TABLE VII.

	% diff. in soleus	% diff. in tibialis
Arthritis	—24.0	—22.7
Arthritis and hyperextension	—38.8	+38.9
Hyperextension	—38.0	+28.0
Arthritis and hyperflexion	+ 2.9	—11.6
Hyperflexion	+11.0	—13.0

of maximum extension (hyperextension) caused a greater loss of weight than immobilization in maximum shortening, and that the change in the soleus was the same in either position. The experimental conditions were different in the two cases, and we believe that the different results are due to the fact that we studied the first 16 days of immobilization while Huddleston's experiments extended from 95 to 290 days. It may be that our results would change with time and come to resemble those of Huddleston. Besides, the results listed in our tables show that there are wide variations from animal to animal and, therefore, the averages must be taken from a large number of animals.

Our results cannot be compared either with those of Hines[5] who studied in rats the effect of immobilization on the recovery from paralysis caused by crushing the nerve. In our experiments the nerve was kept intact.

[5] Hines, H. M., *J. A. M. A.*, 1942, **120**, 515.

Summary. 1. Arthritis of the tibio-tarsal joint produced in cats by injecting silver nitrate, causes an atrophy of the soleus and tibialis anticus muscles. Tables I and II, Fig. 1 and 2.

2. Immobilization of the inflamed tibio-tarsal joint in hyperflexion results in a loss of weight of the tibialis that is similar or slightly less marked than that caused by arthritis alone. Table III, Fig. 1. In these conditions the soleus keeps its normal weight. Table IV, Fig. 2.

3. Immobilization of the inflamed joint in hyperextension results in an increase of weight of the tibialis. Table V, Fig. 1. The soleus, on the other hand, shows a greater loss of weight than by arthritis alone. Table VI, Fig. 2.

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Respiratory Mask and Valves for Dogs.

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The units to be described were developed in this laboratory for the purpose of collecting expired air of unanesthetized, trained dogs. The avoidance of leaks, minimization of resistance to breathing and of dead space were prime factors considered in designing the apparatus. No new fundamental principles are involved; rather, the apparatus embodies good features of older designs, eliminates some of the bad and utilizes new devices, to our knowledge never previously described.

Mask. The mask consists of a copper wire frame, on the order of carefully shaped commercial wire muzzle, made to fit loosely the snout of a 15 kg mongrel hound. The nasal end is projected about 1″ beyond the nose and fitted with a No. 9 stopper with a single 3/8″ bore. The open end is bent to fit the snout near the lip corners with about 1/4″

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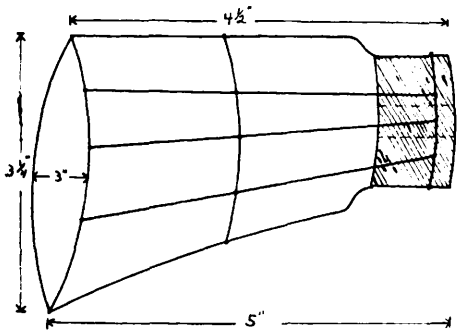

FIG. 1

Mask frame without covering. Shaded portion a No. 9 rubber stopper for insertion of B in Fig. 2.

clearance. Eight longitudinal wires spaced evenly around the frame serve to give good support and shape to the covering material. The finished frame (Fig. 1) is wrapped with 3 or 4 thicknesses of plaster bandage, allowed to dry overnight and soaked for an hour in melted paraffin. A latex surgeon's glove, size 8, from which the fingers are removed is stretched over the open end of the mask and secured by wrapping tightly with string and brushing with molten paraffin; about 3″ of the wrist end of the glove is allowed to project as a sleeve. In use, the sleeve is stretched over the dog's muzzle to beyond the lip corners and invaginated into the mask by sliding the latter toward the eyes. Two rubber strips cemented to the end of the sleeve and tied together behind the ears prevent rolling of the glove and exposure of the lip corners during a measurement. We have found no grease to be necessary to prevent leaks under the glove; this may, however, be necessary in the case of very long-haired animals. The mask can be steadied during the experiment either by hand or a clamp. Such a mask will fit a number of 10-20 kg animals with similar muzzle shapes thus obviating the necessity of individually molded outfits. For smaller animals a smaller size glove may be used as sleeve, but the mask dead-space factor may become significant in such cases. Hence we have constructed similar but smaller size masks which may be used for 5-10 kg dogs. Although this mask does not fit the muzzle tightly enough to prevent some opening of the jaws it would limit the extent of such movement and thus might limit the efficiency and degree of the panting process.

