

TABLE II.

(a) *Hydrogen.*

Duration of film.	Temp.	Transfusion of gas in c.c. per sq. cm. of film per hour.
H. mm.	°C.	
1 52	18.6	4.8
1 33	20.0	5.2
0 50	20.1	4.2
1 45	19.6	4.3
1 20	20.8	3.5
1 10	19.7	4.1
1 07	19.1	3.8
4 40	19.2	3.1
	19.1	3.1
	19.7	3.8
	19.1	3.6
	Average	4.0

(b) *Helium.*

3 41	18.4	3.0
	18.3	2.4
	18.0	3.1
5 15	19.5	2.2
	19.3	2.8
	18.7	2.8
	18.7	3.1
	Average	2.8

hydrogen to be 960 and for helium 670 litres per square metre per day. For the most highly porous balloon fabrics tested by Elworthy and Murray the transfusion of hydrogen was only about 19.0 litres per square metre per day, and of helium 7.1 litres per square metre per day. It is interesting to note that while soap films were very much more permeable to hydrogen and helium than were the balloon fabrics tested, the ratios of the permeabilities of both fabrics and films to the two gases were practically the same. This is the more interesting when it is considered that while in the case of the films the membrane was of the continuous type, in the case of the fabric there was a possibility of the diaphragm being discontinuous. It may be, however, that on account of the fabrics being "doped" the discontinuity referred to was negligible. In this case the process of transfusion of the gases through the substance of the fabric would probably be of the same nature as that of transfusion through the films.