

BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

JANUARY, 1944

A III—PHYSIOLOGY. BIOCHEMISTRY. ANATOMY



CONTENTS

	PAGE		PAGE
I, General Anatomy and Morphology	I	xvi, Other Organs, Tissues, and Body-Fluids. Comparative Physiology (not included elsewhere)	38
II, Descriptive and Experimental Embryology. Heredity	2	xvii, Tumours	39
III, Physical Anthropology	4	xviii, Animal Nutrition	41
IV, Cytology, Histology, and Tissue Culture.	5	xix, Metabolism, General and Special	49
v, Blood and Lymph	6	xx, Pharmacology and Toxicology	53
VI, Vascular System	13	xxi, Physiology of Work and Industrial Hygiene	62
VII, Respiration and Blood Gases	17	xxii, Radiations	63
VIII, Muscle	17	xxiii, Physical and Colloidal Chemistry	63
IX, Nervous System	18	xxiv, Enzymes	64
x, Sense Organs	23	xxv, Fungi. Micro-organisms. Immunology. Allergy	68
XI, Ductless Glands, excluding Gonads	26	xxvi, Plant Physiology	81
XII, Reproduction	29	xxvii, Plant Constituents	88
XIII, Digestive System	33	xxviii, New Books	88
XIV, Liver and Bile	35		
XV, Kidney and Urine	37		

Published by the

BUREAU OF CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

(Supported by the Chemical Society, the Society of Chemical Industry, the Physiological Society, the Biochemical Society, the Anatomical Society of Great Britain and Ireland, and the Society for Experimental Biology.)

Copper Determination with Benzotriazole

Reference: A. J. Curtis,
Ind. Eng. Chem. (Anal.) 13, 349, (1941)

Copper may be separated from metals which interfere in the iodide-thiosulphate titration, by precipitation, at pH 7.0 to 8.5, with benzotriazole. The reagent can afford a gravimetric determination as the copper compound, in the absence of Ag^+ , Ni^{++} , Fe^{++} , Cd^{++} , Zn^{++} , and Co^{++} . In the analysis of iron and steel precipitation is followed by ignition to copper oxide, solution in nitric acid and titration by the iodide-thiosulphate procedure.

HOPKIN & WILLIAMS LTD.

Makers of Fine Chemicals, Reagents, etc.

16-17 ST. CROSS STREET, LONDON, E.C.1

THE JOURNAL OF BIOLOGICAL CHEMISTRY

FOUNDED BY CHRISTIAN A. HERTER AND SUSTAINED
IN PART BY THE CHRISTIAN A. HERTER MEMORIAL
FUND

EDITORIAL BOARD:

RUDOLPH J. ANDERSON.	HOWARD B. LEWIS.
W. MANSFIELD CLARK.	ELMER V. MCCOLLUM.
HANS T. CLARKE.	WILLIAM C. ROSE.
CARL F. CORI.	WILLIAM C. STADIE.
EDWARD A. DOISY.	DONALD D. VAN SLYKE.
A. BAIRD HASTINGS.	HUBERT B. VICKERY.

SUBSCRIPTION PRICE

Beginning with January, 1939, 5 volumes
to be issued a year
£1 1s. 9d. per volume, post free

INDEX TO VOLS. 101-125

8s. net to Subscribers

12s. net to Non-Subscribers

British Agents:

BAILLIÈRE, TINDALL & COX
7 & 8 HENRIETTA STREET, LONDON, W.C.2

BUREAU OF CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

Chairman: L. H. LAMPITT, D.Sc., F.I.C.

Hon. Treasurer: F. P. DUNN, B.Sc., F.I.C.

JULIAN L. BAKER, F.I.C.

G. L. BROWN, M.Sc., M.B., Ch.B.

H. W. CREMER, M.Sc., F.I.C., M.I.CHEM.E.

C. W. DAVIES, D.Sc., F.I.C.

H. J. T. ELLINGHAM, B.Sc., Ph.D., F.I.C.

E. B. HUGHES, D.Sc., F.I.C.

L. A. JORDAN, D.Sc., F.I.C.

G. A. R. KON, M.A., D.Sc., F.R.S.

B. A. McSWINEY, B.A., M.B., Sc.D.

F. G. YOUNG, D.Sc., Ph.D.

Editor: T. F. BURTON, B.Sc.

Assistant Editors:

J. H. BIRKINSHAW, D.Sc., F.I.C.*

H. BURTON, M.Sc., D.Sc., F.I.C.

F. G. CROSSE, F.I.C.

A. A. ELDRIDGE, B.Sc., F.I.C.

E. B. HUGHES, D.Sc., F.I.C.

W. JEVONS, D.Sc., Ph.D.†

E. E. TURNER, M.A., D.Sc., F.I.C., F.R.S.

F. L. USHER, D.Sc.

H. WREN, M.A., D.Sc., Ph.D.

SAMSON WRIGHT, M.D., F.R.C.P.*

* Assisted by J. D. BOYD (Anatomy), A. HADDOW (Tumours), F. O. HOWITT (Biochemistry), A. G. POLLARD (Plant Physiology and Agriculture), K. TANSLEY (Sense Organs), L. G. G. WARNE (Plant Physiology), G. P. WELLS (Comparative Physiology), V. J. WOOLLEY (Pharmacology), and F. G. YOUNG (Ductless Glands).

† Assisted by A. E. J. WELCH (Physical Chemistry).

Indexer: MARGARET LE PLA, B.Sc.



INDEX OF AUTHORS' NAMES, A III.

JANUARY, 1944.

ABBOTT, L. C., 2.
Aberg, E., 85.
Abt, A. F., 44.
Adams, L. J., 37.
Adamson, J. D., 16.
Adasbek, E. P., 73.
Adriani, J., 68.
Ahlgren, H. L., 84.
Alapeuso, H., 50.
Albanese, A. A., 41.
Aldrich, C. A., 74.
Allen, J. G., 34.
Allison, D. K., 79.
Almquist, H. J., 43, 48.
Alterrot, V. L., 69.
Alshuler, S. S., 51.
Anderson, M. I., 74.
Anderson, T. P., 18, 75.
Andrews, H. L., 20, 59.
Anson, B. J., 1, 2.
Anthony, D. S., 48.
Archer, G. T. L., 79.
Armentano, L., 48.
Aron, H. C. S., 44.
Ashcroft, L. S., 78.
Asher, L., 28.
Asher, R., 28.
Ashman, R., 14.
Asper, S. P., 50.
Ast, D. B., 2.
Atkinson, M., 26.
Avery, G. S., jun., 60.
BAKER, A. B., 22.
Baker, C. G., 79.
Baker, R. F., 27.
Balbi, J., 2.
Bale, W. F., 8.
Bambach, K., 61.
Bancroft, W. D., 88.
Banerjee, B., 64.
Banyal, A. L., 8.
Barcroft, H., 16.
Barker, H. A., 76.
Barrett, R. R., 2.
Barrett, T., 60.
Barritt, M. W., 71.
Barron, E. S. G., 64.
Bartels, E. C., 35.
Bartels, W. E., 22.
Bass, M. H., 61.
Batten, C. T., 58.
Batterman, R. C., 34, 59.
Batty, J. L., 36.
Bauer, C. D., 41.
Bayerle, H., 66.
Beal, J. M., 86.
Beard, D., 78.
Beard, H. H., 40.
Beard, J. W., 78.
Beauchamp, C. E., 82.
Bechtel, M. J., 61.
Benjamin, J. A., 31.
Bentley, F. H., 19.
Berg, B. N., 31.
Berg, C. F., 41.
Bergh, G. S., 63.
Bergman, H. C., 28.
Bergner, S., 75.
Berkman, S., 65.
Berling, M., 32.
Bernhard, K., 51.
Bernhauer, K., 69.
Bernheim, F., 76.
Bernheim, M. L. C., 75.
Bernkopf, H., 79.
Beyer, K. H., 35.
Bhargava, K. S., 69.
Bimmerle, J. F., 44.
Bing, F. C., 41.
Bing, R. J., 37.
Binkley, F., 65.
Binkley, S. B., 48.
Bird, O. D., 48.
Birkhäuser, H., 62.
Bishop, M., 78.
Biskind, G. R., 82.
Black, A., 49.
Black, C., 58.
Blackman, S. S., jun., 38, 55.
Blair, J. E., 78.
Blandau, R. J., 30.
Bless, A. A., 30.
Bloch, S., 30.
Bloch, W., 21.
Bloome, E. S., 48.
Bloomfield, A. L., 77.
Blum, K., 14.
Blumstein, A., 22.
Bodansky, O., 44.

Bodian, D., 20.
Bonin, G., 25.
Bonnar, W. McK., 16.
Bonner, J., 87.
Bonner, J. F., 8.
Boorman, K. E., 9.
Borger, G., 66.
Borman, M. C., 14.
Borthwick, H. C., 84.
Borts, I. H., 73.
Bortz, E. L., 54.
Bovet, D., 28.
Boyd, L. J., 10.
Bradley, S. E., 53, 58.
Brandalone, H., 47.
Brandenberger, E., 31.
Bransford, P. W., 34.
Bratzler, J. W., 49.
Bremer, J. L., 2.
Brenneman, J., 62.
Brierley, P., 86.
Briggs, G. M., jun., 46.
Brightman, I. J., 70.
Brougher, J. C., 31.
Brown, A., 71.
Brown, E. C., 38.
Brown, H. M., 84.
Brown, H. R., jun., 11.
Brown, J. O., 21.
Brown, R. A., 48.
Brown, R. K., 38.
Browrie, A. S., 77.
Brunner, A., 34.
Brunner, C., 65.
Brunschwig, A., 34, 40.
Bucca, M. A., 74.
Bucher, K., 17.
Bucher, R., 10.
Buck, M., 76.
Bueker, E. D., 3.
Bürgli, S., 21.
Bugle, E., 69.
Bullett, F., 51.
Bullowa, J. G. M., 54.
Bundesen, H. N., 44.
Burch, J. C., 31.
Burckhardt, J. L., 54.
Burkholder, P. R., 43.
Burnstein, C. L., 23.
Burriss, R. H., 72.
Burstein, C. L., 61.
Burstein, C. S., 58.
Burt, A. S., 19.
Burt-White, H., 56.
Burton, H., 58.
Busch, I., 40.
Busse-Grawitz, P., 13.
Butt, H. E., 41.
Byfield, G. V., 37.
CADDEN, A. V., 8.
Calhoun, M. L., 77.
Callow, B. R., 75.
Calvery, H. O., 39.
Camagni, L. J., 76.
Caminta, B. H., 73.
Campbell, B. H., 10.
Campbell, H. L., 42.
Cantor, A., 71.
Cantrell, W., 70.
Cappel, D. F., 7.
Caretto, J. A., 3.
Carey, E. J., 78.
Carpenter, C. C., 46.
Carr, J. G., 80.
Casals, J., 78.
Casida, L. E., 31.
Cauldwell, E. W., 1.
Cave, P., 1.
Chaikoff, I. L., 51.
Chambers, J. W., 70.
Chan, L., 47.
Chang, S. L., 70.
Charipper, H. A., 29.
Charnas, R., 12.
Charters, A. D., 46.
Chavez, I., 57.
Chesky, V. E., 27.
Chlopik, N. G., 5.
Cholak, J., 61.
Christie, R. V., 17.
Chunn, C. F., 12.
Chvostova, V. V., 85.
Clarke, A. G., 44.
Clarke, W. F., 11.
Clay, A. C., 55.
Cleveland, D. E. H., 70.
Clifton, C. E., 70.
Clinton, M., jun., 52.
Cohen, L. H., 69.

