

The above observations have been corroborated by similar studies in other patients in whom the smear changes have been correlated with biopsies and hormonal assays. These will be reported subsequently.

Conclusions. A study is presented in which the administration of testosterone propionate interrupted regular menstrual cycles in a young woman. Menstruation was resumed after cessation of treatment with this hormone. Vaginal smears showed that during the period of induced amenorrhea there was a replacement of the normal smear picture by one of the typical atrophic menopausal type, indicating a temporary suppression of ovarian follicular activity. This smear type was preceded and followed by characteristic intermediate stages and persisted throughout the course of treatment, and for a short time afterward. It was then followed by gradual resumption of follicular activity and a normal smear picture. The next menses occurred 28 days after the last dose of Oreton and about 12 to 13 days after the establishment of follicular activity.

This study furnishes a method for controlling the use of male sex hormone in women, and for inducing a temporary cessation of their menstrual cycle.

9697

Blood Oxygen Changes in Intermittent Claudication.

J. ROSS VEAL AND WILLIAM M. McCORD. (Introduced by
H. H. Beard.)

From the Departments of Surgery and Biochemistry, School of Medicine, Louisiana State University, and the Charity Hospital of Louisiana, New Orleans.

Although intermittent claudication can be readily produced experimentally by obstruction of the arterial and venous circulation in a normal extremity, the pathologic state thus precipitated is widely different from the pathologic state which is seen in gradually developing arteriosclerosis. Arteriosclerotic subjects who exhibit the symptom complex of intermittent claudication present varying degrees of arterial obstruction, but no venous obstruction of any degree.

In artificially produced intermittent claudication there is a marked lowering of the oxygen content of the venous blood. In order to determine exactly what changes occur in the stage of intermittent

claudication in arteriosclerotic subjects, the following experiments were carried out on 9 patients with arteriosclerosis who presented this symptom complex, and on 9 normal subjects. The Van Slyke method was used to determine the degree of oxygen saturation.

1. In normal subjects, in the erect posture and under basal conditions, samples of venous blood were collected under oil from the lower third of the long saphenous vein and from the popliteal vein. The patient was then required to walk for 5 minutes, this period having been previously determined as the average length of time necessary to produce exercise pain in arteriosclerotic subjects. Samples of blood were collected from the same sources immediately at the conclusion of the exercise. Table I shows the percentage of oxygen saturation of the venous blood before and after exercise in normal subjects.

TABLE I.
% O₂ Saturation Venous Blood in Normal Subjects.

Cases	Rest Period		Pain Period	
	Saphenous	Popliteal	Saphenous	Popliteal
	%	%	%	%
1	71	45	79	36
2	73	40	57	28
3	28	34	57	37
4	60	32	50	27
5	52	52	63	36
6	70	37	66	23
7	40	28	36	31
8	48	48	51	34
9	58	50	48	48
Average	55.5	40.6	54	33.3

2. A similar study was then carried out in the arteriosclerotic subjects after the amount of exercise necessary to produce pain, and the duration of the pain, had been determined for each case. As in the first group of experiments, each patient stood erect for 2 to 3 minutes. Samples of blood were then collected under oil from the lower third of the long saphenous vein and from the popliteal vein, after which the patients were required to walk until the point of severe pain was reached. Samples of blood were then collected immediately from the same sources as previously. In all cases the blood was collected while the pain was still present. Table II shows the percentage of oxygen saturation of the venous blood before and after exercise in arteriosclerotic subjects with intermittent claudication.

In normal subjects the average percentage of oxygen saturation of the superficial venous blood during rest was 55.5%, as opposed

TABLE II.
% O₂ Saturation Venous Blood in Arteriosclerotic Subjects with Intermittent Claudication.

Cases	Rest Period		Pain Period	
	Saphenous %	Popliteal %	Saphenous %	Popliteal %
1	75	51	44	42
2	71	38	88	25
3	80	42	72	35
4	55	46	80	35
5	72	35	65	32
6	82	56	67	63
7	38	32	32	35
8	86	89	78	74
9	68	49	68	44
Average	69.6	49.7	66	62

to 69.6% in arteriosclerotic subjects, and after exercise was 54%, as opposed to 66.6% in arteriosclerotic subjects. In normal subjects the average percentage of oxygen saturation of the popliteal venous blood during rest was 40.6%, as opposed to 49.7% in arteriosclerotic subjects, and after exercise was 33.3%, as opposed to 42% in arteriosclerotic subjects.

Conclusions. Determinations of the oxygen saturation of the venous blood reveal a lower oxygen content in a series of normal individuals after exercise than in a series of arteriosclerotic subjects with intermittent claudication. If intermittent claudication in arteriosclerotic subjects is produced by a tissue anoxemia, it cannot be demonstrated by determinations of the oxygen content of the superficial and deep venous blood.

9698

An Improved Method for the Evaluation of Germicidal Substances.

A. J. SALLE, W. A. MCOMIE, I. L. SHECHMEISTER AND D. C. FOORD.

From the Department of Bacteriology, University of California.

In previous papers^{1, 2} a new method was described for evaluating the efficiency of germicides by testing them for their effect on the

¹ Salle, A. J., and Lazarus, A. S., *PROC. SOC. EXP. BIOL. AND MED.*, 1935, **32**, 665.

² Salle, A. J., McOmie, W. A., and Shechmeister, I. L., *J. Bact.*, 1937, **34**, 267.