few days later in Munich I told Voit that I had called on Pflüger.

"But he did not receive you?" "Yes."

"But he did not know whose pupil you were?" "Yes."

"So, Sie sind in dem Löwenkäfig gewesen!" (So you have been in the lion's cage!)

I remarked that in conversation Pflüger was willing to grant the possibility of the production of sugar from protein to which Voit smilingly replied:

"Ja; der Löwe wird bald zahm." (Yes; the lion will soon become tame.)

There is no doubt that irritating criticism is a highly beneficial stimulus. Only the vain refuse to hear it; and the teachings of such become dogmatic, their investigations futile.

We Americans have learned much from England, France, Italy and Germany. We have brought over the seas their knowledge and have set it up here as a common heritage. Sometimes we have advanced beyond their methods, and at other times have fallen far short. We have just helped to rescue Europe from torment. In comparison with ourselves they are living in abject poverty, and we are selling to them the necessities of life, wheat and cotton, at prices which are highly profitable to our people. They are under great financial strain in the struggle for existence, and will be so for many years. In this great land of ours, which is overflowing with opportunity and abundance, it is of very especial importance to elevate our intellectual standards. Many scientific men hardly seem to realize the heavy world responsibilities which have been placed on us.

Money alone will not produce a creative mind; money may well spoil such a mind. The best work does not always come from the most richly endowed institutions, nor from those laboratories that have the largest number of assistants and laboratory servants. It is the spirit that matters. This spirit cannot be manufactured according to a formula. It belongs to the genius of the people. The spirit animating this society gives it the power to achieve greatly in the advancement of American medicine. This spirit is the greatest present asset of American medicine.

The members of this society, urged on by the vision of the condition of the world, have the honorable privilege to render high service for the benefit of all mankind, perhaps winning through scientific achievement the medical leadership of the world.

477 First Avenue.

Japanese Opium Trade with China.—In an article which appeared in the *North China Daily News*, Dec. 17, 1918, it is stated that the trade in morphin is still flourishing. As morphin cannot, however, be purchased in Europe, the seat of industry has been transferred to Japan, where the Japanese are now manufacturing morphin. Wholesale contraband traffic between Japan and China is carried on. It is conservatively estimated that during the last year 18 tons of morphin were imported by the Japanese into China, and the amount is said to be steadily increasing.

TYPE I PNEUMOCOCCUS LOBAR PNEUMONIA AMONG PORTO RICAN LABORERS

AT CAMP JACKSON, SOUTH CAROLINA

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First Lieutenant, M. C., U. S. Army

AND

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Captain, M. C., U. S. Army

CAMP JACKSON, COLUMBIA, S. C.

Shortly after the epidemic of acute respiratory disease appeared at Camp Jackson in September, 1918, 1,653 Porto Rican laborers arrived in camp direct from

Effect of serum in a case of Type I pneumonia of the right and left lower lobes: B. C., blood culture; +, positive; -, negative.

Porto Rico to be employed in the construction work incident to the enlargement of the cantonment.

A large proportion of these men were poorly developed individuals, most of whom suffered from chronic hookworm infection as well as from other intestinal parasites. They appeared undernourished and were obviously underclad, with their Palm Beach suits and Panama hats, for the almost freezing nights of South Carolina in November and December.

Soon after the arrival of these Porto Rican laborers, respiratory infections developed among them, and 1,003 were admitted to the base hospital with the diagnosis of influenza. Of these, 220 exhibited signs of complicating pneumonia, and sixty-seven died, a mortality of 30.4 per cent.

During the height of the epidemic, it became impossible to take cultures of the sputum of all individuals

having pneumonia, but as soon as the hospital assumed approximately its normal condition, the careful examination of the sputum of all cases exhibiting pulmonary lesions was again resumed.¹

During the early part of the influenza epidemic among the Porto Ricans, atypical types of pneumonia were seen; but later, beginning about Dec. 15, 1918, a number of patients were admitted who exhibited the more usual signs of lobar pneumonia.

In the early part of the summer, in May and June, twenty-two of fifty-one cases of pneumonia were Type I pneumococcus infections. From that time on until Sept. 15, 1918, only twelve more cases of Type I pneumococcus infection occurred out of 122 cases of pneumonia. While the statistics covering sputum and blood culture examinations during the influenza epidemic are extremely fragmentary, apparently there were but few Type I pneumococcus infections of the lung, as but three patients were found to be harboring that type of pneumococcus in the sputum, and only two persons were shown to have positive blood cultures, as shown in Table 1.