Collins, S. D., 80.
Conn, J. E., 69.
Connel, M. C., 8.
Constam, G. R., 51.
Corfield, W. F., 55.
Corns, W. G., 88.
CoTui, 23.
Coulson, E. J., 81.
Coulston, F., 70.
Councell, C., 80.
Council on Pharmacy & Chemistry, 79.
Council on Physical Therapy, 63.
Courville, C. B., 58.
Covey, G. W., 14.
Coward, K. H., 42.
Cox, W., 33.
Craig, F. N., 35.
Craighead, F. C., 84.
Cramer, F. B., jun., 12.
Crisuolo, J., 26.
Crocker, C. G., 77.
Croisier, M., 20.
Crosby, E. C., 21, 22.
Crossmon, G., 6.
Cruckshank, R., 70.
Cullinan, E. R., 79.
Curnen, E. C., 78.
Currier, A. R., 73.
Curtis, J. T., 84.
Custer, E. A., 64.
DALE, H., 56.
Dale, W. M., 63.
Daly, C., 22.
Dain, H., 49.
Dano, M., 51.
Davenport, D., 57.
Davey, H. W., 12.
Davidson, A. M., 63.
Davis, B. D., 30, 38.
Davis, C. D., 32, 33.
Davis, C. L., 39.
Davis, G. E., 79, 86.
Davis, J. B., 24.
Davis, L. J., 7.
Day, D., 83.
De Beer, E. J., 10.
De Courcy, J. L., 20.
Defalco, R. J., 6.
Definer, M., 35.
De Gunten, P., 26.
Delancy, M. A., 44.
Dell'Acqua, G., 24.
Della Vida, B. L., 8.
Del Rio Hortega, P., 5.
Denny, F. E., 83.
Dermer, H., 24.
Detweiler, H. K., 61.
Deut, H. J., jun., 43.
Deutsch, H. F., 45.
De Waal, H. L., 76.
Dexter, L., 16.
Dick, L. A., 73.
Dienes, L., 76.
Di Sant'Agnes, P. A., 44.
Doan, C. A., 40.
Dodd, B. E., 9.
Dom, A. H., 54.
Donelson, E. G., 4.
Dorfman, R. T., 28.
Doty, E. J., 22.
Doudoroff, M., 75.
Downs, W. G., 6.
Dozois, T. F., 9.
Dressler, M., 70.
Dressler, W., 15.
Drill, V. A., 36.
Drinker, C. K., 62.
Druey, J., 53.
Dubo, S., 16.
Du Bois, P. G., 74.
Duerschner, D. R., 71.
Duncan, R. E., 38, 84.
Dunn, L. C., 2.
Dunn, S., 78.
Dunning, W. F., 39.
Du Pan, R. M., 62.
Dutcher, J. D., 88.
Dutcher, R. A., 45.
Dutoit, C., 50.
Dyckerhoff, H., 36.
Dziemian, A. J., 27.
EASBY, M. L., 54.
Eastlick, G. L., 3.
Ebbs, J. H., 41.
Ecker, E. E., 9.
Edholm, O. G., 16.
Edbacher, S., 45, 51.

Edward, D. G. ff., 79.
Edwards, E. A., 14.
Edwards, G. A., 49, 50.
Edwards, J. E., 14.
Edwards, W. B., 58.
Efron, A. S., 16.
Egana, E., 50.
Eisenhardt, L., 29.
Elias, H., 14.
Eliot, M. M., 48.
Elliott, S. D., 77.
Ellis, F. W., 62.
Ellis, W. J., 38.
Elvehjem, C. A., 44, 45, 46, 47, 55.
Elman, R., 12.
Emerson, G. A., 57.
Emerson, P. W., 2.
Emery, F. E., 31.
Emmett, A. D., 48.
Emsweller, S. L., 86.
Enders, C., 68, 88.
Enders, J. F., 79.
Engel, R. W., 42.
Entenman, C., 51.
Epstein, R. D., 6.
Evans, E. A., jun., 73.
Evensen, J. C., 87.
Eyles, R., 42.
Eyster, H. C., 52, 80.
FABER, H. K., 2.
Fagen, H. J., 44.
Fairhall, L. T., 60, 61, 62.
Falkenheim, M., 27.
Fanconi, G., 54.
Farmer, C. J., 44.
Farmer, P. W., 81.
Favorite, G. O., 80.
Fazekas, J. F., 12, 22.
Fehr, A., 20.
Feldberg, W., 34.
Feldt, R. H., 57.
Felix, A., 75.
Fellows, E. J., 58.
Ferguson, R. L., 79.
Field, J., 2nd, 22.
Fierz, H. E., 80.
Fink, H., 41.
Fink, W. H., 24.
Fish, W. R., 28.
Fishler, M. C., 51.
Fitzhugh, O. G., 39.
Fleisch, A., 15, 24.
Fleissig, I., 75.
Flippin, H. F., 54.
Foa, N. L., 37.
Foa, P. P., 37.
Foglia, V. G., 11, 27.
Foldes, F. F., 60.
Foley, G. E., 77.
Folkers, K., 47.
Follis, R. H., jun., 48.
Forbes, E. B., 49.
Fosbinder, R. J., 58.
Fox, J. P., 79, 80.
Foy, H., 7.
Franke, W., 64.
French, C. E., 49.
French, C. S., 76.
Fritzsche, H., 40.
Frobisher, M., jun., 74.
Frörier, K., 86.
Furman, F. A., 22.
Fuller, W. H., 72.
GAINES, M., 23.
Gale, E. F., 72.
Gant, O. K., 55.
Gardberg, M., 14.
Garson, P., 55.
Gaunt, R., 29.
Gehenio, P. M., 84.
Geiser, O., 36.
Geiter, C. W., 57.
Gell, P. G. H., 71.
Genter, C. L., 84.
Georgi, F., 50.
Gerschun, G. V., 20.
Gersh, I., 20, 27.
Getting, V. A., 77.
Gibbs, F. A., 22.
Gibel, H., 53.
Gilbert, H. H., 62.
Gill, G. G., 2.
Gillilan, L. A., 21.
Gillis, M. B., 47.
Gitlow, S., 32.
Glasson, B., 42.
Glazier, M., 38.
Glenn, W. W. L., 9, 62.

Göthlin, G. F., 25.
Goldat, S. J., 85.
Golden, A., 16.
Goldkamp, O., 77.
Goldner, M. G., 27.
Goltz, H. L., 39.
Gomori, G., 68.
Goodall, D. W., 88.
Goodhart, R., 41.
Goodwin, L. G., 61.
Gordon, A. S., 29.
Gordon, H., 20.
Gordon, R. A., 38.
Gordon, S. D., 38.
Góth, E., 44.
Gottardo, P., 27.
Gough, N., 41.
Gowen, J. W., 77.
Graef, E., 66.
Grant, D. N. W., 17.
Grant, L. I. H., 57.
Grauer, H., 51.
Gray, S., 36.
Gray, S. H., 36.
Gratzel, H. G., 36.
Greedy, T. G., 68.
Greathouse, G. A., 88.
Grebinski, S. O., 83.
Green, C. A., 73, 78.
Green, H., 2.
Greenberg, L. A., 59.
Greene, J. A., 26.
Greene, R., 14.
Greenebaum, R. S., 41.
Greenwald, E., 64.
Greenwald, L., 10.
Griffin, G., 55.
Groedel, T. M., 15, 16.
Gross, J., 27.
Grossowicz, N., 75.
Grote, F., 59.
Gruenwald, P., 2.
Gruppen, E. S., 75.
Gubner, R., 15.
Guest, G. M., 10.
Guggisberg, H., 31.
Gustaf, G. P., 24.
Gustafson, F. G., 86.
Gustafsson, A., 85.
Gyorgy, P., 47.
HAAS, A. R. C., 81.
Hac, L. R., 53.
Hagens, E. W., 1.
Haggard, H. W., 59.
Hahn, P. F., 8.
Halcrow, J. P. A., 8.
Hale, H. B., 30.
Hallman, F. A., 76.
Hallman, L. F., 43.
Halpern, R., 12.
Hamblen, E. C., 32, 33.
Hamburger, M., 75.
Hammer, C. L., 87.
Hammer, K. C., 82.
Handler, P., 46.
Hanger, F. M., 9.
Hardy, J. D., 71.
Harkins, H. N., 12.
Harper, A. A., 34.
Harris, A. S., 15.
Harris, L. J., 46.
Harris, D. M., 73.
Harris, G. C. M., 69.
Harris, M. M., 12.
Harris, R. S., 12.
Harris, S. A., 47.
Hart, E. B., 45, 40.
Harvey, J. M., 52.
Hasler, A. D., 45.
Hawkes, E. S., 62.
Hawking, F., 56.
Hay, L. J., 56.
Haydak, M. H., 49.
Hayward, G. W., 17.
Heigendörfer, M., 88.
Heitatz, C. J., 36.
Heimann, H. L., 15.
Heinrich, F., 75.
Heinrich, M. R., 49.
Held, I. W., 40.
Heller, C. G., 33.
Helgeson, E. A., 82.
Helfern, M., 55.
Henderson, J. L., 72.
Henderson, V. E., 16.
Henry, J. S., 32.
Hensen, H., 4.
Hepler, O. E., 53.
Herrick, C. J., 21.

