PRACTICAL PLANT BIOCHEMISTRY

THIS book is intended primarily for students of Botany. Such a student's knowledge of plant products is usually obtained, on the one hand, from Organic Chemistry, on the other hand, from Plant Physiology; between these two standpoints there is a gap, which, it is hoped, the following pages may help to fill. It is essentially a text-book for practical work, an aspect of Plant Biochemistry which has received up to the present time very little consideration in teaching. A number of experiments have been devised and have been actually tested in practical classes. These experiments should enable a student to extract from the plant itself the chemical compounds of which it is constituted, and to learn something of their properties. An elementary knowledge of Organic Chemistry on the part of the student has been assumed, as it appeared superfluous to incorporate the material which has already been so amply presented in innumerable text-books.

CONTENTS

INTRODUCTION
THE COLLOIDAL STATE
ENZYME ACTION
CARBON ASSIMILATION
CARBOHYDRATES AND THEIR HYDROLYZING ENZYMES
THE FATS AND LIPASES
AROMATIC COMPOUNDS AND OXIDIZING ENZYMES
THE PROTEINS AND PROTEASES
GLUCOSIDES AND GLUCOSIDE-SPLITTING ENZYMES
THE PLANT BASES
INDEX
(d) Dilute a few drops of the filtrate with water in a porcelain dish and add a drop or two of iodine solution. A transient red colour is formed.

(e) To a little of the filtrate in a test-tube add a few drops of potassium cyanide solution. A reddish-brown colour is formed which changes to brown but becomes red again on shaking with air.

In addition to tannic acid, a great many other tannins are known, but their constitution is obscure.

Expt. 92. To demonstrate that in tannin-containing plants the tannin may be also present in the leaves. Take about two dozen leaves of the Common Oak (Quercus Robur) and pound them in a mortar. Then boil the crushed mass in an evaporating dish with a little water. Filter, and with the filtrate make the tests for tannin. Leaves of other trees also may be used, e.g. the Wig Tree (Rhus Cotinus), Sweet Chestnut (Castanea vulgaris).

Expt. 93. To demonstrate that tannins may be present in herbaceous as well as woody plants. Extract some leaves, as in the last experiment, of Scarlet Geranium (Pelargonium zonale) and test for tannin.

Expt. 94. To demonstrate that tannins may be present in petals and fruits, in addition to other parts of the plant. Extract and test for tannins as in the last experiment, using petals of Pelargonium zonale, Common Paony (Paonia officinalis) or Rose (any garden variety), inflorescence of Flowering Currant (Ribes sanguineum), flowers of Horse Chestnut (Aesculus Hippocastanum) or pericarp of Sweet Chestnut (Castanea).

THE FLAVONE AND FLAVONOL PIGMENTS.

These yellow colouring matters are very widely distributed in the higher plants (Shibata, Nagai and Kishida, 26). They are derived from the mother substances, flavone and flavonol, the latter only differing from the former in having the hydrogen in the central γ-pyrone ring substituted by hydroxyl:

![Flavone and Flavonol structures]

The naturally occurring pigments, however, have additional hydrogen atoms replaced by hydroxyl groups, that is they are hydroxy-flavones and flavonols, and the various members differ among each other in the number and position of these hydroxyl groups. Some of the members are widely distributed, others less so. Quite often more than one representative is present in a plant.
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Ed. W. M. Bayliss, D.Sc., F.R.S., and A. Harden, D.Sc., F.R.S.