TABLE 1.—FREQUENCY OF OCCURRENCE OF TYPES OF PNEUMOCOCCUS INFECTIONS

Sputum Cultures:	No.	Blood Cultures:	No.
Pneumococcus Type I.....	9	Pneumococcus Type I.....	2
Pneumococcus Type II.....	47	Pneumococcus Type II.....	17
Pneumococcus Type III.....	29	Pneumococcus Type III.....	9
Pneumococcus Type IV.....	194	Pneumococcus Type IV.....	16
Staphylococcus aureus.....	18	Staphylococcus aureus.....	2
B. influenzae.....	13	S. hemolyticus.....	1
S. hemolyticus.....	8		

Type I pneumococcus infections of the lung occurred but rarely among the soldiers of Camp Jackson during the epidemic, as compared with other types of pneumococci and other organisms. Of 312 postmortem lung cultures, this group of organisms was encountered only eight times, whereas other types of pneumococci were found 131 times and *Staphylococcus aureus* 153 times.² It seemed to be a matter of some interest, therefore, that among the respiratory infections affect-

1. The sputum examinations were all made in a separate room, the so-called pneumonia laboratory, by specially trained technicians, Miss Pirie Davidson and Private R. A. Ambler, under the supervision of Capt. H. T. Chickering and Lieut. J. H. Park, Jr. As soon as a patient arrived in the pneumonia ward, notice of his arrival was sent to the laboratory, and the specimen was collected by Private W. J. Archer, who was instructed concerning the importance of obtaining sputum from the deeper air passages.

2. Chickering, H. T., and Park, J. H., Jr.: *Staphylococcus Aureus Pneumonia*, J. A. M. A. 72: 617-626 (March 1) 1919.

ing a group of Porto Rican laborers, the incidence of Type I pneumococcus infection should be much greater than among the soldiers in camp.

Table 2 shows the incidence of the various types of pneumococcus among the white and black soldiers, and among the Porto Ricans, over a period from Dec. 15, 1918, to Feb. 1, 1919.

TABLE 2.—INCIDENCE OF VARIOUS TYPES OF PNEUMOCOCCUS

Type	White	Black	Porto Rican
Pneumococcus I.....	1	2	34
Pneumococcus II.....	4	2	0
Pneumococcus III.....	4	0	2
Pneumococcus IV.....	97	17	16

The Porto Rican laborers lived under crowded conditions in wooden buildings. Fourteen barracks were used, 120 feet long by 20 feet wide. The bunks were arranged in two tiers, the lower being about 3 feet from the floor. In this way, from 120 to 160 men were accommodated in each building. The five kitchens, formerly occupied by the depot brigade, were used as mess halls. On account of the cold, the screens were removed and the openings boarded up. The latrines were about 200 yards from the barracks. Under these conditions there was abundant opportunity for close contact and wide temperature variations.

The first Type I infection among the Porto Ricans was discovered by a routine lung puncture made post-mortem. This patient, for some unexplained reason, had not been transferred to the pneumonia ward, and no sputum examinations had been made. From that time on all cases of pneumonia among the Porto Ricans, as well as among the soldiers, were treated in wards especially designed for pneumonia, and cultures were made with as much dispatch as possible.

The sputum was cultivated by streaking directly on blood agar plates, by mouse inoculations, and by the use of the Avery 1 per cent. glucose blood broth. The results of sputum cultures were checked up by repeated blood cultures and by cultures made from exploratory puncture of the lung when indicated.

The patients in whom evidence of Type I pneumococcus infection were found were treated intravenously with antipneumococcus serum according to the method described by Cole.³

3. Avery, O. T.; Chickering, H. T.; Cole, R., and Dochez, A. R.: *Acute Lobar Pneumonia, Prevention and Serum Treatment*, Monograph 7, Rockefeller Institute for Medical Research, 1917.