INDEX OF AUTHORS' NAMES, A III.

- Hershey, S. G., 58.
Hertz, S., 23.
Hertzog, A. J., 61.
Hess, W. R., 21, 31.
Hesseltine, H. C., 58.
Heuser, F. G., 47.
Hewitt, R. I., 56.
Hibbert, H., 87.
Hidde, F. G., 73.
Higgins, C. C., 38.
Hild, A. M., 54.
Hill, J. M., 11.
Hilleboe, H. E., 77.
Himwich, H. E., 12, 22.
Hines, H. M., 17.
Hingson, R. A., 58.
Hinshaw, W. R., 77.
Hinton, C. M., 30.
Hitch, F. G., 78.
Hitchcock, A. E., 87.
Hoagland, R., 42.
Hock, A., 41.
Hodes, G. I., 74.
Hodge, H. C., 61.
Hoffman, J. G., 39.
Hogan, A. G., 48.
Hogg, P. G., 84.
Holmes, J. W., 22.
Holt, L. E., jun., 41, 46.
Homburger, E., 12.
Hood, M. N., 56.
Hooker, D. H., 55.
Hopper, T. H., 82.
Horvath, A. A., 11.
Horwitz, B. J., 28.
Houck, C. L., 76.
House, E. L., 3.
Householder, A. S., 18, 68.
Howland, E. S., 14.
Hoynes, R. M., 41.
Hubbard, C. M., 61.
Hubbard, R. S., 1.
Huber, C. C., 21.
Hubert, A. C., 53.
Hudemann, S., 10.
Huff, C. G., 70.
Huff, J. W., 46.
Hull, J. F., 72.
Hungate, R. E., 83.
Hunt, W. H., 58.
Hunter, A. C., 56.
Hurst, V., 29.
Hutchinson, J. R., 78.
Hutton-Rudolph, M., 18.
Hynes, C., 23.
- IGLAUO, A., 69.
Ihde, A., 48.
Iluridge-Mollshan, K. M., 64.
Ingle, D. J., 31.
Insko, W. M., jun., 30.
Irving, L., 49, 50.
Ivy, A. C., 35, 57.
- JABLONO, B., 16.
Jackson, D., 48.
Jacobi, M., 36.
Jacobs, L., 75.
Jacoby, F., 59.
Jadassohn, W., 81.
Jakob, F., 11.
Jandorf, B. J., 39.
Janota, M., 11.
Jenkins, G. N., 43.
Jennings, J. R., 73.
Jenrette, W. V., 61.
Jermsta, J., 53.
Jewesbury, E. C. O., 60.
Joel, C. A., 33.
Johnson, A. G., 56.
Johnson, C. E., jun., 54.
Johnson, F. H., 72.
Johnston, M. J.
Jones, G. W., 58.
Jones, J. A., 22.
Jones, N., 11.
Jones, T. R. L., 60.
Jordan, C. F., 73.
Jorpes, J. E., 9.
Joseph, S., 29.
Josephs, H. W., 43.
Jovnt, M. F., 73.
Julesz, M., 45.
Jung, A., 49.
Jungeblut, C. W., 78.
Juon, M., 13.
- KARAT, E. A., 9.
Kagan, B. M., 9.
Kaime, M., 79.
Kaltreider, N. L., 8.
Kanof, A., 53.
Kaplan, B. I., 70.
Kaplan, H. M., 57.
Karlstrom, A. E., 61.
Kassanis, B., 80.
Kassner, E. W., 42.
Kaufman, D., 9.
Keeton, R. W., 37.
Kehoe, R. A., 61.
Kektschev, K. C., 24.
Kendall, E. C., 45.
Kennedy, R. E., 58.
Kent, G. B., 27.
Kerestesy, J. C., 76.
- Kern, R., 41.
Kerr, T., 1.
Kertesz, Z. I., 83.
Kessel, J. L., 79.
Kessler, W. R., 73.
King, E. J., 68.
King, J. R., 88.
Kinsman, G. M., 4.
Kirsner, J. B., 77.
Kisch, B., 8, 21, 61, 62, 65.
Kitzes, G., 41.
Kizel, A. R., 39.
Klein, D., 28.
Kligler, I. J., 75.
Klingmüller, V., 40.
Knobloch, H., 68, 69.
Knox, R., 71.
Kobrak, F., 26.
Kohn, G., 43.
Kolb, R. W., 73.
Koller, T., 11, 32.
Koloss, E., 5.
Kondi, A., 7.
Koser, S. A., 55, 73.
Koster, H., 58, 61, 65.
Kozoll, D. D., 11.
Kramer, B., 53.
Krantz, J. C., 58.
Krantz, J. C., jun., 52.
Kratzer, F. H., 48.
Kraus, E. J., 86.
Krautman, B., 59.
Krayor, O., 13.
Kregel, L. A., 11.
Krichesky, B., 31.
Kröner, W., 48.
Kubowitz, F., 64.
Kucharik, J., 62.
Kuhn, H. S., 23.
Kundert, P. R., 14.
Kurschner, D. M., 32.
Kuvshinova, O. P., 69.
Kwiatkowski, H., 18.
- LAEMMERT, H. W., 80.
Lam, C. R., 55.
Lambert, E., 59.
Lambooy, J. P., 48.
Landahl, H. D., 23.
Landolt, R. F., 36.
Landon, H., 9.
Lands, A. M., 57.
Landy, M., 72, 75.
Lang, F., 62.
Lanyar, F., 50.
Larkin, V. de P., 44.
Larkum, N. W., 72, 75.
Laszek, M., 70.
Lassek, A. M., 22.
Laszt, L., 52.
Laviates, P. H., 26.
Lavigina, K. S., 69.
Lazere, B., 17.
Lea, A. J., 4.
Leake, C. D., 47.
Leatham, J. H., 36.
Leber, I., 53.
Leblond, C. P., 27.
Lee, W. E., 17.
Lehman, L., 11.
Lemon, H. F., 71.
Lennox, F. G., 67.
Leonard, V. L., 1.
Leonhardt, H., 61.
Leonian, L. H., 69.
Leuthardt, F., 44, 50.
Levi, I., 87.
Levin, M., 71.
Levine, S. Z., 51.
Levinson, S. O., 11, 17.
Levitt, J., 87.
Levy, S., 1.
Lewis, H. B., 42.
Lewis, J. M., 44.
Lewis, L. A., 28.
Lidwell, O. M., 79.
Liebert, E., 19.
Liechti, A., 18.
Ligon, E. W., jun., 57.
Lilly, V. G., 69.
Limarzi, L. R., 6.
Linderstrom-Lang, K., 66.
Litvak, A. M., 53.
Litwins, J., 10.
Lium, R., 34.
Lloyd, J., 22.
Löffler, W., 36.
Loewenstein, E., 6.
Loewenthal, H., 55.
Logan, V. W., 84.
Lolli, C., 60.
Long, P. H., 55.
Loosli, C. G., 71.
Loughlin, W. C., 12.
Loukides, J., 36.
Lowe, R. C., 7.
Lubin, A. J., 21.
Ludwig, H., 14.
Luetscher, J. A., jun., 55.
Lüttgens, W., 64.
Luisada, A. A., 13, 17.
Luke, J. C., 14.
Lurie, L. A., 1.
Lurie, M. L., 1.
Luyet, B. J., 84.
- MA, R., 70.
Maass, A. R., 45.
McAnally, R. A., 33, 34, 35.
McCall, E. F., 32.
McCalla, A. G., 83.
McCance, R. A., 52.
McCarthy, E. F., 17.
McCarty, M. A., 45.
McClesney, E. W., 42.
McCloy, A., 54.
McClung, L. S., 73.
McClure, F. J., 38.
McClure, G. V., 19.
McCollum, E. V., 42.
McCoy, E., 55.
McCready, R. M., 71.
McCullagh, E. P., 28.
McCullough, N. B., 73.
Macdonald, D. R., 36.
McDowall, R. J. S., 18.
McElroy, W. D., 59.
McFarlane, M. N., 7.
Macfarlane, R. G., 10.
MacGibbon, T. A., 74.
Machle, W., 61.
Macht, D. I., 31, 56.
McIntyre, J. M., 47.
Mackay, E. M., 27.
McKee, C. M., 76.
McKinney, G., 43.
Maclary, W. D., 71.
MacLeod, M. C., 73.
McMillan, R. B., 48.
McNary, R. R., 61.
McNealy, R. W., 27.
MacNider, W. de B., 13.
McPhail, M. K., 31.
McPherson, A. M. C., 77.
McRary, W. L., 82.
McShan, W. H., 31.
Madden, J. H. M., 33.
Magrshikovskaja, K. V., 4.
Mähler, H., 61.
Main, E., 47.
Main, R., 37.
Maitland, F. G., 60.
Major, J. W., 74.
Makarevskaja, E. A., 64.
Mallory, M., 14.
Man, E. B., 26.
Mann, I., 23.
Mann, L. K., 84.
Marcy, L. F., 49.
Markoff, N., 34.
Markoff, N. G., 34.
Marples, E., 51.
Marshall, S., 5.
Martin, E. V., 81.
Martin, G. J., 60.
Martin, S. J., 34.
Marting, E. C., 23.
Martius, C., 64.
Maruseva, A. M., 20.
Marx, R., 36.
Maschmann, E., 66.
Massio, E., 15.
Mathers, F., 14.
Matthews, C. S., 31.
Mattick, A. T. R., 76.
Mattill, H. A., 49.
Mautner, H., 13.
Mayer, H., 68.
Means, J. H., 23.
Meccoli, E., 43, 48.
Meek, W. J., 57.
Meites, J., 29.
Melecher, L. R., 80.
Mellanby, E., 38.
Melnick, J. T., 78.
Mendes, A. J. T., 85.
Meneely, G. R., 8.
Meredith, J. M., 23.
Merten, R., 66.
Messeloff, C. R., 53.
Mettler, F. A., 20, 21.
Meyenburg, H., 40.
Meyer, M. A., 32.
Meyer, R. K., 31.
Meyer-Wildesen, R., 17.
Michaelis, M., 87.
Michaelson, I. C., 23.
Michaud, L., 45.
Milborat, A. T., 22.
Miller, H. G., 42.
Miller, J. W., 60.
Miller, L. P., 87.
Miller, M., 15.
Miller, R. A., 4.
Miller, R. C., 45.
Miller, W. C., 15.
Milligan, E. H. M., 43.
Minard, D., 59.
Mitchell, J. W., 86.
Mitchell-Heggs, G. B., 79.
Modern, F., 9.
Moloney, W., 56.
Money, W. L., 30.
Montgomery, M. L., 51.
Montigel, C., 17.
Moore, D. H., 9.
Moore, F. J., 79.
Moorhouse, M. S., 11.
Morton, H. E., 71.
Mosenthal, H. O., 12.
Moussatché, H., 86.
- Mozingo, R., 47.
Mudd, S., 75.
Mueller, J. H., 76.
Müller, J. H., 2, 32.
Muir, R. M., 81.
Muirhead, E. E., 11.
Mukae, M., 63.
Mullison, W. R., 87.
Mural, A., 18.
Murphy, F. D., 56.
Murray, J. F., 74, 77.
Muschenheim, C., 71.
Myers, R. M., 86.
Myrback, K., 67.
- NACHMANSOHN, D., 19.
Nachtigal, D., 79.
Naegeli, T., 38.
Najjar, V. A., 40.
Narikashvili, S. P., 20.
Nash, L. B., 86.
Nasset, E. S., 48.
Nattrass, F. J., 22.
Neal, A. L., 47.
Neal, P. A., 62, 73.
Neches, H., 11, 17.
Nelson, A. A., 39.
Nelson, C. T., 54.
Nelson, R. G., 87.
Nelson, W. O., 33.
Neter, E., 74.
Neubuerger, K. T., 39.
Neuwelt, F., 17.
Nezamis, J., 31.
Nielsen, E., 47.
Nix, N. W., 28.
Nixon, E. A., 35.
Norman, A. G., 72.
Norris, L. C., 47.
Nungester, W. J., 50.
- O'DELL, B. L., 48.
Örtenblad, E., 67.
Ohlsom, M. A., 4.
Oliver-González, J., 80.
Olsen, Y. P., 70.
O'Neal, R., 33.
Orr, J. H., 73.
Orr, L. M., 2nd, 14.
Orten, A. U., 41.
Orten, J. M., 41.
Orth, O. S., 57.
Osmond, T. E., 54.
Oster, K. A., 16.
Osterberg, A. E., 13.
Ostrowski, P., 74.
Oswald, E. J., 22, 75.
Owen, F. V., 84.
Owen, L. M., 8.
Owen, W. F., 28.
Owens, H. S., 71.
- PAGE, J. E., 61.
Page, R. C., 10.
Palmer, L. S., 49.
Palmer, W. L., 77.
Papper, E. M., 58.
Park, E. A., 43.
Park, R. G., 56.
Parkes, M. W., 84.
Parkes, A. S., 33.
Parkin, G., 26.
Parsons, E. H., 23.
Parsons, W. H., 32.
Patton, E. W., 41.
Patton, M. B., 4.
Paul, J. R., 78.
Pearson, C. S., 42.
Peers, J. H., 19.
Peet, M. M., 37.
Pence, J. W., 45.
Pentz, E. I., 14.
Perlman, H. B., 25.
Perlmann, G. E., 9.
Perlzweig, W. A., 46.
Perrotta, L., 53.
Peters, B. A., 54.
Peters, J. P., 51.
Peters, R., 35.
Petitpierre, C., 15.
Piffner, J. J., 48.
Phelps, D., 31.
Phillip, C. B., 78.
Phillipson, A. T., 33, 34, 35.
Pick, J. W., 2.
Pickett, M. J., 70.
Pijper, A., 77.
Plicher, J. D., 78.
Pillemer, L., 9.
Pirenne, M. H., 24.
Plotke, F., 34.
Polak Moisés y Prado, J. M., 5.
Pollock, M. R., 71.
Polyak, S. L., 25.
Ponder, E., 7.
Popper, H., 11.
Popper, H. L., 34.
Porter, R. C., 1.
Posel, M. M., 15.
Posternak, J., 24.
Potter, E. J., 3.
Pratt, R., 84, 87.
Prescott, L., 44.
Preston, C., 8.
Probststein, J. G., 36.
- PROSSER, C. L., 15.
Pucher, G. W., 83.
Puck, T. T., 71.
Pulver, R., 59.
- QUACKENBUSH, F. W., 48.
Quill, L. M., 22.
Quinby, J. R., 84.
Quinby, J. T., 52.
- RAAB, W., 13, 28.
Rabinowitch, I. M., 38.
Race, R. R., 7.
Rambousek, E. S., 61.
Rammelkamp, C. H., 53.
Randall, R. McI., 41.
Ransmeier, J. C., 74.
Ransone, B., 55.
Rantz, L. A., 77.
Raper, H. S., 34.
Rapoport, S., 10.
Rappaport, D., 80.
Rappaport, F., 80.
Rautch, M. M., 70.
Ravdin, I. S., 35.
Redish, M. H., 10.
Reed, G. B., 73.
Reich, C., 39.
Reifman, A. G., 43.
Reimann, H. A., 72.
Reinert, M., 18.
Reinhard, M. C., 39.
Reist, A., 32.
Rewell, R. E., 12.
Rhoads, J. E., 17, 35.
Rhodes, G. K., 34.
Richards, A. G., jun., 18.
Richards, M. B., 48.
Richardson, A. P., 56.
Ricketts, E. J., 76.
Rieben, G., 53.
Riegel, C., 35.
Rigler, N. E., 88.
Riley, C. M., 19.
Riordan, J. T., 78.
Ritama, V., 67.
Roback, A. C., 57.
Robbins, C. L., 26.
Robbins, M. H., 53.
Robbins, W. J., 70, 87.
Robertson, O. O., 71.
Robinow, M., 1.
Robinson, P., 50.
Rochat, R. L., 32.
Rodaniche, E. C., 77.
Rodger, N. O., 8.
Roeser, J., jun., 81.
Rojas, A. G., 15.
Romanoff, A. L., 4, 30.
Rose, C. S., 47.
Rosenberg, B., 31.
Rosenthal, S. R., 59.
Rossier, P. H., 70.
Rossman, P. T., 78.
Roth, R. T., 12.
Rothman, M. M., 70.
Rothman, S., 62.
Rowenstine, E. A., 58.
Rowlands, I. W., 33.
Rubin, B. A., 83.
Rubin, M., 60.
Rueggsegger, J. M., 75.
Ruff, G., 9.
Ruggiero, W. F., 23.
Rugh, R., 4.
Ruth, E. B., 2.
Rynshi, R., 63.
- SACERDOTE DE LUSTIG, E., 4.
Sacherov, V. V., 4.
Sahyun, M., 61.
Saji, T., 68.
Saka, M. O., 44.
Saksena, R. K., 69.
San Clemente, C. L., 9.
Sandler, B. P., 12.
Sapirstein, M. R., 59.
Saslaw, S., 46.
Satriano, D., 51.
Schär, W., 22.
Scharf, A., 43.
Schaufer, G. C., 71.
Scheinfunkel, N., 18, 28.
Scherer, H., 32.
Scherf, D., 14.
Schiffer, J. J., 61.
Schinz, H. R., 31.
Schlaegel, T. F., 24.
Schlapp, W., 19.
Schmeckebier, M. M., 74.
Schmidt, C. R., 27.
Schmidt, E. R., 73.
Schmidt, H. W., 63.
Schmidt, I. G., 5.
Schmidt, L. H., 53, 75.
Schmitz, A., 66.
Schneider, F., 66.
Schneider, H., 51.
Schneiter, R., 73.
Schnitzer, R. J., 76.
Schobert, W., 71.
Schönbolzer, G., 52.
Schöpfle, G. M., 18.
Schopfer, W. H., 53.
Schuette, H. A., 44.

BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

A III—Physiology. Biochemistry. Anatomy.

JANUARY, 1944.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Visceral branches of abdominal aorta: topographical relationships. E. W. Cauldwell and B. J. Anson (*Amer. J. Anat.*, 1943, **73**, 27—57).—A study of the topography of aortic visceral branches was made on 300 human cadavers and the data were analysed by statistical methods. Apart from extreme variates, a remarkable constancy in the topographical distribution of levels of origin of paired and unpaired visceral branches was found. Extremes were more frequently encountered in the paired arteries. A greater tendency to a central concn. of variates was observed in the left paired arteries (renal and sex arteries) than in the corresponding vessels of the right side. W. F. H.

Utriculo-endo-lymphatic valve. E. W. Hagens (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, **17**, 108—111).—A utriculo-endo-lymphatic valve was demonstrated in 13 out of 24 temporal bones obtained from children between 6 months and 13 years old who had died following meningitis. A. S.

Evolution of the pituitary, with special reference to teleosts. T. Kerr (*Proc. Leeds Phil. Soc., Sci. Sect.*, 1943, **4**, 76—83). J. D. B.

Biological significance of mammalian hair. J. I. Stoves (*Proc. Leeds Phil. Soc., Sci. Sect.*, 1943, **4**, 84—86).—Aspects of the anatomy and physiology of mammalian hair are discussed in relation to genetics and comparative studies of fibre morphology. Photomicrographs are given illustrating the characteristic features of transverse sections of fibres. J. D. B.

Glycolytic enzymes of synovial fluid. R. S. Hubbard and R. C. Porter (*J. Lab. clin. Med.*, 1943, **28**, 1328—1334).—When glucose or fructose was added to sterile synovial fluid which was rich in polymorphonuclear leucocytes, the sugars were destroyed. The rate of the destruction of glucose was twice that of fructose. The enzymes were present almost wholly in the cells, and occasionally in the cell-free fluid. C. J. C. B.