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INDEX

Aceto-acetic acid, passage of, into urine (Widmark) 364
Acetone, elimination of, through the lungs (Widmark) 379
Acetone: n-butyl alcohol fermentation, products of (Reilly, Hickinbottom, Henley and Thaysen) 229
Acetone, passage of, into urine (Widmark) 364
Acids, organic, rapid volumetric method for estimation of (Foreman) 451
Adeair, G. S. The penetration of electrolytes into gels. II: The application of Fourier's linear diffusion law 762
Adam, N. K. A modification of the Barcroft and Winterstein microrespirometers 679
Adkins, D. M. Digestibility of germinated beans 637
Aldehydes, effect of, on fermentation of glucose by yeast preparations (Harden and Henley) 642
Alkaline tide in Singapore (Campbell) 603
Amino-acid excretion in Singapore (Campbell) 603
Amino-acids, rapid volumetric method for estimation of (Foreman) 451
Ammonia coefficient of pregnancy (Cullis and Hewer) 757
Ammonia excretion in Singapore (Campbell) 603
Amylase, presence of, in milk and cheese (Sato) 120
Andersen, K. G., see Krogh, A.
Annett, H. E. Factors influencing alkaloidal content and yield of latex in the opium poppy (Papaver somniferum) 618
Anthocyanins, butyl alcohol as a solvent for (Rosenheim) 73
Anthocyanins, of young leaves of the grape vine (Rosenheim) 178
Antitoxin, diphtheria, heat inactivation of (Homer) 565
Antitoxins, association of, with proteins of immunised horse serum (Homer) 42
Anti-scorbutic factor, of vegetable and fruit juices, effect of heat on (Delf) 211
Anti-scorbutic properties of concentrated fruit juices (Harden and Robison) 171
Anti-scorbutic requirements of the monkey (Harden and Zilva) 131
Baker, J. L. and Hulton, H. F. E. The iodometric estimation of sugars 754
Barbatt, J. O. W. The action of thrombin upon fibrinogen 189
Bases, organic, rapid volumetric method for estimation of (Foreman) 451
Beans, germinated, digestibility of (Adkins) 637
Bile, inhibitor for hepatic esterase in (Wishart) 406
Bradford, S. C. Adsorptive stratification in gels, III 29
Bradford, S. C. Adsorptive stratification in gels, IV 474
Brown, A. J. Obituary notice of 1
Burns, D. A note on the effect of purgation on the creatinine content of urine 94
Butter, effect of heat and oxygen on the nutritive value of (Drummond and Coward) 734
Butyl alcohol as a solvent for anthocyanins (Rosenheim) 73
Cabbage, fat-soluble factor of, extraction of, by solvents (Zilva) 494
Campbell, J. A. Ammonia excretion, amino-acid excretion and the alkaline tide in Singapore 603
Carbohydrate and fat, relative values of, as sources of muscular energy (Krogh and Lindhard) 290
Carrots, fat-soluble factor of, extraction of, by solvents (Zilva) 494
Caseinogen, molecular weight of, determination by Barger's method (Yamakami) 522
Cellulose, fermentation of, in paunch of ox (Krogh and Schmit-Jensen) 686
Cheese, presence of amylase in (Sato) 120
Chick, H. and Hume, E. M. The production in monkeys of symptoms closely resembling those of pellagra, by prolonged feeding on a diet of low protein content 135
Clark, A. B., see Stephenson, M.
Cooking, of eggs, formation of ferrous sulphide during (Tinkler and Soar) 114
Cooking of green vegetables, methods employed for (Masters and Garbutt) 75
Cotton, action of sea water on (Dorée) 709
Cotton, deterioration of, on wet storage (Fleming and Thaysen) 25
Coward, K. H. and Drummond, J. C. Researches on the fat-soluble accessory substance. IV: Nuts as a source of vitamin A 665
Coward, K. H., see also Drummond, J. C.
Creatinine content of urine, effect of purgation on (Burns) 94
Cullis, W. C. and Hewer, E. E. The "ammonia coefficient" of pregnancy 757
Cuorin (MacLean and Griffiths) 615
Delf, E. M. Effect of heat on the anti-scorbutic accessory factor of vegetable and fruit juices 211
Digestibility of germinated beans (Adkins) 637
INDEX