TABLE 3.—TYPE I CASES *

Case No.	Color and Age	Date Admitted and Day of Disease	Temperature on Admission	Pulse and Respiration	Involve-ment	Leuko-cytes	Blood Culture and Method	Stimula-tion	Amount of Serum, C.c. and Serum Sickness	Result	Hook-worm	Was-ser-mann Test	Remarks
1. 42482	P.R. 21	12/16/18 ?	106 crisis 12/23/18	80-124 18-44	Lobar Pn. R. and M.†	20,000 Polys. 85%	Neg. Mouse	Tincture of digitalis, 14 c.c.	355 None	Recovered, 12/23/18	+	Not taken	Relapse; left lower lobe; no serum, 12/31/18; recovered 1/7/19
2. 43162	P.R. 38	12/29/18 ?	103.2 crisis 1/1/19	80-100 18-48	Lobar Pn. R. L. L.	12,700 Polys. 50%	+ I; Avery	Tincture of digitalis, 7 c.c.	200 None	Recovered, 1/1/19	+	Not taken	
3. 43706	P.R. 24	1/7/19 ?	104.2 lysis	72-128 18-32	Lobar Pn. R. U. L.	14,800 Polys. 84%	Neg. Mouse		1/10/19 100 None	Recovered, 1/13/19	—	Not taken	
4. 43922	P.R. 32	1/9/19 ?	104 lysis	72-124 18-44	Lobar Pn. Lt. lung	18,000 Polys. 94%	Neg. Mouse	Tincture of digitalis, 9 c.c.	400 None	Recovered, 1/25/19	—	Not taken	1/16, acute suppurative otitis media, right
5. 42730	P.R. 48	12/20/18 ?	104	74-128 18-44	Lobar Pn. L. lung	13,000 Polys. 90%	+ I Avery Mouse	Tincture of digitalis, 8 c.c.	350 None	Died, 1/9/19	—	Not taken	1/5/19, thoracotomy; facial erysipelas, empyema, left
6. 42900	P.R. 24	12/24/18 4th	100.2	60-114 18-44	R. lung L. L. L.	15,400 Polys. 86%	Neg. Mouse	Tincture of digitalis, 5 c.c.	115 18th day	Died, 1/7/19	—	Not taken	Onset gradual; died suddenly, cause unknown; embolus ?
7. 43852	P.R. 26	1/18/19 ?	105.4 lysis	68-120 18-50	Bron. Pn. R. lung L. L. L.	24,600 Polys. 88%	Neg. Mouse I. + B. Inf.	Tincture of digitalis; strychnin; camphor None	1,050 None	Recovered, 1/19/19	+	Not taken	Old serum used
8. 43278	P.R. 24	12/31/18 ?	102.4	68-104 18-40	Bron. Pn. bilateral	30,000 Polys. 89%	Neg. Mouse		300 None	Recovered, 1/7/19	+	Not taken	

