

STUDIES FROM THE SARANAC LABORATORY

1835 - 1958

Volumes I. - VII.

SARANAC LABORATORY came into being in the fall of 1885.

"... I soon built a little addition off my office, and this became the laboratory in which I worked. . . the room opening from my little office, which was really the beginning of the Saranac Laboratory for the Study of Tuberculosis." An Autobiography, E. L. Trudeau, p. 187; Lea and Febiger, 1915.

"In the fall of 1885, as soon as I had equipped my little laboratory room, I began to work." *Idea*, p. 201.

First little laboratory burned in 1893.

Present Saranac Laboratory building erected in 1894.

Saranac Laboratory incorporated in 1900.

John Mack Wing: Library and Lecture room was completed in 1928; the second story was completed in 1935.



TRUDEAU FOUNDATION STUDIES

(INCLUDING SARUMAC LABORATORY STUDIES)

1917 - 1921 (Bound Volumes)

- 1917 -

#140

DEPOSITION
EXHIBIT

452

#142

The Thirty-Third Annual Medical Report of the Trudeau Sanatorium and the Thirteenth Medical Supplement for the Year Ending October 31, 1917, together with the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

PATERSON, ROBERT C. The Pleural Reaction to Inoculation with Tubercle bacilli in Vaccinated and Normal Guinea Pigs. Am. Rev. Tuberc. 1:353-371, August 1917.

SOPER, W.D. Experimental Tuberculosis of the Liver. Am. Rev. Tuberc. 1:385-403, September 1917.

- 1918 -

The Thirty-Fourth Annual Medical Report of the Trudeau Sanatorium and the Fourteenth Medical Supplement for the Year Ending October 31, 1918, together with the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis. No Sarumac Laboratory reprints included in this issue.

- 1919 -

The Thirty-Fifth Annual Medical Report of the Trudeau Sanatorium and the Fifteenth Medical Supplement for the Year Ending October 31, 1919, together with the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

LONG, HENRY (Fellow of the Trudeau Foundation). A Study in Functional Aspects of the Nutrition of the Tubercle bacillus: The Utilization of Some Amino Acids and Amino Acid Salts. Am. Rev. Tuberc. 1:101-108, April 1920.

Exhibit # 140
Anderson Co., et al. v. S. Gypsum, et al
Case # 3-83-511
EASTERN DISTRICT OF PENNSYLVANIA

TRUDEAU FOUNDATION STUDIES
(INCLUDING SAILLIAC LABORATORY STUDIES)

1917 - 1921 (Bound Volume)

- 1920 -

The Thirty-Sixth Annual Medical Report of the Trudeau Sanatorium and the Sixteenth Medical Supplement for the Year Ending October 31, 1920, together with the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

GARDNER, LEROY U. Studies on the Relation of Mineral Dusts to Tuberculosis. I. The Relatively Early Lesions in Experimental Pneumokoniosis Produced by Granite Inhalation and Their Influence on Pulmonary Tuberculosis. Am. Rev. Tuberc. 4:734-755, December 1920.

LONG, ESMOND R. (Fellow of the Trudeau Foundation). The Purine Bases of the Tubercle Bacillus. Am. Rev. Tuberc. 4:842-846, January 1921.

- 1921 -

The Thirty-Seventh Annual Medical Report of the Trudeau Sanatorium and the Seventeenth Medical Supplement for the Year Ending October 31, 1921, together with the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

BALDWIN, EDWARD R. and GARDNER, LEROY U. Reinfection in Tuberculosis: Experimental Arrested Tuberculosis and Subsequent Infections. Am. Rev. Tuberc. 5:429-517, August 1921.

TRUDEAU FOUNDATION STUDIES

(INCLUDING SANITARY LABORATORY STUDIES)

1922 - 1926 (Bound Volume)

- 1922 -

The Thirty-Eighth Annual Medical Report of the Trudeau Sanatorium and the Eighteenth Medical Supplement for the Year Ending October 31, 1922, together with the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

GARDNER, LEROY U. and EMORSE, MORRIS. Studies on the Relation of Mineral Dusts to Tuberculosis. II. The Relatively Early Lesions Produced by the Inhalation of Marble Dust and Their Influence on Pulmonary Tuberculosis. Am. Rev. Tuberc. 6: 702-727, November 1922.

GARDNER, LEROY U. Peeling by Resolution in Experimental Pulmonary Tuberculosis. Am. Rev. Tuberc. 6:163-182, May 1922.

- 1923 -

The Thirty-Ninth Annual Medical Report of the Trudeau Sanatorium and the Nineteenth Medical Supplement for the Year Ending October 31, 1923, together with the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

BAFENS, G. (Fellow of the Trudeau Foundation). Demineralization in Tuberculosis: Distribution of Calcium in the Tuberculous Guinea Pig. Am. Rev. Tuberc. 7:111-116, April 1923.

GARDNER, LEROY U. Studies on the Relation of Mineral Dusts to Tuberculosis. III. The Relatively Early Lesions in Experimental Pneumoconiosis Produced by Carborundum Inhalation and Their Influence on Pulmonary Tuberculosis. Am. Rev. Tuberc. 7:344-357, July 1923.

TRUDEAU FOUNDATION STUDIES

(INCLUDING SARANAC LABORATORY STUDIES)

1922 - 1925 (Bound Volumes)

- 1924 -

The Fortieth Annual Medical Report of the Trudeau Sanatorium and the Twentieth Medical Supplement for the Year Ending October 31, 1924, together with the Eighth Collection of the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

MAYER, EDGAR and DEORENI, MORRIS. Studies with Ultraviolet Light. I. The Effect of Quartz-Mercury-Vapor Irradiations (Alpine Quartz-Light) on Experimental Tuberculosis of the Cornea in Rabbits. *Am. Rev. Tuberc.* 10:146-155, October 1924.

MAYER, EDGAR and DEORENI, MORRIS. Studies with Ultraviolet Light. II. The Action of Quartz-Mercury-Vapor Irradiation on Inhalation Tuberculosis in Primarily Infected and Sensitized Guinea Pigs. *Am. Rev. Tuberc.* 10:157-165, October 1924.

MAYER, EDGAR and DEORENI, MORRIS. Studies with Ultraviolet Light. III. The Bactericidal Action of Mercury-Quartz-Vapor Light Irradiation. *Am. Rev. Tuberc.* 10:166-169, October 1924.