DORSE, C. The action of sea water on cotton and other textile fabrics 708
DRUMMONT, J. C. The nomenclature of the so-called accessory food factors (vitamins) 660
DRUMMOND, J. C. and COWARD, K. H. Researches on the fat-soluble accessory substance. III: Technique for carrying out feeding tests for vitamin A (fat-soluble A) 661
DRUMMOND, J. C. and COWARD, K. H. Researches on the fat-soluble accessory substance. V: The nutritive value of animal and vegetable oils and fats considered in relation to their colour 668
DRUMMOND, J. C. and COWARD, K. H. Researches on the fat-soluble accessory factor (vitamin A). VI: Effect of heat and oxygen on the nutritive value of butter 734
DRUMMOND, J. C., GOLDING, J., ZILVA, S. S. and COWARD, K. H. The nutritive value of lard 742

DRUMMOND, J. C., see also COWARD, K. H.

Eggs, formation of ferrous sulphide during cooking of (Tinkler and Soar) 114
Electrolytes, penetration of, into gels (Stiles) 58
Electrolytes, penetration of, into gels, mathematical discussion of (Adair) 762
ELMHEIST, R. and SHARPE, J. S. On the colours of two sea anemones, Actinia equina and Anemonea sulcata 48
Enzymes of direct oxidising systems in plants (Onslow) 535
Enzymes, oxidising, of fruits (Onslow) 541
Esterase, hepatic, inhibitor for, in the bile (Wishart) 406

Faeces, guanidine content of, in idiopathic tetany (Sharpe) 46
Fat and carbohydrate, relative values of, as sources of muscular energy (Krogh and Lindhard) 290
Fats, nutritive value of, in relation to colour (Drummond and Coward) 668
Fat soluble factor, action of ozone on, in fats (Zilva) 740
Fat-soluble factor of cabbage and carrot, extraction of, by solvents (Zilva) 494
Fat-soluble factor of fats and oils, relation of, to colour (Drummond and Coward) 668
Fat-soluble factor, technique of feeding tests for (Drummond and Coward) 661
Fat-soluble factor, see also Vitamin A, and Vitamine

Fermentation of cellulose in paunch of ox (Krogh and Schmit-Jensen) 686
Fermentation, of glucose by yeast preparations, effect of aldehydes, etc. on (Harden and Henley) 642
Ferrous sulphide, formation of, in eggs during cooking (Tinkler and Soar) 114
Fibrinogen, action of thrombin upon (Barratt) 139

FLEMING, N. and THAYSEN, A. C. On the deterioration of cotton on wet storage 25
Flour, bread-making properties of, effect of various substances on (Masters and Maughan) 580
FOREMAN, F. W. Rapid volumetric methods for the estimation of amino-acids, organic acids and bases 451
FREER, K. and VENN, E. C. V. The acidity of ropy milk 422
Frogs, dietetic experiments with (Harden and Zilva) 263
Fruit juices, concentrated, anti-scorbutic properties of (Harden and Robison) 171
Fruit juices, effect of heat on anti-scorbutic factor of (Delf) 211
Fruits, oxidising enzymes of (Onslow) 541
GARBUTT, P., see MASTERS, H.
Gas analysis apparatus, accurate form of (Krogh) 267
Gas analysis, application of Krogh’s micro-methods of (Schmit-Jensen) 4
Gas meters, calibration and use of (Krogh) 282
Gelatin, contracting clot in gel of (Lloyd) 584
Gelatin, crystallisation of (Bradford) 91
Gelatin, swelling of, in acid and alkali (Lloyd) 147
Gels, adsorptive stratification in (Bradford) 29, 474
Gels, agar-agar, containing silver nitrate, penetration of sodium chloride into (Stiles) 58
Gels, penetration of electrolytes into (Stiles) 58
Gels, penetration of electrolytes into, mathematical discussion of (Adair) 762
Gels, theory of (Bradford) 91
Glycine, neutral salt addition compounds of (King and Palmer) 574
Glyoxylic acid, new colour test for (Fearon) 548
Goat, collection of uncontaminated samples of urine of (Peters) 697
Goat, normal metabolism of (Peters) 697
GOLDING, J., see DRUMMOND, J. C.
Grape vine, anthocyanins of young leaves of (Rosenheim) 178