TABLE 3.—TYPE I CASES *—Continued

Case No.	Color and Age	Date Admitted and Day of Disease	Temperature on Admission	Pulse and Respiration	Involvement	Leuko-cytes	Blood Culture and Method	Stimulation	Amount of Serum, C.c. and Serum Sickness	Result	Hook-worm	Was sermann Test	Remarks
9. 43491	P.R. 22	1/3/19 ?	102.8	80-120 18-40	Bron. Pn. bilateral	13,400 Polys. 93%	Neg. Mouse	Tincture of digitalis; strychnin	350 None	Recovered, 1/15/19	—	Negative	
10. 43934	P.R. 19	1/9/19 ?	104 lysis	72-124 18-42	Lobar Pn. L. lung	18,000 Polys. 94%	Neg. Mouse	Tincture of digitalis; strychnin	450 None	Recovered, 1/18/19	+	Negative	Acute otitis media, right; N. S. 1/15
11. 42991	P.R. 23	12/26/18 ?	103 crisis	72-136 20-48	Lobar Pn. L. L. L.	17,800 Polys. 92%	Neg. Mouse	Tincture of digitalis	365 None	Recovered, 1/4/19	+	Negative	
12. 43420	P.R. 32	1/2/19 4th	100.6 crisis	84-120 18-40	Lobar Pn. R. L. L.	19,200 Polys. 91%	Neg. Avery	Tincture of digitalis	200 None	Recovered, 8th day	—	Negative	Onset, sudden
13. 43177	P.R. 18	12/29/18 ?	101 crisis	70-132 18-56	Lobar Pn. L. L. L.	13,700 Polys. 89%	Neg. Mouse	Tincture of digitalis	550 None	Recovered, 1/5/19	—	Negative	
14. 43324	P.R. 18	1/1/19 1st	103 crisis	80-120 18-34	Lobar Pn. L. L. L.	18,000 Polys. 83%	Neg. Mouse	None	400 None	Recovered, 7th day	+	Negative	Onset, sudden
15. 43334	P.R. 19	1/1/19 ?	103.4 lysis	80-120 18-48	Lobar Pn. R. U. L.	8,200 Polys. 75%	Neg. Mouse	Tincture of digitalis	365 None	Recovered, 1/7/19	+	Negative	
16. 44397	P.R. 17	1/15/19 3d	105.4	68-144 22-48	Lobar Pn. L. lung	18,000 80% 36,000 84%	Neg. Mouse	Tincture of digitalis	900 None	In hospital, doing nicely	—	Negative	Onset, sudden; costectomy and thoracotomy, 1/13/19; secondary pocket, left lower chest, 2/5/19; thoracotomy, 2/6/19; empyema left chest, 1/22/19
17. 42783	P.R. 23	12/21/18 ?	101.8 lysis	72-120 20-38	Lobar Pn. L. lung	17,200 Polys. 87%	+ 1/8/19 Mouse	Tincture of digitalis	1,000 None	Recovered, 1/27	—	Negative	Old serum used; 1/21/19, abscess right superior scapular region
18. 43401	P.R. 23	1/2/19 ?	102	84-120 20-38	Lobar Pn. L. L. L.	18,800 Polys. 92%	+ I Mouse	Tincture of digitalis	600 + 1/23/19	Recovered, 2/2/19	—	Negative	Slowly resolving pneumonia
19. 43161	P.R. 20	12/29/18 2d	102	88-128 20-40	Lobar Pn. L. lung	16,000 Polys. 83%	Neg. Mouse	Tincture of digitalis	300 None	In hospital, doing nicely	+	Negative	Onset, sudden; thoracotomy, left, 1/10/19; empyema, 1/5/19
20. 43401	P.R. 18	12/27/18 ?	103.6	84-146 20-40	Lobar Pn. R. L. and M. L.	49,600 Polys. 93%	+ Mouse	Tincture of digitalis	315 None	In hospital, doing nicely	—	Negative	Thoracotomy, 1/6/19; empyema, 1/5/19
21. 42911	P.R. 32	12/24/18 2d	102	80-124 20-30	Lobar Pn. L. L. L.	15,600 Polys. 85%	Neg. Mouse	None	0 None	+	—	++	Onset, sudden; suppurative submaxillary adenitis, 1/7/19; erysipelas, face, 1/9/19; periorbitis, right tibia and fibula, 1/14/19
22. 43490	P.R. 20	1/3/19 1st	104.6	76-136	Lobar Pn. R. L. L.	29,600 Polys. 94%	Neg. Mouse 1/7/19	Tincture of digitalis	250 None	Recovered, 1/11/19	—	Negative	Onset, sudden
23. 43025	P.R. 45	12/27/18 ?	101.6	70-120 18-40	Bron. Pn. bilateral	15,200 Polys. 85%	Neg. Mouse 1/2/19	Tincture of digitalis	250 None	Recovered from pneumonia 1/4/19	—	Negative	Left myringotomy, 1/10/19; mastoidectomy, left, 1/25/19; acute otitis media suppurativa, left, 1/10/19; acute suppurative mastoiditis, left, 1/17/19
24. 43540	P.R. 34	1/4/19 ?	101.6	80-120 18-36	Lobar Pn. R. U. and L. lobes	12,800 Polys. 87%	Neg. Avery	Tincture of digitalis	550 + 1/20/19	Recovered from pneumonia 1/12/19	+	++	Slowly resolving pneumonia; phlebitis, left leg, 1/9/19
25. 42656	P.R. 19	12/23/18 4th	104.6	80-108 20-32	Lobar Pn. L. L. L.	? Polys. 86%	Neg. Avery Mouse	Tincture of digitalis, 2 c.c.	0 None	Recovered, 6th day	—	Negative	Onset, sudden; recovered before type obtained
26. 42912	P.R. 18	12/24/18 ?	103.3	80-144 20-38	Bron. Pn. bilateral	11,900 Polys. 88%	+ 12/25/18 Mouse 12/25/18	Tincture of digitalis	100 ?	Recovered from pneumonia 1/4/19	+	Negative	Came in with right parotitis; dental caries; chronic alveolar abscess; acute arthritis, both hips
27. 42857	P.R. 19	12/23/18 3d	103.4 lysis	72-120 20-34	Lobar Pn. L. L. L.	18,000 Polys. 86%	+ I Mouse	Tincture of digitalis	250 + 1/12/19	Recovered, 1/2/19	+	+	Onset, sudden
28. 42611	P.R. 19	12/28/18 ?	100 lysis	80-126 18-42	Bron. Pn. bilateral	12,000 Polys. 87%	+ I Mouse	Tincture of digitalis; atropin; strychnin	300 None	Recovered, 12/28	+	Negative	Relapse, 1/11/19; Type III from sputum; recovered, 1/17/19
29. 43539	P.R. 37	1/4/19 ?	101.4 crisis	66-120 18-38	Lobar Pn. R. U. and L. U. L.	10,600 Polys. 86%	Neg. Mouse	None	700 None	Recovered, 1/11/19	—	Negative	
30. 42520	P.R. 17	12/16/18 ?	104.3 crisis	80-144 20-44	Lobar Pn. B. U. and R. L. L.	16,000 Polys. 91%	Neg. Mouse	Tincture of digitalis; whisky	300 None	Recovered, 12/23/18	—	Negative	Abscess, sacral region, 1/5/19
31. 43731	P.R. 42	1/7/19 ?	104.2 lysis	72-120 18-48	Lobar Pn. R. L. L.	12,800 Polys. 95%	Neg. Mouse	Tincture of digitalis	100 None	Recovered, 1/12/19	—	Negative	
32. 42910	P.R. 32	12/24/18 5th	103 crisis	76-108 18-36	Lobar Pn. R. L. L.	14,000 Polys. 84%	Neg. Mouse	Tincture of digitalis	85 None	Recovered, 12/28/18	+	Negative	Onset, gradual
33. 42019	P.R. 37	12/8/18 ?	103 lysis	80-140 20-40	Lobar Pn. R. J. L. R. M. L.	8,500 Polys. 90%	Neg. Mouse	Tincture of digitalis	100 None	Recovered, 1/16/19	+	Negative	Serum treatment not followed up; result not due to serum; otitis media acuta, left, non-suppurative, 12/13
34. 42600	Col. 26	12/18/18 2d	104.2 lysis	78-120 20-60	Lobar Pn. L. L. L.	16,400 Polys. 92%	Neg. Avery Mouse	Tincture of digitalis	100 None	Recovered, 8th day	+	Negative	Onset, sudden
35. 43331	Col. 22	1/1/19 2d	101-104	80-120 18-26	Bron. Pn. R. L. L.	16,000 Polys. 98%	Neg. Avery Mouse	0	100 None	Recovered, 5th day	—	Not taken	Onset, sudden; very toxic; prompt change after serum
36. 44775	White Co.B. M.P.	1/21/19 2d	104 lysis	80-130 20-48	Lobar Pn. both lowers	14,400 Polys. 88%	+ after 2d serum Mouse	Tincture of digitalis	400 None	Recovered, 11th day	—	Negative	Onset, sudden