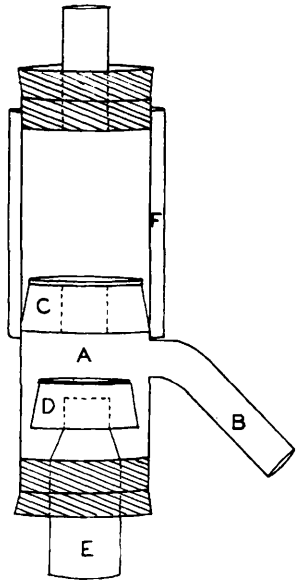

FIG. 2

Respiratory valves, shown in position used.

Valves. The valves are of the ordinary rubber flap type enclosed in glass. (A) in Fig. 2 is a 5¼″ long, 45 mm o.d. standard Pyrex tube with a 13 mm o.d. tube (B) fused to one side about ⅓ of the distance from one end. The expiratory valve (C) is a No. 8 rubber stopper with ⅝″ bore covered with a circle of 1/32″ rubber sheet secured to the stopper by a small dot of rubber cement on one edge. A perfectly flat piece of sheet rubber and a smooth stopper must be selected to avoid leaks. The inspiratory valve (D) is a No. 7 stopper covered with a similar flap. The 25 mm o.d. glass tube (E) should produce a minimum of stretching of the stopper (D) when inserted to prevent distortion of the valve seat and consequent leaks. The ends of (A) are closed with single bore No. 9 stoppers which can be connected to spirometers. A 20-watt electric heater (F) is built to fit over the upper half of the valve. This prevents condensation of moisture on the expiratory valve during collection and eliminates the objectionable sticking of this flap with its consequent resistance to expiration. The valve should be used only in or very

close to the vertical position as shown in the diagram as otherwise the flaps will be opened by gravity between respirations allowing significant leaks. Small springs to close the flaps might eliminate this danger. The valve should be stored in the vertical position when not in use. The tube (B) with a 45° bend, inserted into the stopper of the mask, is used when the dog is supine with head tilted 45° upward. Modification of this bend permits use with the animal in any desired position. Modification of the diameter and bend of (B) and attachment to a suitable mask permits use on man. No significant resistance to respiration develops with these valves even during exercise or CO_2 inhalation.

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Effect of Salicylate on Plasma Fibrinogen and Sedimentation Rate in Rheumatic and Non-Rheumatic Patients.*

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Despite the long-standing use of salicylates in the management of rheumatic fever, considerable uncertainty still exists with regard to their efficacy and to their mode of action in this disease. While some observers believe that their clinical effect may be ascribed entirely to the analgesic and antipyretic action,[1] others have assumed a specific inflammation-suppressant effect of these drugs in rheumatic fever. Studies which indicated a more rapid return to normal of the sedimentation rate in rheumatic patients receiving large doses of salicylates were interpreted as supporting evidence for this view, under the assumption that the sedimentation rate represented an index of inflammatory activity.[2] A specific influence of the drug on the sedimentation rate apart from its assumed action on the inflammation is also suggested by the observation that the sedimentation rate may increase promptly on discontinuance of salicylate therapy.[3]

Present evidence indicates that the sedimentation rate of the erythrocytes is mainly dependent on the concentration and distribution of the various fractions of the plasma proteins.[4] Fibrinogen exerts the greatest accelerating action. A close relationship between the sedimentation rate and the level of fibrinogen has been demonstrated by several observers in various experimental conditions and diseases, among them rheumatic fever.[5] Fibrinogen is generally believed to be formed solely in the liver.[6] In view of these facts it appears possible that the effect of salicylates on the sedimentation rate of rheumatic patients is due to an inhibition of the formation of fibrinogen by the liver. That salicylates may affect liver function is also suggested by the observation that they may cause significant reduction in the plasma prothrombin in animals and in man.[7] One would not expect such

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