Assessing physical condition of children: components of physical status and physical progress and their evaluation. N. C. Wetzel (*J. Pediat.*, 1943, **22**, 320—360).—A detailed account is given of the components which are employed in the Grid technique to represent and define the physical status of growing children at a given moment and their physical progress from one observation to the next. Photographs of illustrative cases are given. C. J. C. B.

Precision method of cephalometry and pelvimetry. P. Cave (*Brit. Med. J.*, 1943, **II**, 196—198).—A new radiometric method is described. Applications in surgery of the brain, chest, abdomen, and pelvis are indicated. I. C.

New approach to quantitative analysis of children's posture. M. Robinow, V. L. Leonard, and M. Anderson (*J. Pediat.*, 1943, **22**, 655—663).—Rating scales on the following 5 variables of children's posture were constructed: knock knees, pronation of feet, hyper-extended knees, lumbar lordosis, and slumped backs. C. J. C. B.

Feet of normal children. M. Robinow, M. Johnston, and M. Anderson (*J. Pediat.*, 1943, **23**, 141—149).—Analyses of 800 lateral X-rays of wt.-bearing feet showed that the method of measurement of Bertani and Moreau (*Rev. argent. Reumatol.*, 1937) can be applied to children over 2½ years of age and yields reliable results. Most children's arches show little change with age. Low arches are correlated with wt.: length ratio at older ages studied. Doubtful correlations were obtained between foot angles and pronation, knock-knees, other postural variables, and with age of starting to walk. Correlation between siblings suggests that a genetic factor is involved in determining the height of the arch in children. C. J. C. B.

Determination of bone age in children. L. A. Lurie, S. Levy, and M. L. Lurie (*J. Pediat.*, 1943, **23**, 131—140).—Roentgenograms of the hand, including the wrist, the elbow, and pelvis, and the foot, including the ankle, are adequate for determining the bone age of a child; the appearance and fusion of bone centres in these sites are detailed for 1129 children. Girls showed quicker bone growth or development compared with boys. C. J. C. B.

Identification of skulls by X-ray pictures of frontal sinuses. A. Schuller (*Med. J. Austral.*, 1943, **I**, 554—557) F. S.

Osteogenesis imperfecta. E. B. Ruth (*Arch. Path.*, 1943, **36**, 211—216).—The skeleton of a micromelic dwarf with osteogenesis imperfecta is described. Multiple fractures with bowing and angulation of the leg bones account for a certain degree of dwarfism, but all the bones of the skeleton were diminished in size, so that the subject was a real dwarf. Developmental defects, including numerous wormian bones, accounted for the peculiarities seen in the skull. Roentgen findings include rarefaction of the cortex and irregular medullary cavities of the long bones, with numerous lines of retarded growth at the metaphyses. C. J. C. B.

Maturity of newborn infants and development of centres of ossification. J. H. Müller and J. Balbi (*Schweiz. med. Wschr.*, 1942, **72**, 1013—1015).—The no. and size of centres of ossification increase with the duration of pregnancy. Different bones in each child show different degrees of development. 50 normal newborns and 25 children after late deliveries were radiologically examined. A. S.

Measurements on human femurs. II. Lengths, diameters, and angles. J. W. Pick, J. K. Stack, and B. J. Anson (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, **17**, 121—126).—Data are presented on the oblique (1), trochanteric-bicondylar (2), and trochanteric-medial condylar lengths (3), difference between (1) and (2) and (1) and (3), and the position of the greater trochanter in relation to the head of the femur, based on measurements of 150 femurs. A. S.

Varus deformity of ankle following injury to distal epiphyseal cartilage of tibia in growing children. G. G. Gill and L. C. Abbott (*Surg. Gynec. Obstet.*, 1941, **72**, 659—666). P. C. W.

Lead in bone. I. Calcification and lead absorption. R. R. Barrett (*Med. J. Austral.*, 1943, **I**, 433—435).—In rats fed a diet containing 0.8% of Pb as PbCO₃, the rate of deposition of Pb was twice as fast in epiphyseal as in diaphyseal bone, and greatest at the distal epiphysis. Similarly the deposition of epiphyseal Ca was twice that of diaphyseal Ca. The higher rate of epiphyseal deposition was due to greater vascularity of the soft bone. The simultaneous deposition of Pb and removal of Ca described by other workers is due to accelerated decalcification of compact bone, in which there is no Pb, with simultaneous calcification and Pb deposition at the epiphyses. F. S.

Effect of fluorine on dental caries. D. B. Ast (*U.S. Publ. Health Repts.*, 1943, **58**, 857—789).—Small doses such as 1 p.p.m. F in water are safe. Further experimentation with this threshold dose or less is warranted to test the efficacy and practicability of using this element universally, under strict control, to reduce the incidence and ravages of dental caries. C. G. W.

Early operation in premature cranial synostosis for prevention of blindness and other sequelæ. H. K. Faber, E. B. Towne (*J. Pediat.*, 1943, **22**, 286—307).—5 cases are reported in which linear craniectomy was performed during infancy on patients with premature synostosis of the cranial sutures to prevent increased intracranial pressure and severe deformity. The results were encouraging. C. J. C. B.

Arachnodactylia. H. Green and P. W. Emerson (*Arch. Pediat.*, 1943, **60**, 299—312).—Report of 6 cases. C. J. C. B.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Heredity and development of early abnormalities in vertebrates. L. C. Dunn (*Harvey Lect.*, 1939—40, *Ser.* 35, 135—165).—A review. E. M. J.

So-called undifferentiated and embryonic cells. P. Gruenewald (*Arch. Path.*, 1943, **36**, 190—194).—A review. C. J. C. B.

[Development of cerebral arteries with relation to] congenital aneurysms. J. L. Bremer (*Arch. Path.*, 1943, **35**, 819—831).—5 pig and human embryos were examined. The cerebral arteries are evolved from a capillary plexus arising from the earliest branch of the primitive aortic arch, which runs along the under side of the brain. From the rostral end of the plexus branches go in front of the bulging hemisphere and over its lateral surface, becoming the anterior and middle cerebral arteries. Another part of the plexus becomes the posterior cerebral artery, covering the diencephalon and

midbrain. The anterior artery gains the mesial surface of the frontal lobe; the posterior supplies the similar surface of the posterior lobes as their expansion covers in the diencephalon. All cerebral arteries approach from the lesser curvature of the expanding hemisphere, and the interstitial growth of the latter during foetal life rapidly spreads the forks of their branches. Other growth changes have the same action. If these forks lack the media, the rapid spread may produce local aneurysms. From all the cerebral arteries and from the main basal trunk smaller branches dip into the brain substances and also supply the meninges. These also form plexuses. Proximal members of the such plexuses may enlarge while their distal continuations degenerate and may thus become aneurysmal pouches from the main vessels. Both types may be true congenital aneurysms.

C. J. C. B.

Glomerular development in kidney as index of foetal maturity. E. L. Potter and S. T. Thierstein (*J. Pediat.*, 1943, 22, 695—706).—Cessation of production of new glomeruli in the kidney depends primarily on foetal size and only secondarily on gestational age. Formation of new glomeruli ceases when the foetus weighs 2100—2500 g. and measures 46.0—48.9 cm. The kidneys of most foetuses born before the beginning of the 35th week show incompletely developed glomeruli; in most of those born after the 35th week, none are visible. The state of glomerular production is an index of foetal maturity.

C. J. C. B.

Development of hypophysis of ox. E. L. House (*Amer. J. Anat.*, 1943, 73, 1—25).—The primary source of the epithelial component of the hypophysis and the formation of Rathke's pouch are described. Growth factors influencing the latter are considered. The buccal stalk disappears early and there is no pharyngeal hypophysis. An area of mesenchyme is included between the pars neuralis and the dorsal wall of the pouch. This mesenchyme becomes vascularised, epitheloid cords from the pars intermedia grow into it, and Wulzen's lobe is formed. The early development of the pars distalis, tuberalis, and neuralis is described. Conditions determining the differentiation of acidophile cells in Wulzen's lobe are discussed. W. F. H.

Development of pituitary in opossum and its responses to hormonal treatment. R. S. Wheeler (*J. Morph.*, 1943, 73, 43—78).—A description of the development of the pituitary from the first day of pouch life to maturity and of the detailed cytology of the pars anterior in juveniles and adults. The effects of castration and of the administration of gonadotropins, androgens, and oestrogens on the nos. and cytology of the cells are recorded. J. D. B.

Intracental and peripheral factors in differentiation of motor neurones in transplanted lumbo-sacral spinal cords of chick embryos. E. D. Bueker (*J. exp. Zool.*, 1943, 93, 99—129).—Unilateral limb primordia extirpations and transplants of the lumbo-sacral segments of the spinal cord of 52—68-hr. chick embryos were made to analyse the rôle of peripheral fields and of longitudinal fibre tracts in the quant. differentiation of motor neurones of the spinal cord. The results indicate that the development of the lateral spinal motor column depends on the presence of a developing limb and the pelvic girdle but that functional connexions with descending tracts are not essential. Dorsal sensory areas of the grey matter and dorsal and ventral roots are all reduced by limb removal. A lumbo-sacral plexus is not found on the limbless sides of transplant or extirpation experiments. J. D. B.

Transplanted embryonic limbs of chick. I. Development of muscle in nerveless and in innervated grafts. G. L. Eastlick (*J. exp. Zool.*, 1943, 93, 27—49).—Limb buds of 26—36-somite chick embryos transplanted into the intraembryonic coelom of hosts of the same age resulted in nerveless or innervated grafts which were studied at various periods up to a day beyond hatching. The histological study of the grafts indicated that a nerve supply is necessary for the continued differentiation and for the maintenance of muscle fibres in grafts which are older than 10 days of incubation. It is suggested that the innervation is necessary for (a) the continued differentiation of the fibrillæ and the organisation of the fibres into typical muscle bundles, (b) the multiplication or increase of myofibrillæ, and (c) the maintenance of muscle fibres in a healthy condition. In 10—13-day non-innervated grafts the muscle fibres undergo sarcolysis and phagocytosis and adipose tissue develops in the area formerly occupied by muscle. In addition to an adequate nerve supply, such factors as normal attachment, tension, stretch, activity, etc. seem to play a rôle in the development and maintenance of embryonic muscle fibres. J. D. B.