GRIFFITHS, W. J., see MACLEAN, H.
Growth-promoting substances, plant, occurrence of, in manurial composts, and properties of (Mockeridge) 432
Guanidine content of faeces in idiopathic tetany (Sharpe) 46

HARDEN, A. and HENLEY, F. R. The effect of pyruvates, aldehydes and methylene blue on the fermentation of glucose by yeast juice and zymin in presence of phosphate 642
HARDEN, A. and ROBISON, R. The anti-scorbutic properties of concentrated fruit juices. Part III 171
HARDEN, A. and ZILVA, S. S. Dietetic experiments with frogs 263
HARDEN, A. and ZILVA, S. S. The anti-scorbutic requirements of the monkey 131
HATSCHEK, E. A series of abnormal Liesegang stratifications 418
Heat, effect of, on anti-scorbutic factor of vegetable and fruit juices (Delf) 211
Heat inactivation of diphtheria antitoxin (Homer) 565
INDEX 783

HENLEY, F. R., see also HARDEN, A. and NEILLY, J.

HICKS, E. E., see CURTIS, W. C.

HICKST, J. A. and PAYNE, J. The metabolism of carbohydrates. Part I. Stereochemical changes undergone by equilibrated solutions of reducing sugars in the alimentary canal and in the peritoneal cavity 395

HICKST, W. J., see NEILLY, J.

HOMER, A. On the association of antitoxins with the proteins of immunized horse serum 43

HOMER, A. The heat inactivation of diphtheria antitoxin 565

HOPKINS, F. G. Note on the vitamin content of milk 721

HOPKINS, F. G. The effects of heat and aeration upon the fat-soluble vitamin 725

HUTTON, H. E. E., see BAKER, J. L.

HUM, E. M., see CHICK, H.

Iron, inorganic, distribution of, in plant and animal tissues (Jones) 654

JONES, H. W. The distribution of inorganic iron in plant and animal tissues 654

JUDD, H. M. The isodometric estimation of sugars 255

Keratomalacia, in rats (Stephenson and Clark) 502

KING, H. and PALMER, A. D. Glycine and its neutral salt addition compounds 574

KROGH, A. A gas analysis apparatus accurate to 0.001 % mainly designed for respiratory exchange work 267

KROGH, A. The calibration, accuracy and use of gas meters 282

KROGH, A. and LINHARD, J. (with the collaboration of LILJESTRAND, G. and ANDERSEN, K. G.). The relative value of fat and carbohydrate as sources of muscular energy. With appendices on the correlation between standard metabolism and the respiratory quotients during rest and work 261

KROGH, A. and SCHMIT-JENSEN, H. O. The fermentation of cellulose in the paunch of the ox and its significance in metabolism experiments 686

Lard, nutritive value of (Drummond, Golding, Zilva and Coward) 742

LILJESTRAND, G., see KROGH, A.

LINHARD, J., see KROGH, A.

LOYD, D. J. Note on the production of a contracting clot in a gel of gelatin at the iso-electric point 584

LOYD, D. J. On the swelling of gelatin in hydrochloric acid and acetic soda 147

MACLEAN, H. and GRIFFITHS, W. J. Carrois 615

MACLEAN, I. SMIRLEY and THOMAS, E. M. The nature of yeast-fat 483

Manurial composts, occurrence of plant growth-promoting substances in (Mackeridge) 424

MARTIN, C. J. The preparation of Sørensen's pure phosphate solutions when the pure salts are not available 98

Masters, H. and GARNUTZ, F. An investigation of the methods employed for cooking vegetables, with special reference to the losses incurred. Part II: Green vegetables 75

Masters, H. and MAUGHAN, M. An experimental study of the effect of certain organic and inorganic substances on the bread-making properties of yeast and on the fermentation of yeast 586

MAUGHAN, M., see MASTERS, H.