* No evidence of malaria was found in any of the cases. When there were complications, these are stated in the last column.

† Right lower and middle

‡ + I means positive for Type I pneumococcus.

§ Positive for Type I pneumococcus and Bacillus influenzae. Refers to organisms recovered from the mouse.

As will be seen in Table 3, these Type I pneumococcus infections among the Porto Ricans resembled more nearly the kind of pneumonia ordinarily encountered in practice, rather than the type of pneumonia experienced as a complication of the recent epidemic of respiratory infection. When a history could be obtained, the onset, in most instances, was found to have been sudden. The type of involvement was, clinically, lobar in twenty-seven, or 81.8 per cent., out of the thirty-three cases studied. All but two cases, moreover, showed the presence of some degree of leukocytosis. In eight cases, or 24.2 per cent., there was a positive blood culture. Thirty-one patients were treated with serum. One case was discovered only postmortem; the other two patients were out of danger when the type of infection was determined.

The smallest amount of serum given to any one individual was 85 c.c.; the largest, 1,050 c.c., with recovery. The average amount of serum administered was 375.8 c.c.

The serum therapy of pneumonia in the case of white persons is followed by serum sickness in a large percentage of cases—probably around 80 per cent.—anywhere from the fifth or sixth day to the second or third week after the administration of the serum, usually about the tenth day.

It was noted during the summer that the occurrence of serum sickness was much less among the negroes, who had been treated with immune horse serum, than among the whites. The absence of serum sickness was even more striking among the Porto Ricans. Only four of the thirty-one men treated showed evidence of serum sickness, as urticaria, muscular and joint pains, headache or fever.