Acetylcholine in chick embryo. I. Variations in course of development of striated muscle and brain. J. Szepsenwol and J. A. Caretti (*Rev. Soc. argent. Biol.*, 1942, 18, 300—307).—Up to the 6th day of incubation acetylcholine was found only in the mesodermic tissues; from then on it appeared in progressively increasing amounts in the central nervous system. Simultaneously it diminished in muscle and disappeared completely by the 18th day when automatic contractions ceased. In the digestive tract acetylcholine increases with age; in the heart a small const. amount was found. J. T. L.

Modifications in muscular automatism during embryonic development, studied *in vitro*. J. Szepsenwol (*Rev. Soc. argent. Biol.*, 1942,

18, 71—78).—Somatic muscle from chick embryos from the 10th day of incubation to hatching and from 1—10-day-old chicks was cultivated in hanging drop. Automatic activity of the muscle fibres reached its peak on the 12th—14th day of incubation; the explants showed rhythmic contractions after 24 hr. cultivation. Explants from 15—16-day embryos show activity only after 4—5 days' culture, beginning at the periphery and extending to the primitive fragment. Explants from 17-day-old embryos in some cases showed activity, limited to the growth area, after 6—7 days' culture. Explants from older embryos and chicks showed no automatic activity. Loss of automatic activity is attributed to differentiation, causing metabolic changes. It is suggested that the somatic nervous system plays a part in this process of differentiation. J. T. L.

Influence of barium chloride and potassium chloride on cultures of chick embryo myocardium and somatic muscle. E. Sacerdote de Lustig (*Rev. Soc. argent. Biol.*, 1942, 18, 146—157).—Myocardium of 24—48-hr.-old chick embryos was cultured in media containing BaCl₂; contractions developed late and were slow; 0.1% BaCl₂ stopped all contractions. Cytological examination showed complete destruction of the myofibrillar system. Isotonic BaCl₂ solutions when added after 2 days of culture slowed and stopped the heart when the amount of salt was sufficiently high; the degree of alteration in the myofibrils was proportionate to the BaCl₂ concn. Somatic muscle explants from 8—13-day-old embryos were more sensitive to BaCl₂ than myocardium from 24—48-hr.-old embryos. Sensitiveness increased with age; myofibrils were destroyed. Myocardium explanted into media containing KCl ceased to beat, but the myofibrils were not damaged. Somatic muscles from 8—13-day-old embryos, explanted into media to which KCl was added when automatic contraction was manifest, were paralysed for 2—3 hr. Ca diminished, and lack of Ca increased, the effect of K. J. T. L.

Neurenteric canal in *Rana pipiens*. R. Rugh (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 304—307).—A tubular connexion between neurocoel and hind-gut is present for about 17 hr. in stages 15—17 of embryonic development. It is not identical with the post-anal gut. V. J. W.

Later phases of embryonic nutrition in *Squalus acanthias*. L. E. Te Winkel (*J. Morph.*, 1943, 73, 177—205).—Passage of yolk platelets to the intestine, functional activity of the latter, and the histological structure of the membranes forming the external and internal yolk sacs and the yolk stalk are described. J. D. B.

Relations between embryogenesis and metamorphosis in insects. H. Hensen (*Proc. Leeds Phil. Soc., Sci. Sect.*, 1943, 4, 97—110). J. D. B.

Developmental stages and glycogen metabolism of *Macracanthorhynchus hirudinaceus*. M. A. Miller (*J. Morph.*, 1943, 73, 19—41). J. D. B.

Differentiation in respiratory activity of isolated embryonic tissues. A. L. Romanoff (*J. exp. Zool.*, 1943, 93, 1—26).—A manometric study of the rate of O₂ consumption of the whole chick embryo and of its various tissues during the entire developmental period. The results indicate that the Q₀ of the whole embryo decreases with the progress of development. There is a higher rate in the anterior than in the posterior region during the period of predominant neurogenetic development and this is reversed at the time of organogenetic development. The Q₀ of various tissues is characteristic for different regions and for different developmental stages. Older embryonic tissues are less dependent on glucose as a substrate for the inorg. medium than younger ones. J. D. B.

Inheritance of coat and nose colour in long-haired dachshunds. A. J. Lea (*J. Genet.*, 1943, 45, 197—205).—Coat-colour in long-haired dachshunds segregates in a normal manner. Three pairs of allelomorphs are described: brindle and its absence, red and its absence, black and tan—chocolate and tan. There is an association between coat colour and nose colour, the latter being dependent on the black and tan—chocolate allelomorphs. Sufficient evidence is available to forecast the results of colour crosses, both for coat and nose, with a considerable degree of accuracy. Change of colour of both black and brown noses under certain conditions and the association of poor physique with the brown nose are recorded. W. F. H.

Rôle of internal factors in mutation. Influence of hybridisation on mutation rate. K. V. Magrshikovskaja and V. V. Sacharov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 697—698).—A study of the mutation process in intra-sp. hybrids between two stocks of *Drosophila melanogaster* taken from geographically remote localities. The result of the crossing was a threefold statistically significant increase in the mutation frequency. It is concluded that the data obtained confirm Sturtevant's assumption that despite the general trend of mutability to decrease in separate populations, it may be increased by intra-sp. crosses. J. D. B.

III.—PHYSICAL ANTHROPOLOGY.

Physical measurements of college women. E. G. Donelson, M. A. Ohlson, B. K. Watt, M. B. Patton, and G. M. Kinsman (*Amer. J.*

Dis. Child., 1943, **66**, 21—24).—Measurements of height, wt., breadth, and depth of the chest, girth of the right and left arms and of the left leg, and pressure of the right and left hands made for 4 successive years on 209 women of 17—24 years residing in the states of Iowa, Kansas, Minnesota, Ohio, and Oklahoma are tabulated. The height measurements alone consistently increased during the period.
C. J. C. B.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Peripheral neuroglia. II. Neuroglia of sensory ganglia. P. del Rio Hortega, and J. M. Polak Moisés y Prado (*Rev. Soc. argent. Biol.*, 1942, **18**, 159—168).—The neuroglia of the sensory ganglia is formed by cells that show two forms of adaptation, related to their situation surrounding the neuronal bodies or their axons. The so-called "capsular cells" are perisomatic gliocytes, polygonal, laminar, or stellated in shape, which spread on the neuronal surface or envelop it in a plexus of slender processes. The so-called "subcapsular cells" are commonly periaxonic gliocytes, mono-, bi-, pluri-polar or laminar in shape, which wrap the nerve fibres in their glomerular or pericapsular parts. There are transitions between them and the Schwann cells. Histo-physiologically considered, the perisomatic elements are equiv. to cerebral astrocytes, and the periaxonic ones to oligodendrocytes of the central third and fourth types.
J. T. L.

(A) Structure and function of the Golgi system in the living cells of developing molluscs. (B) Relation between the Golgi apparatus and "droplets" in the cell stainable vitally with methylene-blue. L. G. Worley (*Proc. Nat. Acad. Sci.*, 1943, **29**, 225—228, 228—231).—

(A) In mollusc embryos vitally stained with methylene-blue the Golgi body is a spherical, simple vesicle, possessing a chromophilic, gel-like, relatively lipoidal pellicle covering a relatively more proteinaceous, fluid, chromophobic core. The pellicle is thickened over one part and thus appears as a bowl-like structure. Multiplication of the Golgi elements and their rôle as absorbing and protein and fat elaborating systems are described. (1 photomicrograph.)

(B) The living Golgi system in many invertebrate and vertebrate cells consists of similar chromophilic vesicles. When heated with hypertonic salt solutions the vesicles collapse, discharge their contents, and form a pseudo-reticulum similar to that exhibited by the Golgi apparatus stained with osmic acid. (2 photomicrographs.) F. S.

Proliferation in the genital tract of the normal mature guinea-pig treated with colchicine. I. G. Schmidt (*Amer. J. Anat.*, 1943, **73**, 59—80).—In lining uterine epithelium, proliferation is absent from the 4th to 10th day of the cycle. There is a considerable rise during proœstrus. Mitotic rate decreases markedly at the time of ovulation but this is followed by extensive proliferation. In the distal segments of glands proliferation parallels that in the lining epithelium. Proliferation in basal cells of stratified columnar epithelium of the upper cervix is slight, but in the lower cervix it is more extensive. Cyclic distribution follows that in uterine epithelium. In the muscularis, proliferation is confined mainly to endothelial cells and occurs at the same time as in the uterus. In the vagina extensive proliferation begins during proœstrus and a thick epithelial layer is built up and maintained throughout œstrus. In the fimbriated portion, ampulla, and isthmus of the uterine tube max. proliferation occurs soon after ovulation. Secretion is liberated by the cells during this period.
W. F. H.

Nucleus in normal and hyperplastic liver of rat. N. M. Sulkin (*Amer. J. Anat.*, 1943, **73**, 107—125).—Mitotic figures are rare in the normal liver, their infrequent occurrence being due to the slow replacement of hepatic cells. No indication of amitosis was noted. Removal of 75% of the liver produces compensatory hyperplasia in the remaining lobes. The % of binucleate cells in the normal liver is approx. 11.7 and in the restored liver it is 4.95. Measurements of nuclei in restored and normal livers show that there is an increase in the frequency and magnitude of polyploidy in the restored liver. Polyploidy is most frequent in the region of the central vein in both the normal and the restored liver. There are indications that there is a continuous slow replacement of hepatic cells, mostly in the region of the central vein. The average size of restored nuclei is slightly greater than in the normal.
W. F. H.

Explantation experiments on neuroglia from cerebral white matter. N. G. Chopin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 702—704).—Description of the growth *in vitro* of neuroglia from new-born and young rabbits for periods of from 1 to 45 days.
J. D. B.

Epithelium of frog stomach during reparative regeneration. E. Koloss (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **31**, 711—713).—An account of the modifications in the endodermal components of the stomach during healing and of the differentiation of new glands.
J. D. B.

Composite Ziehl-gram staining method for sputum, pus, and exudates. S. Marshall (*Brit. Med. J.*, 1943, II, 232—233).—The stains and the technique are described.
I. C.