Metabolism experiments, significance of fermentation of cellulose in paunch of ox for (Krogh and Schmit-Jensen) 686

Metabolism in Singapore (Campbell) 603

Metabolism, normal, of the billy goat (Peters) 697

Metabolism, standard, and respiratory quotient, correlation between (Krogh and Lindhard) 290

Methylene blue, effect of, on fermentation of glucose by yeast-preparations (Harden and Henley) 642

Microrespirometer, modified form of (Adam) 679

Milk, presence of amylase in (Sato) 120

Milk, ropy, acidity of (Freear and Venn) 422

Milk, vitamin content of (Hopkins) 721

MCKERIDGE, F. A. The occurrence and nature of the plant growth-promoting substances in various organic manurial composts 432

Molecular weight, application to caseinogen of Barger's method for determining (Yamakami) 522

Molecular weight, Barger's microscopical method of determining (Yamakami) 103

Monkey, anti-scorbutic requirements of the (Harden and Zilva) 131

Monkeys, pellagra in (Chick and Hume) 135

Muscular energy, relative value of fat and carbohydrate as sources of (Krogh and Lindhard) 290

NIERENSTEIN, M. Note on the oxidation of quinine with hydrogen peroxide 572

Nute, vitamin A of (Coward and Drummond) 666

Oils, animal and vegetable, nutritive value of, in relation to colour (Drummond and Coward) 668

ONSLOW, M. WHEDDALE. Oxidising enzymes. II: The nature of the enzymes associated with certain direct oxidising systems in plants 535

ONSLOW, M. WHEDDALE. Oxidising enzymes. III: The oxidising enzymes of some common fruits 541

Opium poppy, factors influencing alkaloidal content and yield of latex of (Annetti) 618

Oxidising enzymes of fruits (Onslow) 541

Oxidising enzymes of plants, nature of (Onslow) 536

Oxose, action of, on vitamin A in fats (Zilva) 740

PALMER, A. D., see KING, H.

