CONTENTS

NUMBER 1, SEPTEMBER, 1937

I. The Influence of Vitamin C Deficiency upon the Resistance of Guinea Pigs to Diphtheria Toxin. Glucose Tolerance. A. Sigal and C. G. King .................................................. 1

II. The Acetylcholine-Choline-Esterase System. G. E. Hall and C. C. Lucas ........................................ 10

III. Spermine, Zinc and Insulin. A. M. Fisher and D. A. Scott ...... 21

IV. The Relative Effectiveness of Atropine and Novatropin on Gastric and Colonic Motility of the Unanesthetized Dog. J. P. Quigley ...................................................... 30

V. Does Digitalis Protect Against Diphtheria Toxin? Charles W. Edmunds and Ralph G. Smith .... 37


VII. Effect of Dosage on Rate of Disappearance of Alcohol from the Blood Stream. Henry W. Newman, Arnold J. Lehman and Windsor C. Cutting .................. 58

VIII. The Toxicity of Certain Codein Compounds for Male and Female Rats of Different Ages. Charles F. Poe, John G. Strong and Norman F. Witt ........................................ 62

IX. Sodium Formaldehyde Sulphoxalate in Experimental Poisoning by Mercuric Chloride. Walter Modell, Harry Gold, Griffith J. Winthrop and Ellen B. Foot ........ 66

X. The Effects of Morphine on Blood Sugar and Reflex Activity in the Chronic Spinal Cat. Richard C. Bodo and Chandler McC. Brooks .................................................. 82

XI. The Toxicity of Orally Ingested Arsenic, Selenium, Tellurium, Vanadium and Molybdenum. Kurt W. Franke and Alvin L. Moxon .................................................. 89

XII. Comparative Intravenous Toxicity of Some Monohydric Saturated Alcohols. A. J. Lehman and H. W. Newman ........ 103

NUMBER 2, OCTOBER, 1937

XIII. The Toxicity and Anesthetic Potency of Some Alkoxy Benzoates and Related Compounds. A. R. McIntyre and R. F. Sievers .... 107


XV. The Inhibition of Human Gastric Hypermotility by Atropine or Novatropin. J. P. Quigley ........ 130
CONTENTS

XXXV. The Action of p-Aminophenol on Certain Tissue Oxidations.
   Frederick Bernheim, Mary L. C. Bernheim and Harry O. Michel. 311

XXXVI. The Hydrolysis of Acetanilide by Various Tissues. Harry O.
   Michel, Frederick Bernheim and Mary L. C. Bernheim. 321

XXXVII. The Effect of Various Anesthetics and Certain Drugs on the
   Electrocardiogram of the Dog. Charles J. Betlach. 329

XXXVIII. The Effect of Strychnine on Irritability and Certain Other
   Properties of Perfused Frog Heart. Paul L. McLain. 338

XXXIX. The In Vivo Effects of Eserine on the Choline-Esterase System.
   G. W. Manning, J. Lang and G. E. Hall. 350

XL. Further Experiments on Effect of Certain Quinine Derivatives on
   the Pneumococcus. John M. Johnston, H. B. Burchell,
   H. H. Permar and W. W. G. Maclachlan. 364

XLI. Synergism of Ethyl Alcohol and Sodium Pentobarbital. James
   M. Dille and Raymond P. Ahliquist. 385

XLII. Notes on the Observed Effects of Prostigmin in Man: Persons
   with Epilepsy. Leon J. Robinson. 389

XLIII. Distribution of Administered Iodide and Thiocyanate in Compari-
   sion with Chloride, and Their Relation to Body Fluids. G. B.
   Wallace and B. B. Brodie, with assistance of Max M. Friedman
   and David Brand. 397

XLIV. The Distribution of Administered Iodide and Thiocyanate in
   Comparison with Chloride in Pathological Tissues, and Their
   Relation to Body Fluids. By G. B. Wallace and B. B. Brodie,
   with assistance of Max M. Friedman and David Brand. 412

XLV. The Respiratory Effects of Morphine, Codeine and Related Sub-
   stances. VI. Compounds Derived from Morphine and Di-
   hydromorphine by Substitution in 6-Carbon Position. Charles
   I. Wright and Fleming A. Barbour. 422

XLVI. The Respiratory Effects of Morphine, Codeine and Related Sub-
   stances. VII. Compounds Derived from Codeine and Di-
   hydromorphine by Substitution in 6-Carbon Position. Charles
   I. Wright and Fleming A. Barbour. 440

XLVII. Specificity Relationships between Types of Arsenicals and Types
   of Trypanosomes. M. L. Kuhls and A. L. Tatum. 451