- 1925 -

The Forty-First Annual Medical Report of the Trudeau Sanatorium and the Twenty-First Medical Supplement for the Year Ending October 31, 1925, together with the Ninth Collection of the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

SARANAC, LINDA E. The Pathology of Artificial Pneumothorax in Experimental Tuberculosis. *Am. Rev. Tuberc.* 10:501-523, January 1926.

SCOTT, WILLIAM R. and DEORENI, MORRIS. Experimental Tuberculous Meningitis: Superinfection of the Meninges in Rabbits. *Am. Rev. Tuberc.* 11:200-216, May 1925.

- 1926 -

The Forty-Second Annual Medical Report of the Trudeau Sanatorium and the Twenty-Second Medical Supplement for the Year Ending September 30, 1926, together with the Tenth Collection of the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.
No Saranac Laboratory reprints in this issue.

TRUDEAU FOUNDATION STUDIES

(INCLUDING SARANAC LABORATORY STUDIES)

1927 - 1930 (Bound Volumes)

- 1927 -

The Forty-Third Annual Medical Report of the Trudeau Sanatorium and the Forty-Third Medical Supplement for the Year Ending September 30, 1927, together with the Tenth Collection of the Papers of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

SOPER, WILLIAM H., SANFSON, HOMER L. and HASKINS, CHARLES H.
Respiration Tuberculosis in Rabbits: An X-Ray Study of the Development of the Tuberculosis of Primary Infection and That of Superinfection. *Am. Rev. Tuberc.* 15:25-110, January 1927.

GARDNER, LEMUEL U. Preserving Supravital Staining with Neutral Red in Paraffin Sections of the Lung. *Proc. Soc. Exper. Biol. and Med.* 24:646-648, 1927.

GARDNER, LEMUEL U. and SMITH, DAVID T. The Origin of the Alveolar Macrophage Studied in Paraffin Sections of Lung Stained Supravitaly with Neutral Red. *Am. J. Path.* 3:441-450, September 1927.

BALDWIN, E. R., FERROFF, S. A., and GARDNER, LEMUEL U.
Tuberculosis, Bacteriology, Pathology, and Laboratory Diagnosis. Published by Lea and Febiger, 1927.

- 1928 -

The Forty-Fourth Annual Medical Report of the Trudeau Sanatorium and the Forty-Fourth Medical Supplement for the Year Ending September 30, 1928, together with the Eleventh Collection of the Papers of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.
See separate laboratory reprints in this issue.

* Separate publication; not included in the bound volume of TRUDEAU FOUNDATION STUDIES.

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TRUDEAU FOUNDATION STUDIES
(INCLUDING SARANAC LABORATORY STUDIES)

1927 - 1930 (Bound Volume)

- 1929 -

The Forty-Fifth Annual Medical Report of the Trudeau Sanatorium and the Twenty-Fifth Medical Supplement for the Year Ending September 30, 1929, together with the Thirteenth Collection of the Studies of the Edward L. Trudeau Foundation for Research and Teaching in Tuberculosis.

GARDNER, LEROY U. Studies on the Tissue Reactions to Primary Infection and Reinfection with the Tubercle Bacillus: I. A Histological Examination of the Omentum and Other Sub-peritoneal Tissues. *Am. Rev. Tuberc.* 20:201-213, August 1929.

CUMMINGS, DONALD E. Studies on Experimental Pneumokoniosis. IV. The Separation of Particulate Matter Smaller than Seven Sixes into Graded Fractions. *J. Indust. Hyg.* 11:245-256, September 1929.

GARDNER, LEROY U. Studies on Experimental Pneumokoniosis. V. The Reactivation of Healing Primary Tubercles in the Lung by the Inhalation of Quartz, Granite and Carborundum Dusts. *Am. Rev. Tuberc.* 20:833-875, December 1929.

- 1930 -

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SOPER, WILBUR E. and DUNNICK, MORRIS. Experimental Tuberculosis: Respiratory in Rabbits: II. The Protective Action of Inactivated and Living Tubercle Bacilli. *Am. Rev. Tuberc.* 21:209-222, February 1930.

GARDNER, LEROY U. Differential Cell Counts of the Peritoneal Fluid from the Normal Guinea Pig. *Proc. Soc. for Exper. Biol. and Med.* 26:672-672, 1929.

GARDNER, LEROY U. The Cellular Reactions to Primary Infection and Reinfection with the Tubercle Bacillus: II. The Cells of Peritoneal Exudate Produced by the Local Injection of Tubercle Bacilli into Normal Sensitized Guinea Pigs. *Am. Rev. Tuberc.* 22:379-411, October 1930.

WATKINS, LEROY U. Pathological Anatomy of Intestinal Tuberculosis, Chap. VI, 83-112, *INTESTINAL TUBERCULOSIS*, Brown, Lawson and Sampson, Homer L. Published by Lea and Febiger, 1930.

*Separate publication; not included in the bound volume of TRUDEAU FOUNDATION STUDIES.

SARANAC LABORATORY STUDIES*

Reprints of Scientific Papers

1931 - 1936 (Bound Volume)

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- 1931 -

- The Saranac Laboratory for the Study of Tuberculosis of the Edward L. Trudeau Foundation. Report of Director and Financial Report for the Year Ending September 30, 1931.
- GARDNER, LEROY U. and CUMMINGS, DONALD E. Studies on Experimental Pneumonokoniosis. VI. Inhalation of Asbestos Dust: Its Effect upon Primary Tuberculous Infection. J. Indust. Hyg., 13:65-81, February 1931.
- GARDNER, LEROY U. and CUMMINGS, DONALD E. Studies on Experimental Pneumonokoniosis. VI. Inhalation of Asbestos Dust: Its Effect upon Primary Tuberculous Infection (concluded). J. Indust. Hyg. 13:97-114, March 1931.
- GARDNER, LEROY U. Studies on Experimental Pneumonokoniosis. VIII. Inhalation of Quartz Dust. J. Indust. Hyg. 14:18-38, January 1932.
- HAYER, EDGAR and DWORSKI, M. The Effect of Ultraviolet Energy on Erythrocytes in "Vitro". Arch. of Phys. Therapy, X-Ray, Radium, 12:709-715-754, December 1931.