Pellagra, symptoms of, in monkeys (Chick and Hume) 135

PETERS, R. A. A method for obtaining uncontaminated specimens of urine from the billy goat with some notes upon the normal metabolism of this animal 697.
Phosphate, fermentation of glucose in presence of, by yeast preparations, effect of aldehydes, etc. on (Harden and Henley) 642
Pigments, the yellow plant, differentiation of, from fat-soluble vitamine (Stephenson) 715
Pigs, “scurry” in (Plimmer) 570
Plimmer, B. H. A. Note on “scurry” in pigs 570
Pregnancy, “ammonia coefficient” of (Cullis and Hewer) 757
Protein, Adamkiewicz test for (Fearon) 548
Pyruvates, effect of, on fermentation of glucose by yeast preparations (Harden and Henley) 642
Quinine, oxidation of, with hydrogen peroxide (Nierenstein) 572
Rats, keratomalacia in (Stephenson and Clark) 502
Reaction, influence of, on colour changes in tyrosine solutions (Venn) 99
Reilly, C., Hickinbottom, W. J., Henley, F. R. and Thaysen, A. C. The products of the “acetone: n-butyl alcohol” fermentation of carbohydrate material with special reference to some of the intermediate substances produced 229
Respiratory quotient and standard metabolism, correlation between (Krog and Lindhard) 290
Robison, R., see Harden, A.
Rosenheim, O. Note on the use of butyl alcohol as a solvent for anthocyanins 73
Rosenheim, O. Observations on anthocyanins. 1: The anthocyanins of the young leaves of the grape vine 178
Sato, M. On the presence of amylase in milk and cheese 120
Schmitt-Jensen, H. O. Estimation of carbon dioxide, oxygen and combustible gases by Krogh’s method of microanalysis 4
Schmitt-Jensen, H. O., see also Krogh, A. “Scurvy” in pigs (Plimmer) 570
Sea anemones, colours of (Elmhirst and Sharpe) 48
Sea water, action of, on cotton and other textile fabrics (Dorée) 709
Serum, immunized horse, association of antitoxins with (Homer) 42
Sharpe, J. S. The guanine content of faeces in idiopathic tetany 46
Sharpe, J. S., see also Elmhirst, R.
Singapore, alkaline tide in (Campbell) 603
Singapore, excretion of ammonia and amino acids in (Campbell) 603
Soak, M. C., see Tinkler, C. K.
Sörensøn, phosphate solutions, preparation of (Martin) 98
Stephenson, M. A note on the differentiation of the yellow plant pigments from the fat-soluble vitamine 715
Stephenson, M. and Clark, A. B. A contribution to the study of keratomalacia among rats 502
Stiles, W. The penetration of electrolytes into gels. 1: The penetration of sodium chloride into gels of agar-agar containing silver nitrate 58
Stratification, adsorptive in gels (Bradford) 29, 474
Stratifications, Liesegang, series of abnormal (Hatschek) 418
Sugars, iodimetric estimation of (Baker and Hulton) 754; (Judd) 255
Sugars, reducing, stereochemical changes undergone by, in alimentary canal and peritoneal cavity (Hewitt and Fryde) 395
Scurvy, the “ammonia coefficient” of (Cullis and Hewer) 757
Textile fabrics, action of sea water on (Dorée) 709
Thaysen, A. C., see also Fleming, N. and Reilly, J.
Thomas, E. M., see MacLean, I., Smedley Thrombin, action of, upon fibrinogen (Barratt) 189
Tinkler, C. K. and Soar, M. C. The formation of ferrous sulphide in eggs during cooking 114
Tod, A. H. A note on Braunstein’s modification of the Mörner-Sjöqvist process for the estimation of urea 252
Tryptophan, mechanism of Hopkins-Cole test for (Fearon) 548
Tyrosine, influence of reaction on colour changes of (Venn) 99
Urea, estimation of, note on (Tod) 252
Urine, creatinine content of, effect of purgation on (Burns) 94
Urine, of billy goat, method of collecting uncontaminated samples of (Peters) 697
Vegetable juices, effect of heat on anti-scorbutic factor of (Delf) 211
Vegetables, green, methods of cooking (Masters and Garbutt) 75
Venn, E. C. V. The influence of reaction on colour changes in tyrosine solutions 99
Venn, E. C. V., see also Freear, K.
Vitamin A. effect of heat and oxygen on, in butter (Drummond and Coward) 734
Vitamin A, of nuts (Coward and Drummond) 665
Vitamin A, technique of feeding tests for (Drummond and Coward) 661
Vitamin A, see also Fat-soluble factor and Vitamin
Vitamine content of milk (Hopkins) 721
Vitamine, the fat-soluble, differentiation of, from the yellow plant pigments (Stephenson) 715
Vitamine, the fat-soluble, effect of heat and aeration on (Hopkins) 725
Vitamine, the fat-soluble, effect of heat and oxygen on, in butter (Drummond and Coward) 734
Vitamine, the fat-soluble, see also Fat-soluble factor and Vitamin A
Vitamins, nomenclature of (Drummond) 660
Widmark, E. M. P. Studies in the acetone concentration in blood, urine and alveolar air. II: The passage of acetone and acetooacetic acid into the urine 394
INDEX

WIDMARK, E. M. P. Studies in the acetone concentration in blood, urine and alveolar air. III: The elimination of acetone through the lungs 379

WISHART, G. M. The existence in the bile of an inhibitor for hepatic esterase, and its nature 406

YAMAKAMI, K. Barger's microscopical method of determining molecular weights. Part I. The principle of the method with reference to the molecular and ionic attraction of solute for solvent 103

YAMAKAMI, K. Barger's microscopical method of determining molecular weights. Part II. Its application to caseinogen 522

Yeast-fat, nature of (MacLean and Thomas) 483

Yeast, fermentation of, effect of various substances on (Masters and Maughan) 586

ZILVA, S. S. The action of ozone on the fat-soluble factor in fats 740

ZILVA, S. S. The extraction of the fat-soluble factor of cabbage and carrot by solvents 494

ZILVA, S. S. see also DRUMMOND, J. C. and HARDEN, A.