XLVIII. The Effect of Anoxia on the Action of Nitrous Oxide in the
   Normal Human Subject. J. H. Bennett and M. H. Seegers. 459
## ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of vitamin C depletion alone on glucose tolerance of guinea pigs</td>
<td>4</td>
</tr>
<tr>
<td>— of diphtheria toxin on glucose tolerance of vitamin C depleted guinea pigs</td>
<td>4</td>
</tr>
<tr>
<td>— of injections of diphtheria toxin on average weights of guinea pigs</td>
<td>4</td>
</tr>
<tr>
<td>receiving different amounts of vitamin C daily</td>
<td>7</td>
</tr>
<tr>
<td>Hydrolysis of substrate by sera from various species of animals</td>
<td>19</td>
</tr>
<tr>
<td>Effect of novatropin and atropin on gastric and colonic motility</td>
<td>32</td>
</tr>
<tr>
<td>Blood alcohol concentration in dog</td>
<td>60</td>
</tr>
<tr>
<td>Toxicity curves for male rats of different ages</td>
<td>64</td>
</tr>
<tr>
<td>— curves for female rats of different ages</td>
<td>64</td>
</tr>
<tr>
<td>Growth curves of male rats receiving diets containing arsenic, selenium,</td>
<td>93</td>
</tr>
<tr>
<td>tellurium, vanadium and molybdenum (chart 1)</td>
<td></td>
</tr>
<tr>
<td>— curves of female rats receiving diets containing arsenic, selenium,</td>
<td>93</td>
</tr>
<tr>
<td>tellurium, vanadium and molybdenum (chart 2)</td>
<td></td>
</tr>
<tr>
<td>— curves of female rats receiving diets containing arsenic, selenium,</td>
<td>94</td>
</tr>
<tr>
<td>tellurium, vanadium and molybdenum (chart 3)</td>
<td></td>
</tr>
<tr>
<td>— curves of female rats receiving diets containing arsenic, selenium,</td>
<td>94</td>
</tr>
<tr>
<td>tellurium, vanadium and molybdenum (chart 4)</td>
<td></td>
</tr>
<tr>
<td>Effect of Staphylococcus aureus exotoxin on rabbit heart</td>
<td>124</td>
</tr>
<tr>
<td>— of Staphylococcus aureus exotoxin on rabbit heart</td>
<td>125</td>
</tr>
<tr>
<td>— of Staphylococcus aureus exotoxin on rabbit heart</td>
<td>126</td>
</tr>
<tr>
<td>— of atropine of gastric hypermotility</td>
<td>132</td>
</tr>
<tr>
<td>Contraction of melanophores in response to three different concentrations</td>
<td>150</td>
</tr>
<tr>
<td>of deuterium oxide</td>
<td></td>
</tr>
<tr>
<td>Effects of deuterium oxide on ergotized melanophores</td>
<td>150</td>
</tr>
<tr>
<td>Combined effects of deuterium oxide and epinephrine</td>
<td>151</td>
</tr>
<tr>
<td>Mortality curve indicating superiority of picrotoxin over epinephrine as</td>
<td>156</td>
</tr>
<tr>
<td>antidote against nembutal depression</td>
<td></td>
</tr>
<tr>
<td>Electrocardiographic records during cyclopropane anesthesia</td>
<td>168</td>
</tr>
<tr>
<td>— records during cyclopropane anesthesia</td>
<td>171</td>
</tr>
<tr>
<td>Anesthesia with cyclopropane derivatives</td>
<td>188</td>
</tr>
<tr>
<td>Sulfanilamide clearance plotted against urine flow in experiment on dog</td>
<td>193</td>
</tr>
<tr>
<td>— clearance plotted against urine flow in experiments on dogs</td>
<td>194</td>
</tr>
<tr>
<td>Concentrations of sulfanilamide in blood and spinal fluid of boy some weeks</td>
<td>202</td>
</tr>
<tr>
<td>after recovery from meningitis</td>
<td></td>
</tr>
<tr>
<td>— of sulfanilamide in blood and spinal fluid of man with meningococcus</td>
<td>202</td>
</tr>
<tr>
<td>meningitis</td>
<td></td>
</tr>
<tr>
<td>Action of isopropylantipyrine on cat</td>
<td>207</td>
</tr>
<tr>
<td>— of isopropylantipyrine on isolated rabbit intestine</td>
<td>208</td>
</tr>
</tbody>
</table>
ILLUSTRATIONS

