show a less active participation: England 13, Russia 10, Italy 9, Belgium 7, Hungary 6, Denmark 5, Sweden and Norway 5, Holland 4, and Switzerland 3.

Of the 34 publications on gastroscopy, Germany leads with 18, Britain 5, United States 5, Austria 3, France 2, and Hungary 1.

Direct laryngo-tracheo-bronchoscopy has also found in Germany its leading advocate, 198 publications. American colleagues have here been very active as their 119 publications indicate; then France 96, Austria 83, and Spain 42. The other countries soon realized the significance of this new method: England 24, Russia 22, Belgium 15, Hungary 14, Sweden and Norway 12, Italy 12, Denmark 10, Holland 8, Switzerland 5, Chile and Argentine 9, Japan 3.

We may acquire a better idea of the way in which the development in this field has been accomplished if we analyze the work annually of the several authors in various countries.

Esophagoscopy began in the year 1868, with one publication, 2 in 1881, 2 in 1882, 1 in 1887, 3 in 1889, 1 in 1893, and 2 in 1894. From 1895 the development became more active, yet not until 1901 did marked activity begin. There were 6 publications in 1895, 9 in 1896, 9 in 1897, 10 in 1898, 8 in 1899, 7 in 1900 and 11 in 1901.

In 1902 an appreciable and distinct increase in interest and scientific data was developed, due, no doubt, to the advent of bronchoscopy.

Bronchoscopy was so unusually effective in the extraction of foreign bodies that old and young workers were stimulated to efforts not restricted alone to the upper-air passages, but to the digestive tract where there was more occasion for its application.

In 1902 there were 17 publications on esophagoscopy, 11 in 1903, 15 in 1904, 26 in 1905, 21 in 1906, 33 in 1907, 60 in 1908, 81 in 1909 and 75 in 1910.

This unusual development of esophagoscopy is due to the laryngologists. While this work was still in the hands of isolated surgeons and internists and the laryngologists remained disinterested, it was of little importance. Not until the laryngologists earnestly participated in this work did it become of general value, general interest and unusual importance. Step by step this method of examination was applied to the entire field of diseases of the esophagus and, like the laryngoscope, disclosed many affections in the living which had previously only been recognized in post-mortem.

I am not prepared to predict the outcome of gastroscopy. This difficult technic is but in its infancy and must develop a more practical form of application before it can be of general service.

It is interesting to note the fact that direct examination of the air-passages made active strides only after 1902.

In 1902, 18 articles appeared, 21 in 1903, 32 in 1904. This was but a forerunner to the following number of increased publications: 81 articles on laryngo-tracheo-bronchoscopy were published in 1905, 58 in 1906, 75 in 1907, 99 in 1908, 119 in 1909, 18 in 1910. The development of direct examination of the air-passages has been more active than that of esophagoscopy and has materially influenced the latter.

The unusually rapid progress is explained by the fact that in certain years other countries participated actively in this work and we may now say that this method has been disseminated throughout the world and has become one of the valuable medical accessories; it has disclosed the larynx to the eye and to the hand in an entirely new aspect and has actually revealed the trachea and bronchi for the first time. To remove a foreign body in a direct way from a bronchus of the second and third caliber, seemed impossible; to the practiced hand it is now not a difficult task.

We obtain a broader insight into the entire literary movement called forth by the direct method when we consider separately the publications according to time, countries and authors. Even if we

ascribe to Kussmaul the first direct esophago-gastroscopy in Germany, we are obliged to attribute its practical solution to Austria.

In Vienna, v. Mikulicz solved the problem in 1881. Stoerk (1887), devoted especial attention to it and v. Hacker (1889), carried it to such completion that it became of use in practice. Except in Germany, this work aroused but slight notice. (See Baratoux, 1882).

Von Hacker championed the new and splendid work and his ever-improving results removed every doubt. For years he stood alone for the cause in Vienna, supported only by Stoerk and his school (Ebstein). Comparatively late others followed his example, such as Harmer and Lotheisen. Until 1908, however, even with the cooperation of H. von Schroetter, esophagoscopic literature was but meager. From 1908, work in this field became more active in Austria. (Six publications in 1908, 5 in 1909, 6 in 1910).