* To avoid the existing confusion the Trudeau Foundation will from henceforth publish an annual report of the Saranac Laboratory under separate cover from that of the Sanatorium.

SARANAC LABORATORY STUDIES

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1931 - 1936 (Bound Volume)

- 1932 -

The Saranac Laboratory for the Study of Tuberculosis of the
Edward L. Trudeau Foundation. Report of Director and
Financial Report for the Year Ending September 30, 1932.

JAMESON, EDWIN M. A Study of Tuberculous Infection by Way of
the Female Genital Tract. Am. Rev. Tuberc. 25:213-217,
February 1932.

GARDNER, LEROY U. The R₁ Strain of Tubercle Bacillus: A
Record of Forty Years' Experience with an Attenuated
Organism. Tubercle 1-6, August 1932.

LAYER, EUGEN and DWOREKI, MORRIS. The Bactericidal Action of
Ultraviolet Irradiations of Tubercle Bacilli. Am. Rev.
Tuberc. 26:105-111, August 1932.

GARDNER, LEROY U. The History of the R₁ Strain of Tubercle
Bacillus. Am. Rev. Tuberc. 25:577-590, May 1932.

CUMMINGS, DONALD E. The Virulence of the Attenuated Strain
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Previously Tuberculin-Negative Guinea Pigs. Am. Rev.
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losis in Guinea Pigs Infected with the Attenuated Strain
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CUMMINGS, DONALD E. Naturally Acquired Tuberculous Infection
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26:303-407, October 1932.

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- 1933 -

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JAMESON, EDWIN M. A Study of Tuberculous Infection by Way of
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GARDNER, LEROY U. The Pathologic Reaction in Various Pneumono-
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BRUNFELT, DANIEL M. The Heart and Tuberculosis. Am. Rev.
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GARDNER, LEROY U., CUMMINGS, DONALD E., and DOWD, GERALD R.
Experimental Inhalation of Bituminous Coal Dust and Its
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Pigs. J. Indust. Hyg. 15:456-465, November 1933.

GARDNER, LEROY U. Pathology of So-Called Acute Silicosis.
Am. J. Pub. Health 23:1240-1249, December 1933.

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Fine and Medium Sized Quartz and Aluminum Oxide Particles.
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763, 1933 (Supplement, whole number 54).

GARDNER, LEROY U. Silicosis and Its Relationship to Tubercu-
losis. Am. Rev. Tuberc. 29:1-7, January 1934.

* GARDNER, LEROY U. Effects of Dusts Upon the Respiratory Sys-
tem. Proceedings of Conference, The Industrial Commission
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consin, February 1933.

* CUMMINGS, DONALD E. Effects of Dust (Chemical and Physical
Properties) Upon the Respiratory System. Proceedings of
Conference, The Industrial Commission of Wisconsin, at
Chicago, Ill., Nov. 16-17, 1932, held at Madison Athletic
Club, published by Indust. Comm. of Wisconsin, February 1933.

* Separate publication; not included in the bound volume of SARANAC
LABORATORY STUDIES.

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- 1934 -

The Saranac Laboratory for the Study of Tuberculosis of the
Edward L. Trudeau Foundation. Report of Director and
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GARDNER, LEROY U. Inhaled Silica and Its Effect on Normal and
Tuberculous Lungs. J.A.M.A. 103:743-748, September 1934.

CUMMINGS, DONALD E. and DELAHANT, ANTHONY B. Relationships
Between Hypersensitiveness and Immunity in Tuberculosis.
Trans. Thirtieth Annual Meeting of the National Tubercu-
losis Association, 1934.

JAMESON, EDWIN M. Tuberculosis of the Uterus and Fallopian
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GARDNER, LEROY U. and BALDWIN, EDWARD R. Tuberculin: Its Prep-
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- * GARDNER, LEROY U. First Saranac Symposium on Silicosis,
Saranac Lake, N.Y., June 18 to 22, 1934, conducted and
edited by Gardner, L.U., and Kucchie, B.E., Claim Man-
ager, Employers Mutuals, Wausau, Wis. (Out of print).
- * CUMMINGS, DONALD E. Dust Concentrations and Methods of
Measurement. *Idem*, p. 15.
- * GARDNER, L.U. Pathology, Human and Experimental. *Idem*, p. 22.
- * CUMMINGS, DONALD E. Occupational History. *Idem*, p. 51.

* Separate publication; not included in the bound volume of SARANAC
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1931 - 1936 (Bound Volume)

- 1935 -

The Saranac Laboratory for the Study of Tuberculosis of the
Edward L. Trudeau Foundation. Report of Director and
Financial Report for the Year Ending September 30, 1935.

GARDNER, LEROY U. Pneumonokoniosis. International Clinics,
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CUMMINGS, DONALD E. A Study of the Types and Virulence of
Tubercle Bacilli Isolated from Tuberculous Silicotics
and Some Observations Regarding the Nature and Relation-
ship of Infections in Silicotics and Their Contacts.
Trans. Thirty-first Annual Meeting of the National Tuber-
culosis Association, 1935.

DOWD, GERALD R. Cultural Characteristics of the R₁ Strain of
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Report by a Committee Composed of PANCOAST, H.Y., PENDER-
GRASS, E.P., RIDDELL, A.R., LANZA, A.J., McCONNELL,
W.H. J., SAYERS, R.R., SAMPSON, H.L. and GARDNER, L.U.
Roentgenological Appearances in Silicosis and the Under-
lying Pathological Lesions. Reprint No. 1696 from the
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Associated with Mining Operations. Am. Institute of Mining
and Metallurgical Engineers Tech. Pub. 638, 3-12, 1935.

CUMMINGS, DONALD E. The Significance of Silicosis in Mining.
Mining Congress Journal, December 1935.

BRUMFIELD, DANIEL M. and GARDNER, LEROY U. Silicosis and
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1935.