Polyvinyl alcohol: medium for mounting and cleaning biological specimens. W. G. Downs (*Science*, 1943, **97**, 539—540).—The medium contains phenol 22%, lactic acid 22%, polyvinyl alcohol stock solution 56%. The stock solution is prepared by slowly adding the powder to water, heating on a steam-bath until the solution is as viscous as molasses, and keeping it for several hr.
E. R. R.

Demonstration of tubercle bacilli in tissue by fluorescence microscopy. G. Crossmon and E. Loewenstein (*J. Lab. clin. Med.*, 1943, **28**, 1349—1354).—Tissue sections (6—10 μ) are stained with carbolauramine solution and decolorised with acid alcohol. Preps. are counterstained with methylene-blue, dehydrated, cleared, and mounted in xylol-clarite for permanent preps. Distilled water, glycerin, medicinal mineral oil, or Shillaber's immersion oil may also be used as mounting medium, if the cover glass is sealed with shellac or paraffin wax. The preps. are examined with ultra-violet radiation using low-power magnification and a dark-field stop for the initial examination. Higher magnification is necessary to check the morphology of stained elements. Tubercle bacilli appear as thin, yellow, luminous, slightly curved rods on a dark background.
C. J. C. B.

V.—BLOOD AND LYMPH.

Comparison of techniques for differential counting of bone marrow cells (guinea-pig). R. D. Epstein and E. H. Tomkins (*Amer. J. med. Sci.*, 1943, **206**, 249—260).—A method is described for counting the hæmatopoietic cells of small pieces of bone marrow supravivally. Counts of bone marrow of normal guinea-pigs were made from fixed smears prepared by a variety of methods, on small pieces of marrow stained supravivally, and on sections fixed and stained by Kingsley's method. Inadequate distribution and trauma are inherent sources of error in the use of fixed smears; differential counts made from them are less dependable than by the other 2 methods. The difference between section counts of the same marrow by different observers is greater than between supravital counts under the same conditions. Both methods, however, are sufficiently reliable for studies based on comparative, rather than abs., vals. The most important differences between section and supravital counts are: greater % of polymorphs in section counts, inability to differentiate monocytes and clasmatocytes, specifically, in section counts, and a shift towards the younger cells of any series in section counts.
C. J. C. B.

Stomach and erythropoiesis. E. Wollheim (*Schweiz. med. Wschr.*, 1943, **73**, 233—238).—Ligatures of parts of the portal vein system in rabbits and dogs were made at (1) splenic vein, prior to its junction with the gastric vein; (2) splenic and all veins between the stomach and spleen (gastro-epiploic veins); (3) vena coronaria ventriculi, prior to the junction with the splenic vein; (4) vena coronaria ventriculi and all gastro-epiploic veins; (5) vena coronaria ventriculi and splenectomy; (6) superior mesentery vein. Marked hypochromic microcytic anæmia was produced by operations (2), (3), and (4), commencing 2—4 days after the operation, being most marked with (4). There is a reticulocyte crisis in the 2nd—4th week, followed by a recovery of the blood count, which is due to formation of collateral vascular channels. It is assumed that a "stomach factor" is normally formed in the fundus which has an erythropoietic effect on reaching the liver in the blood stream. This product is not identical with the anti-pernicious anæmia factor.
A. S.

Effect of arsenic (Fowler's solution) on erythropoiesis. L. R. Limarzi (*Amer. J. med. Sci.*, 1943, **206**, 339—347).—The megaloblasts in the bone marrow of patients with pernicious anæmia during relapse are As-sensitive; the pronormoblasts in normal bone marrow and in the bone marrow of most anæmias with an erythroid immaturity are As-resistant. The resultant reticulocytosis following As therapy is due to maturation of megaloblasts to reticulated megalocytes, since there is no morphological indication that megaloblasts are maturing to reticulocytes. Arsenic serves as a convenient agent for separating the pathological reticulocytes originating from the megaloblasts from those derived from normoblasts. When the latter appear, the anæmia is corr. (5 photomicrographs.)
C. J. C. B.

Dimorphic anæmia. Deficiency of iron associated with nutritional macrocytic anæmia. H. C. Trowell (*Trans. R. Soc. trop. Med. Hyg.*, 1943, **37**, 19—40).—63 cases are analysed.
C. J. C. B.

Hypochromic anæmia in adolescent males. M. L. Thomson (*Brit. Med. J.*, 1943, II, 454—455).—Report of 9 cases of hypochromic anæmia in young men between 17 and 19. The ætiology is undetermined; gastric acidity was low.
I. C.

Toxic effects of promin on erythrocytes of guinea-pigs. Erythrocyte aplasia following sulphathiazole.—See A., 1943, III, 907.

Taking of blood for hæmoglobin estimation.—See C., 1944, Part I.

Hæmoglobinometers.—See C., 1944, Part I.

Serological study of avian relationships. R. J. Defalco (*Biol. Bull.*, 1942, **83**, 205—218).—The classification of birds is generally confirmed by serological tests.
G. P. W.

Rh factor [in blood] and racial origins. A. S. Wiener (*Science*, 1942, 96, 407—408).—The distribution of the Rh factor in the blood cells of white individuals is deduced from the assumption that there were originally 2 or more white races in which Rh or rh predominated; the evidence is against the theory that mutation is responsible for the present distribution. E. R. R.

Rh factor and erythroblastosis foetalis. R. R. Race, G. L. Taylor, D. F. Cappel, and M. N. McFarlane (*Brit. Med. J.*, 1943, II, 289—293).—Results of the examination of 50 families in which erythroblastosis foetalis was diagnosed with a list of their pedigrees. Of 50 mothers 6 were Rh-positive and 44 were Rh-negative. In the sera of 38 of these Rh-negative women anti-Rh agglutinins were found. This finding confirms the connexion between the Rh blood group factor and the disease. In some families other red cell antigens behaving like the Rh factor may be responsible for the disease. Thus a case is recorded of iso-immunisation of the mother against both the A₁ and Rh factors contained in the cells of the foetus, and another in which the serum of the mother (group ORh+) contained a powerful antibody able to agglutinate the red cells of her erythroblastotic child (group ORh+) and 50 samples of ORh- bloods. After removal of the anti-A and anti-B isoantibodies this serum still agglutinated the husband's cells (group ARh+). This antibody is thought to be similar to the irregular agglutinin named Hr. The fact that Rh- children were absent from the healthy group probably indicates that not all Rh-positive children of Rh- mothers are equally liable to the disease, this depending on the father being homozygous (Rh Rh) or heterozygous (Rh rh); in the latter case not every conception will produce Rh+ children and as in most families two or three positive children are necessary before an affected child is produced, the mother is less likely to be immunised when the father is heterozygous. A Rh- child (unaffected) may occur in an affected family. ¼ of the children diagnosed as affected survived; ¾ were born dead or died mostly within a week of birth. Affected children are evenly distributed between the two sexes. I. C.

Hæmolytic anæmias. L. J. Davis (*Edinb. Med. J.*, 1943, 50, 589—616).—A comprehensive and crit. review. (4 photomicrographs, 109 refs.) H. S.

Family with hæmolytic icterus. H. H. Sealrs (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 294—298).—The cases of a father and of his son and daughter are described and discussed. P. C. W.

Hæmoglobin metabolism and hæmatology in a case of congenital hæmolytic jaundice during (a) clinical crisis, (b) repeated transfusions, and (c) before and after splenectomy. R. C. Lowe (*Amer. J. med. Sci.*, 1943, 206, 347—352).—During the crisis there was decreased liver function which cleared spontaneously; there was no marked blood destruction. Transfusions were followed by progressive enlargement of the spleen. There then occurred a marked increase in blood destruction, and fall of red blood cells, hæmoglobin, and reticulocytes. The transfused red cells were probably sequestered in the spleen and rapidly destroyed, leading to marked stercobilin excretion. Splenectomy was followed by a return to normal in the red blood cells, hæmoglobin, reticulocytes, bilirubinæmia, and pigment excretion. All clinical symptoms and signs disappeared. C. J. C. B.

Lyso-lecithin fragility in blackwater fever and hæmolytic jaundice. H. Foy and A. Kondi (*Trans. R. Soc. trop. Med. Hyg.*, 1943, 37, 1—13).—Red cells transfused into a case of hæmolytic blackwater fever were destroyed as readily as the patient's own cells. By an improved spectrophotometric technique it was shown that, like those of hæmolytic jaundice, the red cells from blackwater fever have an increased fragility to lyso-lecithin, although their fragility to saline is normal, unlike the cells of hæmolytic jaundice. By using van Boro's formula it was demonstrated that spherocytosis occurs in blackwater fever and is accompanied by decreases in diameter/thickness ratio, vols., and areas, and that these changes in blackwater fever are intermediate between those taking place in hæmolytic jaundice and normal controls, and are not related in blackwater fever to changes in hypotonic saline fragility. C. J. C. B.

Mechanism of inhibition of hæmolysis. E. Ponder (*J. Gen. Physiol.*, 1943, 27, 1—14).—The inhibitory effect of plasma on saponin hæmolysis has the following properties in common with the inhibition produced by sugars and electrolytes and with the acceleratory effects of indole etc.: the temp. coeff. is small and negative; the amount of inhibition depends on the type of red cell used; the const. $R = C_1/C_2$, where C_1 is the initial amount of lysin and C_2 is the residual lysin after application of the inhibitor) is the most satisfactory measure of inhibition and is a linear function of the quantity of inhibitor present. Lysin reacts with a component or components of the cell membrane so as to break down its semi-permeability to hæmoglobin. The membrane is composed of areas of varying resistance on which the accelerations or inhibitory factors have an overall effect, e.g., changing lysin concn. at the surface or altering the partition between the membrane and the surrounding fluid. F. S.

Antigenic properties of crystalline hæmolysin.—See A., 1943, III, 925.

Acute aleukæmic myeloid leukæmia. B. L. della Vida and M. C. Connel (*Brit. Med. J.*, 1943, II, 417—418).—Report of two cases. Peroxidase stain was essential for classification of immature cells. I. C.