Action of isopropylantipyrine on rabbit (fig. 3) .................. 211
Effect of histamine administered intra-arterially on blood pressure and
salivary secretion (fig. 1) .................................. 220
— of atropine on rapid continuous secretion caused by administration of
histamine (fig. 2) .................................. 221
— of physostigmine on slow secretion caused by administration of hist-
amine (figs. 3 and 4) .................................. 222
Ink-writer (fig. 1) .................................. 232
Action of morphine and atropine on stomach (fig. 2) ............. 234
— of morphine and atropine on stomach (fig. 3) .......... 235
— of morphine and atropine on stomach (fig. 4) ....... 236
Arrhythmias observed after injection of test dose of adrenalin in cyclopro-
pane and chloroform anesthetics (fig. 1) ............. 245
Normal rabbit bronchus (fig. 1) .................................. 276
— cat bronchus (fig. 2) .................................. 276
— puppy bronchiole (fig. 3) .................................. 278
Small bronchus of rabbit sensitized by egg albumin hypodermically (fig. 4) .... 281
Sensitivity of diphtheritic heart to digitalis (fig. 1) .............. 290
Effects of ergotamine injections on urinary constituents before and after
renal denervation (fig. 1) .................................. 294
Action of cinchophen on denervated kidney (fig. 2) ............. 296
Effects of atropine on action of cinchophen on denervated kidney (fig. 3) .... 297
— of p-aminophenol on oxidation of xanthine by liver at pH 6.7 (fig. 1) .......... 316
— of hydrogen ion concentration on rate of hydrolysis on acetanilide and
chloracetyl-l-leucine (fig. 1) .................................. 324
Hydrolysis of acetanilide by liver suspension, pH 8.0, 30° (fig. 2) ............. 325
Typical electrocardiograms of dog taken during third plane of surgical
anesthesia (fig. 1) .................................. 331
Beginning depression of ventricular irritability by strychnine (fig. 1) .......... 343
— recovery of ventricular irritability after strychnine perfusion (fig. 2) .......... 344
Effects of eserine on choline-esterase system (graph 1) ............ 352
— of eserine on choline-esterase system (graph 2) ............ 354
Chronically eserinized dog—effect of vagus stimulation and acetylcholine
(fig. 1) .................................. 356
— eserinized dog—effect of additional eserine (fig. 2) .......... 357
— eserinized and atropinized dog—effect of vagus stimulation (fig. 3) .......... 358
— eserinized and atropinized dog—effect of pilocarpine and acetylcholine
(fig. 4) .................................. 359
Normal anesthetized dog—effect of continuous acetylcholine (fig. 5) .......... 359
— anesthetized dog—effect of single large injection of eserine followed by
acetylcholine (fig. 6) .................................. 360
— unanesthetized dog—effect of continuous acetylcholine (fig. 7) .......... 361
Graphic representation of two experiments with mice infected with virulent
pneumococci subsequently given hydroxyethylapoquinine or optochin
(chart 1) .................................. 366
Experiment showing comparative survival of group of mice infected with
virulent pneumococci and treated with apocuprein and optochin (chart 2). 367
ILLUSTRATIONS

Graphic representation of survival of infected and treated mice for each test compound (optochin and hydroxyethylapquinine) (chart 3) .......... 367
Effect of varying number of infecting organisms (optochin) (chart 4) ........ 368
— of varying dose of compound (optochin and hydroxyethylapquinine) upon survival of mice infected with constant dose of organisms (chart 5) .... 369
Results of experiments similar to those of chart 5 but at higher doses of test compounds (chart 6) ............................................. 369
Effect of delaying administration of compound one-half hour as compared with administration immediately following infection (chart 7) ...... 370
— of previous condition of mice upon survival in such experiments (chart 8) ...... 370
Sleeping time (absence of righting reflex) after various doses of alcohol and sodium pentobarbital (fig. 1) ............................................. 386
— time after intravenous administration of various combinations of alcohol and sodium pentobarbital (fig. 2) ................................. 387
Percentage of normal minute volume of rabbits one hour after injection of morphine and derivatives (fig. 1) ............................................. 430
— of normal carbon dioxide minute volume (fig. 2) ................................. 431
— of normal minute volume of rabbit one hour after injection of dihydro-
morphine and derivatives (fig. 3) ............................................. 432
— of normal carbon dioxide minute volume one hour after injection of dihydromorphine and derivatives (fig. 4) ............................................. 433
Minute volume one hour after injection of codeine and derivatives in rabbit 
(fig. 1) ................................................................. 444
Percentage of normal carbon dioxide minute volume (fig. 2) .................... 445
Minute volume one hour after injection of dihydrocodeine and derivatives in 
rabbit (fig. 3) ................................................................. 446
Percentage of normal carbon dioxide minute volume after injection of dihydrocodeine and derivatives (fig. 4) ................................. 447