typing of hemolytic streptococci cross-reactions can frequently be eliminated by dilution of the serum, and absorption of such sera with organisms of a heterologous type may be unnecessary. This has been our experience.

Lastly, there is the obvious but important point that the amount of available typing serum is considerably increased by dilution.

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AN AUTOMATIC DEVICE FOR PERIODICALLY DETERMINING AND RECORDING BOTH SYSTOLIC AND DIASTOLIC BLOOD PRESSURE IN MAN[1]

THIS device, which has been developed at the University of Wisconsin as a joint project of the anesthesia and physiology departments of the Medical School, determines both systolic and diastolic blood pressures by the auscultatory method, the method in common use by most members of the medical profession. The machine has been designed so that it can make and record a complete determination of both pressures and allow sufficient rest for the arm of the subject all within 30 seconds. Pressures may therefore be determined at any periodic rate up to one every half minute. The record consists of a graph of the pressure changes in an inflatable cuff placed on the upper arm (the ordinary type of cuff and application used by physicians in determining blood pressures) and a simultaneous record of the sounds over the brachial artery in the ante-cubital fossa below the cuff. The systolic pressure is taken as that pressure corresponding to the first Korotkow phase in these sounds and the diastolic as that corresponding to the fourth Korotkow phase.

The device consists essentially of two parts. One part controls the induction and recording of the necessary cyclic pressure changes in the inflatable cuff; the other is concerned with the detection, amplification and recording of the sounds in the brachial artery below the cuff.

Operation of the device is as follows. The pressure in the inflatable cuff is automatically recorded as it passes through the following events: (a) raising the pressure in the cuff to some desired pressure above systolic in a predetermined length of time which may be varied at will; (b) allowing this pressure to fall to some pressure below diastolic at a rate which may be adjusted; (c) completely deflating the cuff for any desired period of time to allow rest for the arm and to restore circulation. This cycle of events may be made to take place periodically or non-periodically as desired. The sounds over the brachial artery in the ante-cubital fossa are picked up by a suitable device, amplified and recorded simultaneously with the pressures in the cuff. The amplification may be varied and a limiting device is supplied to limit the oscillations of the recording pen or stylus.

The machine as constructed at Wisconsin accomplishes the pressure cycle by means of electrically operated valves. A Shure Stethophone picks up the sounds which are amplified and recorded by means of a moving coil type of ink writer. Pressures are recorded with an Esterline Angus pressure recorder. The paper drive is controlled so that the tape moves only during the actual determination and not while the arm is at rest.

A typical time distribution for the pressure cycle for recording pressures every half minute is 3 seconds for inflation, 22 seconds pressure fall and 5 seconds for rest. Pressures may be taken every half minute for hours at a time using this distribution with little discomfort to the patient and little interference with the circulation. The advantages of this machine over others is that both systolic and diastolic pressures are determined and recorded consecutively; no continuously inflated cuff or other pressure device which impedes circulation is needed; and once adjusted to the individual patient, it may be left to run unattended for hours.

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