

## CONTENTS

## IRRITABILITY, STIMULATION, AND METHODS OF RECORDING

Pithing a frog	4
The nerve-muscle preparation	4
The Classes of Stimuli	5
1. Mechanical stimuli	5
2. Thermal stimuli	5
3. Physico-chemical stimuli	5
4. Electrical stimuli	8
The Graphic Record	10
Some General Phenomena of Stimulation	11
Some General Phenomena of Muscular and Nervous Response	16

## CONTRACTION OF MUSCLE AND CILIA

I. SKELETAL MUSCLE	19-29
II. SMOOTH MUSCLE	29-31
III. CILIA	30-31

## CONDUCTION IN THE NERVE TRUNK AND IN THE NERVOUS SYSTEM

I. THE NERVE TRUNK	32-34
II. THE CENTRAL NERVOUS SYSTEM	34-46
III. THE SYMPATHETIC NERVOUS SYSTEM	47

## THE RECEPTION OF STIMULI FOR THE NERVOUS SYSTEM

NOCTUOUS STIMULI	49
THERMAL STIMULI	50
MECHANICAL STIMULI	51
I. Source of stimuli immediate. Touch	51
II. Source of stimuli within the body	52
III. Source of stimuli distant. Hearing	55
CHEMICAL STIMULI	56
I. Source of stimuli immediate. Taste	56
II. Source of stimuli distant. Smell	57
PHOTIC STIMULI	57
Physiological optics	57
Accommodation	65
Defects of the eye	68
Ophthalmoscopy	70
Some of the conditions of vision	72
Color vision	75
Space perception	76

## THE CIRCULATION OF THE BLOOD

CARDIAC CONTRACTION AND ITS CONTROL	78
Experiments on the frog heart	78
Experiments on the tortoise heart	84
THE FLOW AND PRESSURE OF THE BLOOD	86
The circulation seen under a microscope	86
The capillary circulation	87
Conditions affecting the capillary circulation	87
Direct observation of the capillary circulation in man	88
Effects of mechanical stimulation on the blood vessels of the human skin	88
Effects of drugs on the skin capillaries in man	89
“Capillary pulsation”	89
The events of a cardiac cycle	90
The nervous control of the peripheral resistance	93
The pressure of blood in the arteries	94
The pulse	103
The flow and pressure of blood in the veins	104
Fatigue in mammalian muscle having a normal circulation	106
SECRETION	
Saliva	108
Gastric juice. Demonstration. Psychic secretion of gastric juice. Bidder and Schmidt’s	
Observation	109
Pancreatic juice and bile. Demonstration. The action of secretin on the flow of pancreatic	
Juice and bile	109
DIGESTION	
The mechanical factors	112
The nervous control of the alimentary canal	114
The chemistry of digestion	115
ABSORPTION	
Absorption of water from the stomach and from the small intestine	116
Absorption of crystalloids from the small intestine	116
Absorption from the large intestine	119
THE BODY FLUIDS AND THEIR REGULATION	
I. BLOOD AND ITS PROPERTIES	120
II. LYMPH AND LYMPH FLOW	128
III. URINE	131
METABOLISM	
The Haldane method of gas analysis	135
Haldane-Henderson-Bailey gas analyzer	135
The purpose of the control tube	136
Preparation for analysis. Brette asnd control tube	137

Directions for analyzing a gas	137
The proper way to clean a burette when solutions have been drawn over from the absorption Chambers	139
The Bailey sampling bottle for transferring samples of expired air	139
Determination of expired carbon dioxide	140
The basal metabolism	140
Definitions and computations	142
Determination of basal metabolism by measurement of oxygen absorption	147
Oxygen consumption in man	148
Specific dynamic action of protein	149
INTERNAL SECRETION	
The effects of pancreatectomy	152
The effects of partial adrenalectomy in the rat	153
The effects of thyroidectomy in the rat	153
The nervous control of the secretion of adrenine and sympathin	154
RESPIRATION	
The mechanics of respiration	155
Analysis of alveolar air	157
The chemical control of respiration	159
The nervous control of respiration	160
Artificial respiration in man	163
ANIMAL HEAT AND ITS REGULATION	
The temperature the body	164
The regulation of body temperature	165