SARANAC LABORATORY STUDIES

SECOND SARANAC SYMPOSIUM

- 1935 -

- * GARDNER, LEROY U. Second Saranac Symposium on Silicosis, Saranac Lake, N.Y., June 3 to 7, 1935, conducted and edited by Gardner, L.U., and Kuechle, B.E., Claims Manager, Employers Mutuals, Wausau, Wis. (Out of print).
- * CUMINGS, DONALD E. Dust in Atmosphere; Methods of Estimation and Significance. Idem, p. 37.
- * GARDNER, LEROY U. Pathology of Silicosis. Idem, p. 44.
- * CUMINGS, DONALD E. Occupational History. Idem, p. 95.
- * BRUMFIELD, D.M. Census of Cases of Pneumoconiosis in Tuberculosis Sanatoria and the Effect of Treatment. Idem, p. 130.
- * GARDNER, LEROY U. Correlation Between Pathological Anatomy and X-Ray Appearance in Silicosis. Idem, p. 144.
- * CUMINGS, DONALD E. Administrative Control of Silicosis in Industry. Idem, p. 183.

separate publication; not included in the bound volume of
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State J. of Med. 36:1-5, October 1936.

GARDNER, LEROY U. The Similarity of the Lesions Produced by
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13:13-23, January 1937.

PUBLICATIONS OF HERBY U. GARLNER, M.D.

Vol. I. 1917 - 1931

1. A Case of Detachable Leucomyoblastoma Primary in the Uterus.
J. Med. Research 14:11-29, March 1917.
2. Three Cases of Infection of the Upper Respiratory Tract
with Staphylococcus Pyogenes Aureus, Presenting the
Symptom-Complex of Acidosis. Am. J. Med. Sci. 155:
318-324, March 1923.
3. Studies on the Relation of Mineral Dusts to Tuberculosis:
I. The Relatively Early Lesions in Experimental Pneumo-
nitis Produced by Chronic Inhalation and Their In-
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18:111-120, December 1920; (A Preliminary Report) Nat.
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4. Mechanism of Tuberculosis: Experimental Arrested Tubercu-
losis and Subsequent Infections, in collaboration with
L. A. McQuinn. Ann. Roy. Tuberc. 5:479-517, August 1921.
5. The Nature of Relapsing Tuberculosis in Guinea Pigs, Produced
by the Re-infection of a Low-Virulent Strain. Nat. Tuberc.
A. Tr. 17:1019-1022, April.
6. Healing of a Tubercle in Experimental Pulmonary Tuberculosis.
Ann. Roy. Tuberc. 5:177-182, May 1922.
7. Studies on the Relation of Mineral Dusts to Tuberculosis:
II. The Relatively Early Lesions Produced by the Inhal-
ation of Silica Dust and Their Influence on Pulmonary
Tuberculosis in combination with Corris Inoculi.
Ann. Roy. Tuberc. 6:17-27, November 1922; abstracted,
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8. Studies on the Relation of Mineral Dusts to Tuberculosis.
III. The Relatively Early Lesions in Experimental Pneumo-
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fluence on Pulmonary Tuberculosis. Ann. Roy. Tuberc. 7:311-
322, May 1923.
9. Studies on the Relation of Mineral Dusts to Tuberculosis:
IV. A Theory of the Mechanism of Fibrosis in Pneumo-
nitis. Nat. Tuberc. A. Tr. 20:275-286, 1924.

PUBLICATIONS OF LEROY U. GARDNER, M.D.

Vol. I. 1917 - 1931

10. The Pathology of Artificial Pneumothorax in Pulmonary Tuberculosis. *Am. Rev. Tuberc.* 30:501-533, January 1925.
11. Tuberculous Infection and Tuberculosis as Modified by Experimental Pneumothorax. *Tubercle* 6:335-341, April; 443-451, June 1925.
12. A Comparative Study of the Cytological Reactions to Primary and Superinfection with the Tubercle Bacillus in the Guinea Pig, in collaboration with Morris Dworski and David T. Smith. *Am. Rev. Tuberc.* 4: 321-333, 1925.
13. A Comparative Study of the Blood Cells in Experimental Tuberculosis Primary and Reinfections of the Lung. Abstract, *Nat. Tuberc. A. Tr.* 22:257-259, 1926.
14. Tuberculosis - Bacteriology, Pathology, and Laboratory Diagnosis, in collaboration with Edward R. Holden and S. A. Petroff. Lea and Febiger, Phila., 342 pages, 1927.
15. Demonstrating Supravital Staining with Neutral Red in Paraffin Sections of Lung. *Proc. Soc. Exper. Biol. and Med.* 24:646-648, April 1927.
16. The Origin of the Alveolar Phagocyte Studied in Paraffin Sections of Mouse Stained Supravitaly with Neutral Red, in collaboration with David T. Smith. *Am. J. Path.* 3:445-460, September 1927.
17. The Diagnosis of Intestinal Tuberculosis, in collaboration with Harry E. Williams. *U. S. Vet. Bur. Med. Bull.* 4:207-209, March 1928.
18. The Relation of Cellular Changes to Skin Hypersensitiveness and Allergy in Tuberculosis. Abstract, *Nat. Tuberc. A. Tr.* 22:327-329, 1928.
19. Differential Cell Count of the Peritoneal Fluid from the Guinea Guinea Pig. *Proc. Soc. Exper. Biol. and Med.* 25: 659-661, May 1929.

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PUBLICATIONS OF LEROY U. GARDNER, M.D.