The first articles of v. Hacker (1889), created a deep impression in Germany. This became more pronounced (excepting the publication of Loewe, in 1893), with the active work in esophagoscopy by Rosenheim, in Berlin. His numerous writings appear until the recent period. Ewald, Kelling, Gottstein, Kirstein, and since 1899, G. Killian, follow. The number of esophagoscopic writings from 1895 to 1903 averaged between five and ten annually.

The first kindred in America was that of Max Einhorn, in 1897. This was followed by Gordon King, in 1899, Fletcher Ingals, in 1903, Coolidge in 1905, and especially by Chevalier Jackson, whose work not only in esophagoscopy, but also in gastroscopy, has been of such great prominence. Mention should also be made of Yankauer, Mosher, Stillmann, Large, E. Mayer and others. In 1908, publications in this field in America were doubled, fourteen, and it has maintained this ratio. In 1909, del Rio, in Chili, was the first to introduce esophagoscopy in South America.

France developed unusual activities in the direct examination of the esophagus and in the number of publications is second only to Germany.

With the exception of the work of Vallas and Duperon (1902), activities began here comparatively late, (1905). A real interest was not awakened in France, however, until attention turned to bronchoscopy and after Moure, Texier and Jacques visited me in Freiburg, as is mentioned in Brindel's Historical Treatise. Besides Garel, Brindel (1905), Béze, Valentin, Guisez above all, since 1905, has devoted himself to esophagoscopy. In France, 9 publications

appeared in 1907, 12 in 1908, 23 in 1909, 23 in 1910, which was a far greater number than appeared in any other country.

Our Spanish confrères were no less active.

Botey (1902), Tapia (1903), and Botella (1904), were warm advocates of esophagoscopy and their work competed with that of Germany. In 1906, 6 publications appeared, 8 in 1908, 11 in 1910. Among the other nations, Belgium began in 1905 (Delsaux), Switzerland in 1905 (Siebenmann), Denmark in 1906 (Schmiegelow), England (Paterson), Russia (Weglowski), 1907 Japan (Kubo), 1908 Holland (Burger), Norway and Sweden (Waller, Tetens-Hald and in the following year Holmgren and Kayser), Italy (Adjello, Cigna), 1909 Massei, Tanturri, Canalejo, Lozano. In the field of gastroscopy besides the older workers, I mention Rosenheim, Sauther, Kelling, Perl, Chevalier Jackson, Morrison, Thompson, Delande, Elsner, etc.

Let us take a similar view of direct laryngoscopy and tracheo-bronchoscopy. A separation of the two was impossible. The development of this method began in 1875, in Germany, with Voltolini and in 1888 in Austria with Pieniasek.

In 1895, Kirstein astonished the laryngological world with his direct upper laryngoscopy and was so successful that he immediately published seven articles; in the following year, 5, and in 1897 he treated the subject in four articles. In 1896, he found followers in V. Bruns and G. Killian, and in 1897, in Max Thorner (Cincinnati).

Direct laryngoscopy was productive of unusual results. In 1897, G. Killian employed it in direct tracheoscopy and its clinical application and one year later applied it in direct upper and lower bronchoscopy. This he presented in Heidelberg to the Society of South German Laryngologists, on May 29. It proved to be a marking-stone not only in this epoch-making period of the direct method, but also in the entire realm of laryngology, as clearly indicated by the unusual literary activity. Direct bronchoscopy created more enthusiasm even than direct laryngoscopy, and stirred up interest everywhere.

In Germany, Killian and his school (Wild, Henrici, v. Eicken, Just and Brünings) by their numerous publications, made a deep impression. Among co-operators may be mentioned J. Killian (Worms), Neumeyer, Helferich, Kümmel, Speiss, Noltenius, Nehrkorn, Denker, Gottstein, Kausch, Kob, Thost, Mann, E. Meyer and others. In 1905, there were 31 publications in Germany on Bronchoscopy, 12 in 1906, 18 in 1907, 14 in 1908, 23 in 1909, 33 in 1910.

