by inserting a heating unit in the same machine a temperature range of over 100°C can be obtained which will remain constant within very narrow limits.

A resistance thermometer with a self-recording mechanism (Micromax-Leeds and Northrup Company, Philadelphia) is introduced into the chamber so that any deviation from the constant temperature may be noted, and the cultural results interpreted accordingly.

An interval timer with an automatic release is attached to the camera which permits a wide range of interval-timed photography ranging from seconds to hours. The most practical of such apparatus we have found to be the extremely compact unit made by J. W. Robbins of Philadelphia. In this way the entire procedure is automatic with the exception of critical focusing. Particularly with rapidly growing cells such focusing must be carried out at frequent intervals to secure satisfactory photographic results. In our apparatus this can be done directly through the microscope eyepiece or with the intervention of a removable prism in the system which makes the focusing somewhat more convenient.

13630

Susceptibility of Syrian Hamsters to Leptospirosis.

HARRY E. MORTON. (Introduced by Stuart Mudd.)

From the Department of Bacteriology, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

Packchanian[1] studied the susceptibility of 32 species and subspecies of rodents to virulent strains of *Leptospira icterohemorrhagiæ* and concluded that certain species of American deer-mice, genus *Peromyscus,* are suitable as susceptible small laboratory animals for experimental studies of icterohemorrhagic spirochetosis and for the diagnosis of Weil's disease. He did not, however, include hamsters in his studies. Larson[2] reported that white mice *(Mus musculus)* are extremely sensitive to *L.icterohemorrhagiæ*. He emphasized that young animals be employed. The mortality rate approximates 100% in 3-week-old mice, but falls rapidly as age increases. At this time we wish to report on the susceptibility of Syrian hamsters to *L. canicola* and *L. icterohemorrhagiæ*.

[1] Packchanian, A., *Pub. Health Rep.*, 1940, **55**, 1389.

[2] Larson, C. L., *Pub. Health Rep.*, 1941, **56**, 1546.

The Syrian hamsters were obtained originally from H. C. Schaefer, Research Department of Ralston Purina Co., St. Louis. The strain of *L. canicola* was obtained from Dr. Karl F. Meyer, George Williams Hooper Foundation, San Francisco. It was isolated from dog blood by culture methods. The strain of *L. icterohemorrhagiæ* was obtained from Dr. Ruth E. Miller, Woman's Medical College of Pennsylvania, Philadelphia. It was isolated from rats in Philadelphia. The culture medium was Schüffner's modification of Verwoort's medium, as described by Meyer, Stewart-Anderson, and Eddie.[3]

L. icterohemorrhagiæ: 0.5 ml of cultures which had been incubated approximately one week at room temperature, when injected subcutaneously into hamsters 3 to 5 weeks old, produced death in 5 to 8 days. Cultures made from the heart's blood 24 hours after the injection remained sterile, but those made 48 and 72 hours after the injection were positive for leptospira. Animals not over 5 weeks old should be used if it is desired to produce death of the animals with typical signs of icterus.

L. canicola: 0.5 ml of cultures which had been incubated approximately one week at room temperature, when injected subcutaneously into hamsters 3 to 5 weeks old failed to bring about death of the animals. Cultures made from the heart's blood 48, 72, and 96 hours after the injection were positive for leptospira whereas the cultures made 24 hours after the injection remained sterile.

Although our work has been limited to one strain each of the two species of *Leptospira*, it appears that Syrian hamsters may be useful as laboratory animals in working with *L. canicola* and *L. icterohemorrhagiæ*.

Taylor[4, 5] reported that Syrian hamsters, in addition to ferrets, gave an immune response to influenzal virus in human throat washings, and since our first use of these animals in April, 1941, other reports have appeared on their usefulness as laboratory animals. Broun, Muether, Mezera, and LeGier[6] found them highly susceptible to the virus of St. Louis encephalitis and that humoral antibodies were demonstrable in the blood sera if the animals survived 7 days or

[3] Meyer, K. F., Stewart-Anderson, B., and Eddie, B., *J. Am. Vet. Med. Assn.*, 1939, **95**, 710.

[4] Taylor, R. M., PROC. SOC. EXP. BIOL. AND MED., 1940, **43**, 541.

[5] Taylor, R. M., and Parodi, A. S., PROC. SOC. EXP. BIOL. AND MED., 1942, **49**, 105.

[6] Broun, G. O., Muether, R. O., Mezera, R. A., and LeGier, M., PROC. SOC. EXP. BIOL. AND MED., 1941, **46**, 601.

longer.[7] Eaton, Martin and Beck[8] reported the hamsters susceptible to the viruses of meningopneumonitis and lymphogranuloma venereum.

13631 P

Blood Cultures from Pulmonary Artery and Aorta in Patient with Infected Patent *Ductus arteriosus.*

ARTHUR S. W. TOUROFF. (Introduced by G. Shwartzman.)

From the Laboratories of The Mount Sinai Hospital, New York City.

Operation, in cases of subacute bacterial endarteritis superimposed on patent *ductus arteriosus*, necessitates direct exposure of the pulmonary artery and aorta.[1, 2, 3] This offers an opportunity to take blood cultures directly from the above structures.

In a recent case, 14 ml of blood were drawn simultaneously from both the pulmonary artery and the aorta. Agar-plate cultures of the blood taken from the pulmonary artery revealed innumerable colonies of *Streptococcus viridans*. The aortic specimen contained 51 colonies per ml of blood. These quantitative determinations indicate that the bacterial content of the blood *entering* the lungs differs from that of the blood *leaving* the lungs (and traversing only the left side of the heart.).

Heretofore the existence of a pulmonary protective barrier, which removes infective material from the circulating blood, has been demonstrated directly only in experimental animals.[4-9] Furthermore, in cases of subacute bacterial endarteritis superimposed on patent *ductus arteriosus*, it has not been shown as yet whether in-

7 Broun, G. O., LeGier, M., Mezera, R. A., and Muether, R. O., PROC. SOC. EXP. BIOL. AND MED., 1941, **48**, 310.

8 Eaton, M. D., Martin, W. P., and Beck, M. D., *J. Exp. Med.*, 1942, **75**, 21.

1 Touroff, A. S. W., and Vesell, H., *J. A. M. A.*, 1940, **115**, 1270.

2 Touroff, A. S. W., and Vesell, H., *J. Thoracic Surg.*, 1940, **10**, 59.

3 Touroff, A. S. W., Vesell, H., and Chasnoff, J., *J. A. M. A.*, 1942, **118**, 890.

4 Wyssokowitsch, W., *Z. f. Hyg.*, Leipzig, 1886, **1**, 3.

5 Werigo, M., *Ann. l'Inst. Pasteur*, 1894, **8**, 1.

6 Bull, C. G., *J. Exp. Med.*, 1915, **22**, 475.

7 Aschoff, L., *Z. exp. Med.*, 1926, **50**, 52.

8 Christeller, E., and Eisner, G., *Beitr. Z. Path. Anat. u. z. Allg. Path.*, 1929, **81**, 524.

9 Seeman, G., and Theodorowitsch, W., *Ztschr. f. d. Ges. Exp. Med.*, 1929, **69**, 742.