Vol. I. 1917 - 1931

20. A Pathological Study of Eight Lungs from Employees in the Granite Industry, Section X. The Health of Workers in Dusty Trades. II. Exposure to Siliceous Dust (Granite Industry). Public Health Bull. No. 127, pp. 133-170, July 1929.
21. Studies on the Tissue Reactions to Primary Infection and Re-infection with the Tubercle Bacillus: I. A Histological Examination of the Omentum and Other Subperitoneal Tissues. Am. Rev. Tuberc. 20:201-213, August 1929.
22. Studies on Experimental Pneumokoniosis: V. The Reactivation of Healing Primary Tubercles in the Lung by the Inhalation of Quartz, Granite, and Carbonaceous Dusts. Am. Rev. Tuberc. 20:551-575, December 1929.
23. Experimental Tuberculosis as Modified by Dust Inhalation. Am. Rev. Tuberc. 4, 1st. 25:210-222, 1929.
24. Will Inhalation of Siliceous Dusts Activate a Partially Healed Focus of Tuberculous Infection? An Experimental Study. Public Health Rep. 45:232-238, February 7, 1930.
25. The Cellular Reactions to Primary Infection and Reinfection with the Tubercle Bacillus: II. The Cells of Peritoneal Exudate Produced by the Local Injection of Tubercle Bacilli into Normal Sanitized Guinea Pigs. Am. Rev. Tuberc. 22: 373-412, October 1930.
26. Histological Anatomy of Intestinal Tuberculosis. Chapter VI, pp. 1-112, Intestinal Tuberculosis: Its Importance, Diagnosis and Treatment. Irrison Brown and Homer L. Sampson, Eds and Publishers, Phila., 1930.
27. Studies on Experimental Pneumokoniosis: VI. Inhalation of Activated Dust - Its Effect upon Primary Tuberculous Infection, in collaboration with Donald E. Cummings. J. Tuberc. 15:65-81, February; 97-114, March 1931. (Summary of this paper was presented at the International Silica Conference, Johannesburg, I.L.O., pp. 553-555, 1930.)
28. Saranac Lake as a Research Center. J. Outdoor Life 23:268-302, May 1931. (The May 1931 issue of the J. Outdoor Life is a Saranac Lake Special Number; the complete issue is included in the Publications of Leroy U. Gardner.)

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29. Studies on Experimental Pneumoconiosis: VIII. Inhalation of Quartz Dust. J. Indust. Hyg. 14:18-38, January 1932.
30. The History of the H1 Strain of Tubercle Bacillus. Am. Rev. Tuberc. 24:577-590, May 1932.
31. The H1 Strain of Tubercle Bacillus: A Record of Forty Years' Experience with an Attenuated Organism. Tubercle 13:504-519, August 1932.
32. Effects of Dusts upon the Respiratory System. Proceedings of Conference, Industrial Commission of Wisconsin, Chicago, Ill., November 16-17, 1932, published by Indust. Comm. of Wisconsin, pp. 8-50, 70-81, 105-124, 206, February 1933.
33. Silicosis: Analysis of Factors Involved in Its Production. Indust. Med. 2:37-52, July 1933.
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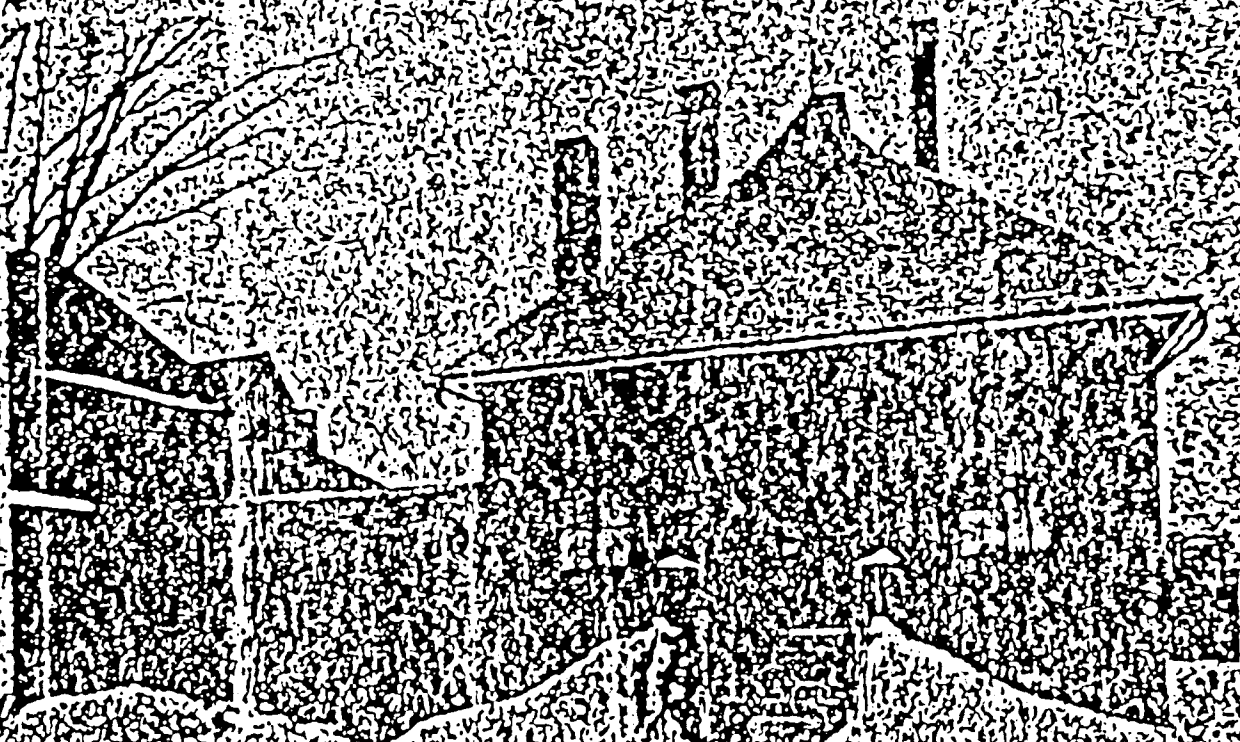
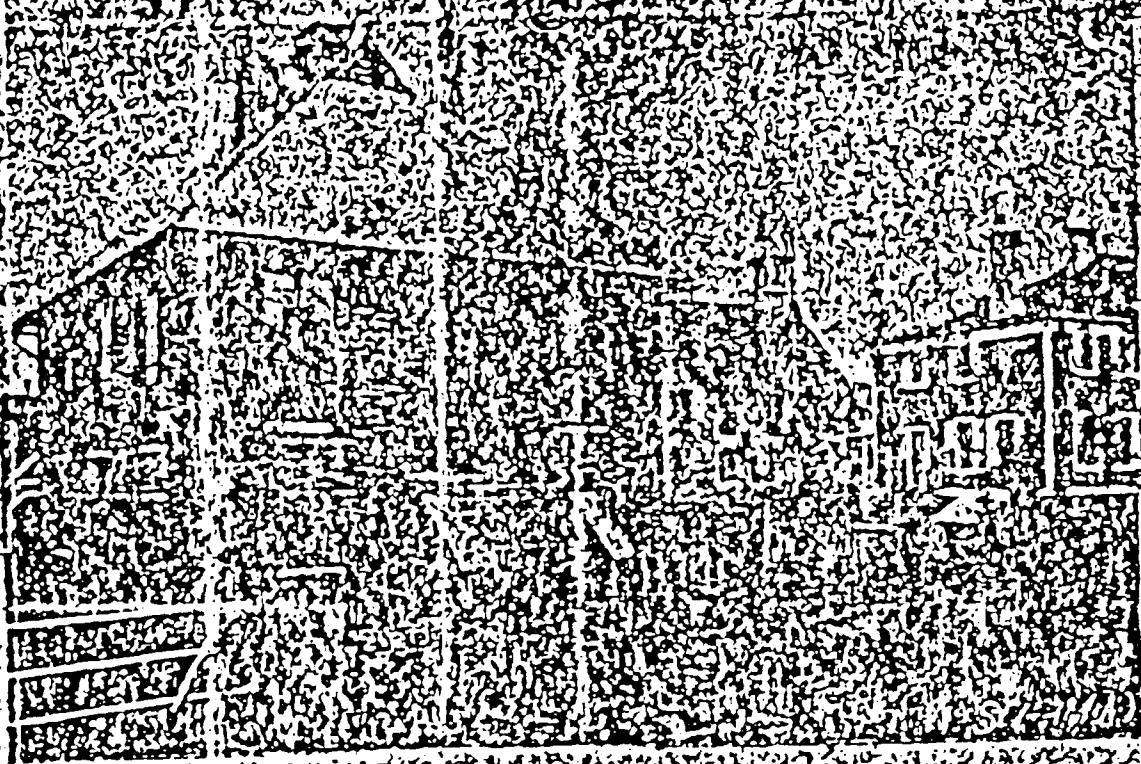
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SARINO LABORATORY