The Vienna school (H. v. Schroetter Chiari, Kahler), took up bronchoscopy with great enthusiasm. In Austria, Pieniazek and Nowotny were also active participants. Since 1905, nine to thirteen published articles appeared annually.

In America, Coolidge began this work as early as 1899. Only after 1904, however, did activities begin with the efforts of Fletcher Ingals, Schmyzer, Chevalier Jackson, Mosher, E. Mayer, Yan-kauer, Clayton, Elsberg, and others. In 1908 there were 28 papers on direct examination of the air-passages published in America alone; 22 in 1909, 19 in 1910.

France, too, deserves special mention. Among the early workers in this field we find: Jaques, Garel and Cavaillon in 1901; Moure in 1902, Texier, Lermoyer and Guiser in 1903. Guiser has been unusually active in this field and has accomplished much. In 1905 there were thirteen publications on direct laryngo-tracheo-bronchoscopy in France; nineteen in 1908; sixteen in 1910.

Of the European countries participating in this work, we mention chronologically: Switzerland—Wild, Kränlein in 1902; Spain—Tapia in 1903;—Belgium, Tretrop in 1903; England—Patterson in 1904; Italy—Massei in 1904; Norway and Sweden—Lind in 1904; Japan—Okada and Yoshu; Holland—Kan in 1905; Hungary—Paunz, Winternitz, Finaly, György in 1905; Denmark—Schmiegelow in 1906; Russia—Schmidt in 1906; South America—Zamprini, Del Rio, Middleton, Quadi, Segura in 1908.

Mention should also be made of Siebenmann and Nager in Switzerland; of that active trio in Spain, Tapia, Botey and Botella, who have accomplished much in bronchoscopy, and also Compaired, Goyanes and others. In Spain, since 1907, there are eight to ten articles published annually. In Belgium, Goldschmidt, Delsaux, de Stella and Van der Wildenberg should be mentioned; in England, Brown Kelly, Tilley, Waggett, Mofat (Capetown); in Canada, Wishart; in Italy, Stazza, Tanturri, Melzi; in Norway and Sweden, Waller, Holmgren, Uchermann and Kayser; in Holland, Burger; in Hungary; Polyak; in Denmark, Mahler, Schioedte; in Russia, Mintz, Schneider, Zitowitsch, Iwanow, Rontaler.

It is certainly worthy the effort to have presented the history and evolution of this field, and enumerated every worker in chronological sequence before the activities and literature accumulated so fast as to make the task impracticable.

The time is approaching when the direct method of examination of the upper air tract will be quite a matter of routine in our work

and not an extraordinary and exceptional proceeding in selected cases. It will soon be more difficult to trace its special influence on laryngology in detail.

The history of esophagoscopy and bronchoscopy afford an excellent example of the influence on science of the introduction of a new procedure, and how rapidly in this fast-whirling age a useful innovation can make its influence felt in medical science.

The introduction of the direct method of examination of the upper air-passages is an incalculable blessing to mankind.

Removal of an Open Safety-pin from the Trachea by Upper Bronchoscopy. G. HUDSON-MAKUEN. *Jour. A. M. A.*, July 22, 1911.

Makuen reports a case of removal of an open safety-pin which had been swallowed during laughing by a girl of 13, by upper bronchoscopy. The skiagraph showed the pin in the trachea. The Jackson bronchoscope was passed into the trachea in the usual manner through the laryngoscope. The flat square head of the pin came almost immediately into view and by means of the special instruments devised originally, he thinks, by Dr. Algernon Collidge, Jr., of Boston, the distant spiral end of the pin was engaged in the ring and the pin was closed with a forked probe. When attempting to withdraw the bronchoscope and instruments with the pin attached, it was found impossible and Hudson-Makuen decided to withdraw the two instruments in the tube, first, the pin pusher and then the ring instrument, and the pin came out on the end of the ring, which snapped off on the floor before they could see how it was engaged. It was then with considerable difficulty that the glottic spasm was overcome and the tube removed from the larynx. The patient bore the anesthetic and the operation well without loss of blood or serious after effect.