The results of the serum therapy were very satisfactory; only two patients died in this series of thirty-three. One patient died suddenly on the eighteenth day during convalescence, apparently from a pulmonary embolus. No necropsy was granted. The second developed an empyema, and subsequently a severe facial erysipelas with which he died a few days later, on the twentieth day of the disease. The therapeutic results are especially gratifying, as a majority of these men were in wretched physical condition. Sixteen, at least, were shown to be harboring the hookworm in the intestine. Eight of the thirty-three had a pneumococcus bacteremia, which may be taken in general as evidence of severe infection.

Of the complications, four patients developed empyema, and three recovered after thoracotomy and drainage. Four developed otitis media and one of these an acute infection of the mastoid cells which necessitated a radical operation. Several had skin abscesses, one a phlebitis, one a submaxillary adenitis, one acute catarrhal appendicitis, and one an epididymitis. Two had complicating facial erysipelas.

During the same period there were three other cases of Type I pneumococcus infection among the soldiers. One of the patients was white, and two were colored. They were treated with serum and recovered.

SUMMARY

Porto Ricans under favorable conditions are susceptible to lung infection by the Type I pneumococcus. The disease pursues a typical course, accompanied by a bacteremia in about the same proportion as among white persons.

Specific serum therapy seemed to influence the disease. The mortality of this series was 6 per cent.

The incidence of serum sickness following the administration of antipneumococcus immune horse serum was infrequent as compared with our usual experience among white persons.

END-RESULTS OF ARTERIAL RESTITUTION WITH DEVITALIZED TISSUE

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Jan. 22, 1908, the right common carotid artery of a young, adult, female dog was divided, and a segment of vena cava, preserved for sixty days in formaldehyd solution, was interposed and sutured to the ends of the artery. The implanted tissue was treated with ammonia and absolute alcohol, and was impregnated with petrolatum, just prior to the operation. Feb. 12, 1908, the artery at the site of the operation was exposed, and a direct examination revealed an active circulation through the segment.¹

The animal was demonstrated before the St. Louis Medical Society, Feb. 29, 1908, at which time, as far as could be determined by palpation, pulsation in the common carotid arteries was the same on the two sides.

Clinical examination, from time to time, demonstrated like pulsations in the two common carotid arteries. On the right side, at the site of operation, a dense nodular structure could be felt on the course of the artery. The animal raised pups in 1909-1910, and whelped several times in immediately succeeding years, but failed to raise litters. She remained in excellent condition except after occasional fights with other dogs, until age led to a general physical decline. For about six months prior to death, the decline grew increasingly more marked, and for several weeks preceding death she showed great physical weakness, with loss of appetite; emaciation became correspondingly evident. Two days before death she was barely able to rise to her feet, and was unable to stand for more than a minute. An examination revealed the pulse in both common carotid arteries to be the same by palpation. The animal died suddenly, March 20, 1919, just after the attendant gave water. According to his statement, she fell over dead—there was no struggling.

An examination shortly after death revealed the two scars of the previous operations: the first, for the operation proper, Jan. 22, 1908, and the second, for exposing the structures for direct examination, Feb. 12, 1908.

There was an enlargement of the right common carotid artery about 3.5 cm. long and 2 cm. in diameter on the course of the artery near the root of the neck, several centimeters distal to the origin of the artery. Above and below, the artery appeared and felt normal. The enlargement was fibrous and vascularized on the surface, and to the touch was resistant, but springy and apparently hollow.

A connection through the mass between the two parts of the artery on each side was demonstrated by manipulation under liquid, and confirmed by section.

COMMENT

This experiment was undertaken in an attempt to obtain conclusive evidence as to whether devitalized tissue may serve adequately and indefinitely to transmit blood in vascular restitution. At that time, others

1. Guthrie, C. C.: *Am. J. Physiol.* **19**: 482 (Sept. 2) 1907; *Interstate M. J.* **15**: 25 (Feb. 29) 1908; *Science* **27**: 690 (March 20) 1908; *ibid.* **29**: 29 (Jan. 11) 1909; *Structural Changes and Survival of Cells in Transplanted Blood Vessels*, *J. A. M. A.* **50**: 1035 (March 28) 1908; *Heart* **2**: 115 (Nov.) 1910; *Cleveland M. J.* **11**: 317 (May) 1912; *Blood Vessel Surgery and Its Applications*, New York, Longmans, Green & Co., 1912, p. 93.