Shown at the left the new JOHN F. SARINO LABORATORY
 December 1984

Mr. and Mrs. Frank Black donated the five new rooms on the second floor (the memorial library and lecture room and the study hall on the old building was extended in order to join the roof of the new wing with that of the old building, creating another large well-lighted room in the rear of the building)



THE HISTORY OF THE SARANAC LABORATORY

1885 - 1958

The beginning of the Saranac Laboratory is best described by its founder, Dr. Edward Livingston Trudeau, in the paper he read before The Lecturer, a Society for the Study of Tuberculosis, at the Johns Hopkins Hospital, May 1, 1901:

"I must apologize for talking of my own work . . . My experiences may prove an encouragement, perhaps, to those of you who are to locate at distant points, as demonstrating the possibility of doing scientific work in remote regions, far from the centres of learning, and they may prove of interest to a Society such as yours as describing the foundation of the first laboratory in this country devoted to researches in tuberculosis.

"I met from the first many difficulties to contend with: no health, no scientific training, no apparatus, no access to books, and was situated forty-two miles from a railroad, in a primitive forest, where I had gone in search of health.

"My inspiration was Koch's paper on the Etiology of Tuberculosis, of which I read an extract in a medical journal in 1882, and which was translated into English and sent me by a patient*.

"In some of the short visits I was enabled to make to New York, Dr. Frederick taught me how to stain the bacillus, and the first principles of bacteriology, and I taught myself the rest as best I could. My laboratory was a very small room in my house, in which, during the intense cold of winter, water froze at night in spite of my best efforts, as we had no coal in Saranac Lake in those days, and the wood stove could not be counted upon to burn all night. I had no apparatus but my microscope. With Dr. Koch's paper as a guide I succeeded, however, in growing the tubercle bacillus in a homemade thermostat which had no regulating apparatus and which was heated by a small kerosene lamp only. In order to protect this from the violent changes of temperature, which occurred particularly at night, I had enclosed it in a series of wooden boxes, the doors of which could be opened or closed at will, according to the intensity of the cold out of doors. But on very cold nights I was obliged to get up in the night to make a fire in the stove in order to prevent too violent changes of temperature in my little oven.

"With these primitive arrangements, after many failures, I obtained the tubercle bacillus in pure cultures, being, I believe the second observer in America to do this. With these cultures I repeated all of Koch's inoculation experiments. My guinea pigs had to be kept in a hole under ground, heated by a kerosene lamp, this being the only spot in Saranac Lake where they could escape freezing at night."

* Mr. Charles E. Lea of the famous Philadelphia publishing house.

** Dr. T. Mitchell Prudden who had worked in Koch's laboratory and who then taught pathology at the College of Physicians and Surgeons.

THE HISTORY OF THE SARANAC LABORATORY

These quarters were so cramped that Dr. Trudeau soon built a little addition off his office and this was the laboratory in which he worked until his house was destroyed in 1893 by fire originating from the little thermostat.

In his autobiography Dr. Trudeau describes his laboratory in these words: ". . . I can see clearly the room opening from my little office, which was really the beginning of the Saranac Laboratory for the Study of Tuberculosis. One side of this room was occupied by a long, high, stationary shelf-table set against the wall under three little half-windows, with shelves underneath the table for glassware, a dry and a steam sterilizer, an oil stove, etc. A little homemade thermostat, heated by a minute kerosene lamp, without any regulating apparatus, stood on a bracket-shelf next to a sink of washing glassware. This sink was as primitive as the thermostat, as there was no running water in Saranac Lake in those days. At one end on a broad shelf stood a big pail with a dipper and this supplied the water (there was of course no hot water), and the waste from the sink was carried off by a leaden pipe which led to a big pail on the floor, this pail being emptied out of doors when danger of its overflow made this imperatively necessary. At the window was a small table with my microscopes on it, some bottles of stains, and slides in boxes. By the side of this stood a shelf of books, on top of which was always Mr. Lea's precious translation of Koch's paper, to which the Saranac Laboratory has owed its existence.

"With this humble outfit I began with much enthusiasm, in my imagination, the conquest of the tubercle bacillus, and if I have never come within sight of the castles of my dreams, I at least have made some progress along the road leading to them and started others in the same direction, for I was, as far as I can ascertain, the first in this country to cultivate the tubercle bacillus and confirm Koch's brilliant discovery. From the ashes of the little room has sprung the Saranac Laboratory for the Study of Tuberculosis . . ."

Doctor Trudeau's first publication, *An Experimental Research upon the Infectiousness of Non-Bacillary Phtisis*, was published in the *American Journal of Medical Sciences*, October 1895, a record of experiments demonstrating the infectiousness of bacillary sputum and the harmlessness of expectoration free from bacilli taken from a patient supposed to have consumption.

In 1896 Doctor Trudeau studied the influence of extremes of environment in the course of inoculation tuberculosis. Many of the inoculated rabbits allowed to run wild on an island recovered or developed only localized disease, while those placed under the most unhygienic conditions died of tuberculosis in a few months. The results of this research confirmed Doctor Trudeau's faith in the value of the sanatorium and open-air method of treating tuberculosis.

THE HISTORY OF THE SARANAC LABORATORY

During the same week in which Koch's announcement of the discovery of tuberculin and of his hopes as to its specific curative action on tuberculosis was flashed across the ocean, Dr. Trudeau published in the November 22, 1890 issue of the Medical Record an article describing his attempts at the production of artificial immunity in animals by the injections of sterilized and filtered liquid cultures of the tubercle bacillus (tuberculin), and his failure to obtain any appreciable degree of immunity by this method.

The arrival of Dr. Edward R. Baldwin from New Haven, Connecticut, marks the beginning of the second epoch in the Laboratory's history. In December 1892 he rang Dr. Trudeau's doorbell and told him that he was a physician, that he had contracted tuberculosis, and that he wanted to go to the Sanatorium, which he entered six weeks later. The day after Dr. Baldwin came to town he visited the Laboratory, at Dr. Trudeau's invitation, and offered to help in any way. Dr. Baldwin became a constant presence in the Laboratory and Dr. Trudeau learned to learn more and more on him and finally turned this branch of work over to Dr. Baldwin entirely. Dr. Trudeau mentioned in his autobiography: "Doctor Baldwin in those days knew even less than I did about the new science of bacteriology, and I gladly taught him all I knew, and as gladly does he teach me now the latest advances in a branch of medical science in which he is an expert and an acknowledged authority. Many happy hours did we spend working in the Laboratory together, and now that I cannot work with him anymore he brings to my bedside the latest literature and tells me of the work he and others are doing."

It seems fitting to quote here from an article by Dr. Allen F. Peters, Reflections on Doctor Trudeau, which appeared in the January 1925 issue of the Journal of Outdoor Life, as follows: "For years Baldwin would carry his bundle of the literature over to the doctor's house on the evening and then read to him what was going on in tuberculosis, particularly in Germany, and since the younger man could not handle French, the doctor would tell him what was happening in the land of his own extraction. This pair formed an almost ideal combination for scientific work."

Dr. Baldwin was soon made Director of the Laboratory and this position he held until 1926. With the late Dr. Walter E. James, Dr. Baldwin inaugurated The Edward Livingston Trudeau Foundation in 1916 and was the first director of the Foundation and of the Trudeau School, which positions he held from 1916 to 1922. In 1927 Dr. Baldwin was awarded the Trudeau Medal for outstanding contribution in the field of tuberculosis; in 1926 he received the Kober Medal for outstanding achievements in medicine, and in 1927 Dartmouth conferred upon him the degree of Doctor of Science.

THE HISTORY OF THE SALMONAC LABORATORY

In the winter of 1893 while Dr. Trudeau was ill in New York his house and laboratory burned to the ground. Among the telegrams, letters of condolence and cheer, and offers of help which poured in was one brief but striking note from Dr. William Osler, as follows:

"Dear Trudeau: I am sorry to hear of your misfortune, but take my word for it, there is nothing like a fire to make a man do the Phoenix trick."

Dr. Osler's prophecy was soon fulfilled. Mr. George C. Cooper of New York, whose family gave to New York the Cooper Institute, a friend and patient of Dr. Trudeau, called on him the day after the fire. He told Dr. Trudeau to begin to plan a good stone and steel laboratory, one that would never burn up. In Mr. Cooper's words: "Plan it just as you want it, complete, and I will be glad to pay for it and give it to you personally."

Mr. Cooper was not satisfied with the mere establishment of the material facilities for investigation, which his gift of the laboratory afforded, but in association with Mr. John Garrett of Baltimore gave a fund sufficient to carry on researches for several years, while a brother of Mr. Garrett, Mr. Horatio Garrett, provided a fund for a library.

While the laboratory was in process of construction a small addition to the stable on Dr. Trudeau's property was built and served as a temporary laboratory in which, for a year, the work, through the generosity of Mrs. Robert Hoe, was carried on.

During the spring and summer of 1894 work steadily progressed on the new laboratory and by fall it was nearly completed. Dr. Trudeau facilitated matters by presenting the land on which it was placed, which was part of his house lot on Church Street. Dr. Trudeau described the new laboratory in these words:

"The building is a most substantial and dignified structure. As nothing but cut stone, glazed brick, slate, steel and cement entered into its composition, it is absolutely fire-proof and it has not been necessary to insure it. The inside is all finished in white, glazed brick, and it looks absolutely indestructible—as if it were built not for time but for eternity! The Phoenix trick will not have to be repeated soon so far as the building is concerned. It is equipped with fine, self-regulating thermostats, gas, electricity, and every modern appliance for facilitating laboratory work."

THE HISTORY OF THE SARANAC LABORATORY

"No name has been written on the outside of this compact little structure to indicate its uses, but in the inner hall over the door of the main room a small brass inscription has been placed, which reads:

Saranac Laboratory
for the Study of Tuberculosis
Erected A.D., 1894
Presented to
Edward L. Trudeau, M.D.
by
George C. Cooper

"We had no opening ceremonies and never have had any. When everything was ready, Baldwin and I merely began to move the apparatus we already had in use from the little shed near the barn to our beautiful new quarters and to continue the work we were doing. This was the opening of the first laboratory devoted to the study of tuberculosis in this country."

Dr. Laurasen Brown mentioned in an article he wrote about Dr. Trudeau in the May 1921 issue of the Journal of the Outdoor Life that Dr. Trudeau wanted to call the laboratory the Cooper Laboratory, but Mr. Cooper wished to name it after Dr. Trudeau. A compromise was made and it was called the Saranac Laboratory. The Laboratory was incorporated in 1900 as the Saranac Laboratory under the Education Law of New York State.

Finances proved a difficult problem for Dr. Trudeau as the Laboratory had no endowment of any kind; however, with the help from his many friends, among whom were Dr. Horatio Garrett, Mr. John Garrett, Mrs. Robert Hoe, and Miss Julia Cooper, Dr. Trudeau was able to pay for the experimental animals, chemicals and apparatus, and to continue research. Mrs. A. A. Anderson (founder of the Milbank Memorial Fund) gave generous checks at first and then, according to Dr. Trudeau's notes, assumed the entire support of the Laboratory for a number of years.

The Saranac Laboratory has had a strong educational influence on the many physicians who have come to Saranac Lake for their health and has offered them an opportunity for study. Among these were Drs. P. A. Levene, Laurasen Brown, H. H. Kitchorn, J. Woods Price, Albert H. Allen, J. L. Nichols, Robert A. Patterson, and Willard B. Soper. One of the most noted of the group was Dr. Allen E. Krause who came in 1910 and worked here for ten years. He relieved Dr. Baldwin of much of the routine work and was later appointed associate director of the Laboratory. His work on the problems of immunity and infection are known to all in the tuberculosis world. Dr. Levene was another outstanding scientist and a pioneer worker at the Laboratory. He conducted important studies on the biochemistry of the tubercle bacillus, continuing his investigations at the Rockefeller Foundation.

THE HISTORY OF THE SARANAC LABORATORY

Dr. Leonard H. Long, associate professor of pathology at the University of Chicago and later director of Henry Phipps Institute, worked with Dr. Baldwin in the Laboratory from 1917 to 1919. Here he started the chemical investigations on the tubercle bacillus which became an important feature of the research program of the National Tuberculosis Association.

Physicians who were staying in Saranac Lake even temporarily and who were disposed to do a piece of work meeting with the approval of Dr. Baldwin and Dr. Trudeau had the facilities of the Laboratory placed at their disposal and were assisted in carrying out their work, which they were free to publish under their own names.

The Saranac Laboratory inspired the formation of a medical society in Saranac Lake which continues to meet in the John Black Room. The Laboratory has been the nucleus about which the medical interest of the community centered. More physicians of the village have brought their problems for solution. The medical library, housed in the John Black Room, has always been open to the physicians and medical patients of the community.

Numerous research studies were conducted during the early years of the Laboratory, as Dr. Trudeau has disclosed:

"How much original work my associates have done was revealed most pleasantly to me on my sixtieth birthday when, after a very pleasant dinner they gave me, they presented me with two most beautiful volumes bound in red morocco, containing seventy papers representing their own studies, which had been published in various medical journals both here and abroad, from 1887 to 1908. These volumes I keep among my treasures and I prize them more and more as the years roll by."

Just before Dr. Trudeau's death on November 15, 1915, the post-graduate course known as the Trudeau School of Tuberculosis, which has its headquarters at the Saranac Laboratory, was founded by the late Samuel Hather. An annual contribution of \$5,000 was contributed by Dr. Hather for the first eleven years, and since 1910 the School has received support from the Lillian Babbitt Hyde Foundation.

Dr. Trudeau died before there was any assurance of the permanency for the research and teaching in progress. It was then that the sanatorium trustees decided to establish a memorial endowment fund to maintain these activities. Created by gifts from Dr. Trudeau's friends, this fund was called the Edward L. Trudeau Foundation. The Saranac Laboratory was entrusted to the Foundation, under whose administration it provides diagnostic facilities to the community and carries on experimental research.

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LEROY UPSON GARDNER*

1888-1946

THE recent death of Dr. Gardner has deprived this Journal of one of its associate editors and a valued contributor. We are proud of the papers we published for him, as several of them have been far reaching in their consequences.

While he was a patient at Saranac, Dr. Gardner acquired a paternal feeling for the tuberculous workmen. His long series of studies on the pneumoconioses started with a thorough appreciation of the importance of tuberculosis in the dusty trades. For years the Saranac Laboratories have carried along their own strain of tubercle bacilli which Dr. Gardner customarily applied in his biological appraisals of various dusts.

He started his animal dusting experiments at a time when some able men were still blaming the hardness and sharpness of silica particles for producing the silicotic nodule. Dr. Gardner showed it was reasonable to appraise potency in terms of the free silica content of the dust. He found that granite dust would not produce the typical silicotic nodule in his guinea pigs, yet he could do it easily with pure quartz. He had abundant evidence that granite cutters died of silicosis and reported typical nodules at autopsy. He realized his failure to produce the nodules in guinea pigs was due to the fact that the granite dust was less harmful than the quartz dust so the guinea pig's span of life was too short for silicosis to result.

From then on his biological appraisals of dust were referred to pure quartz dust as control. Many studies followed showing the comparative harmlessness of the non-silicious dusts. Gradually state codes and rules were proposed purporting to evaluate atmospheric dustiness in terms of exposure to quartz dust. Dr. Gardner viewed these codes with skepticism and his wise counsel kept them on a practical basis.

In some other studies he showed that silica particles below 3 microns in size were much more dangerous than those of 6 to 12 microns. A little later he found that asbestos particles of bacterial size would not produce the typical asbestosis pathology, while the long fibers thrown into the air in processing asbestos minerals would cause asbestosis. Both of these findings had practical usefulness to industry and both added greatly to our knowledge of the pneumoconioses.

At various meetings and by correspondence, I had often discussed with him the possible effects upon open tuberculous lesions of moderate concentrations of irritating gases and vapors. He used to cite the considerable volume of work published after World War I on this very subject—all indicating the comparative harmlessness to the tuberculous individual of casual exposures to irritants. He admitted this point of view was usually not accepted by the lay public, and especially by compensation boards. At the request of some of us he showed that welding fumes in heavy doses had no effect upon tuberculous guinea pigs. If he had only been given a little more time he might have extended this particular study to include other common irritants. The appeal, to him, would have been the help he would thus be giving the tuberculous workmen.

He was a fine teacher. The series of symposiums on silicosis which he started in 1934 and continued until World War II became the meeting place for all who were technically interested in the subject. Dr. Gardner carried the lion's share of the work and edited the transactions which quickly earned for themselves the position of textbooks.

Altogether, industry's debt to him is great and we all hope that the Saranac Laboratories will continue the work in which he pioneered.—

Philip Drinker

* Received for publication December 7, 1946.



LEROY UPSON GARDNER