Leukæmia; relative incidence of its various forms and their response to radiation therapy. F. H. Bethell (*Ann. int. Med.*, 1943, 18, 757—771).—495 cases of leukæmia were examined in 14½ years; re-examinations were carried out of blood and bone marrow in 262 cases; necropsy was performed in 19% of the cases. Lymphogenous leukæmia was found in 43.6, myelogenous in 48.3, and histogenous in 8.1%. The term "sub-leukæmia" was used when at least 10% of the white cells showed a sp. abnormality, with the total not exceeding 10,000 per cu. mm. In the group of acute leukæmia the myeloblastic replaces the lymphoblastic as the most frequent type after the age of 20. Among the chronic types, myelogenous leukæmia predominates up to the 7th decade, when the lymphocytic type is most frequently observed. Chronic monocytic leukæmia was most frequently observed between the ages of 40 and 60. Intense irradiation, limited to the spleen, was carried out in myelocytic and myelo-monocytic cases. The best results were obtained in myelocytic and lymphocytic types. A. S.

Effect of sodium pentobarbital, p-dichlorobenzene, amyl acetate, and sovosol on induced resistance to transplanted leukæmia of the rat.—See A., 1943, III, 896.

Infectious mononucleosis. J. P. A. Halcrow, L. M. Owen, and N. O. Rodger (*Brit. Med. J.*, 1943, II, 443—447).—An epidemic of infectious mononucleosis is described presenting some unusual features: high % of cases in the adult population; occurrence of cases with hæmatological and serological findings and no clinical manifestations, blood and serological changes preceding the clinical manifestations. Diagnosis can only be made from examination of blood and repeated Paul-Bunnell tests. The condition is always benign and does not respond favourably to sulphonamide therapy. I. C.

Mechanism of effect of adrenaline on venous hæmatocrit value of normal unanæsthetised dog. P. F. Hahn, W. F. Bale, and J. F. Bonner (*Amer. J. Physiol.*, 1942, 137, 717—721).—Intravenous administration of adrenaline to dogs sometimes increases the venous hæmatocrit val., a response abolished by splenectomy, without a corresponding change in the circulating red blood cell mass as determined by the donor-isotope-radioactive Fe-red cell procedure. An explanation may be an increase in the effective no. of blood vessels of small inside diameter as well as a reduction in the calibre of many vessels by vasoconstriction, both factors leading to an increased fraction of plasma in sluggish circulation. T. F. D.

Hæmatocrit readings in normal dogs. B. Kisch and E. Strauss (*Exp. Med. and Surg.*, 1943, 1, 250—251).—The average hæmatocrit reading, in 58 dogs of 6—37 lb. wt., was 32.7, S.D. 4.15, S.E. 0.54. There was no correlation between the wt. of the animals and the hæmatocrit vals. A. S.

Limitations of erythrocyte sedimentation test in tuberculosis. A. L. Banyal and A. V. Cadden (*Arch. intern. Med.*, 1943, 72, 245—249).—8% of 2640 tuberculous patients had a normal sedimentation rate. The eligibility of a patient to become ambulatory and undergo pneumothorax treatment should not be decided on the basis of a normal sedimentation rate unless the results of other procedures are corroborative, including aspiration of gastric contents that are repeatedly negative for tubercle bacilli on culture or on inoculation into guinea-pigs. During the course of collapse therapy, the sedimentation rate may return to normal while cavities remain open and the tuberculous process is still active. C. J. C. B.

Blood volume in congestive heart failure. Relation to other measurements in 15 patients. G. R. Meneely and N. L. Kaltreider (*J. clin. Invest.*, 1943, 22, 521—529).—The blood vol. was usually greatly increased. There was great variability in the increase and in the degree to which the plasma and the cells contributed to the increase, and no significant difference was observed between the increase in cell and plasma. Log circulation time bore a linear relation to the ratio between the transverse diameter of the heart and the internal diameter of the chest in 8 cases where roentgenograms of chest were taken. There was a significant correlation between the degree of anoxia measured by Lundsgaard's "capillary unsaturation" and the increase in cell vol. In 3 patients who improved, all measurements tended towards normal, the plasma vol. decreasing more than the cell vol. In the patient who grew worse, the reverse was the case. C. J. C. B.

Effect of hæmorrhage on blood-fat. H. C. Stewart (*J. Physiol.*, 1943, 101, 15P).—The amount of blood-fat in the rabbit increases during anæmia caused by daily bleedings of 20—25 c.c. Its increase parallels that of the reticulocytes rather than the degree of anæmia. W. H. N.

Immunisation against blood factor N. E. Singer (*Med. J. Austral.*, 1943, II, 29).—A transfusion accident was caused by active immunisation of the recipient against blood factor N by a previous transfusion. F. S.

Group-specific substances, A, B, N, and Rh; their occurrence in tissues and body fluids. K. E. Boorman and B. E. Dodd (*J. Path. Bact.*, 1943, 55, 329—329).—The presence of *M*, *N*, and *Rh* group-sp. substances in the tissues is demonstrated. Only small amounts (in contrast to the large concns. of *A* and *B*) are detected in the saliva. C. J. C. B.

Autohaemagglutination. F. Stratton (*Lancet*, 1943, 244, 613—614).—5 cases of autohaemagglutination at room temp. are described; abnormal agglutinins can be isolated by the prep. of agglutinin solutions or by addition of sp. polysaccharides of saliva to remove isoagglutinins *a* and *β*. C. A. K.

Human complement. E. E. Ecker, L. Pillemer, S. Seifter, T. F. Dozois, and C. L. San Clemente (*Science*, 1943, 98, 43—44).—Fresh human serum was fractionated into three fractions by dialysis against a $\text{PO}_4^{'''}$ buffer of ionic strength (μ) 0.02 and pH 5.4, at 1° for 24 hr. or longer, with mechanical rotation. The ppt. (mid-piece) was washed with cold buffer solution and stored in a $\text{PO}_4^{'''}$ buffer of μ 0.3 and pH 6.6. The end-piece (supernatant) was neutralised, made isotonic with 18% NaCl solution, and stored at 1° in 1:1.2 dilution in the saline, or in 1:2.5 dilution in $\text{PO}_4^{'''}$ ($\mu = 0.3$, pH = 6.6). The two parts are separately inactive, but fully active when combined. *C'3* is removed by incubation at 37° for 1 hr. with 1.35 mg. of "zymosan." *C'4* is inactivated by 0.2 ml. of 0.16M- NH_3 solution per 2 ml. of fresh serum, followed by incubation for 1 hr. at 37°, or by 0.1 ml. of 0.16M- N_2H_4 per ml. of fresh serum. Human complement is inactivated at 52° for 30 min. by destruction of *C'2*. The four components resemble, but are not identical with, those of guinea-pig complement; only *C'3* is interchangeable and alone shows enzymic properties. *C'1* has been characterised as a globulin, with electrophoretic mobility 2.9×10^{-6} in veronal buffer ($\mu = 0.1$, pH = 7.8). A conc. prep. of *C'2* has been prepared. The bactericidal action of human serum against *Vibrio comma* is a result of the joint action of complement and antibody, is destroyed by inactivating any component of the former, and is restored by addition of the lacking component. In fixations of complement to viable sensitised *V. comma* nearly all of the *C'3* activity is removed; the other components are only slightly affected. From complement deprived of *C'3*, the other components are fixed to the sensitised organisms, but the bactericidal action is not exerted till *C'3* is added to the complex. E. R. R.

Relation of kephalin flocculation and colloidal gold reactions to serum-proteins. E. A. Kabat, F. M. Hanger, D. H. Moore, and H. Landow (*J. clin. Invest.*, 1943, 22, 563—567).—Electrophoretically separated γ -globulins from normal and pathological human sera show marked colloidal Au and kephalin flocculating activity. 0.002—0.001 mg.-% γ -globulin-N gives a 5 reading in the colloidal Au test; 0.05 mg. of γ -globulin-N gives a definite kephalin flocculation. Addition of electrophoretically separated albumin to γ -globulin inhibits the colloidal Au reaction, but does not inhibit kephalin flocculation. Different preps. of albumin vary in inhibiting power. Sera with low electrophoretic albumin/globulin ratios show positive kephalin flocculation and colloidal Au reactions more frequently than those with normal ratios; other factors are also of importance. C. J. C. B.

Hyperglobulinæmia. B. M. Kagan (*Amer. J. med. Sci.*, 1943, 206, 309—315).—The literature is reviewed and 85 cases are reported. Vals. for total serum-protein concn. over 9 g.-% are rarely found except in multiple myeloma, monocytic leukaemia, venereal lymphogranuloma, pulmonary suppuration, Bock's sarcoid, subacute bacterial endocarditis, and dehydration. C. J. C. B.

Changes in electrophoretic pattern in lymph and serum in experimental burns. G. E. Perlmann, W. W. L. Glenn, and D. Kaufman (*J. clin. Invest.*, 1943, 22, 627—633).—Normal lymph has the same electrophoretic components as are present in serum, viz., albumin, α , β , and γ -globulin. The pattern obtained from lymph derived from the burned tissue revealed the occurrence of an additional boundary, migrating with half the speed of the γ -globulin. The changes found in serum indicated a slight decrease of the albumin/globulin ratio with an increase in the α -globulin fraction. C. J. C. B.

Physico-chemical mechanism of Tabanera's sulphuric acid serum precipitation test. J. A. Tabanera, F. Modern, and G. Ruff (*Rev. Soc. argent. Biol.*, 1942, 18, 106—121).—Tabanera's test consists in adding 0.2 c.c. of serum to 3 c.c. of sulphuric acid solution (25 c.c. of conc. H_2SO_4 in 275 c.c. of twice distilled water). After 20—24 hr. at 18—22° a ppt. is seen in normal human sera. In certain pathological conditions no ppt. is formed. The ppt. gives a positive reaction for amino-acids and contains the same amount of N as protein. Electrodialysed serum does not ppt. with acid. Addition of pseudo-globulin from normal sera did not prevent pptn.; pseudo-globulin from abnormal sera not giving the ppt. with acid prevented the ppt. appearing in normal sera. J. T. L.

Chemistry of heparin. J. E. Jorpes (*Z. physiol. Chem.*, 1943, 278, 7—16; cf. A., 1942, III, 574).—Examination of the brucine, Ba, and Na salt of the protein-free polysaccharide shows that $[\alpha]_D$ and anticoagulant power increase with increase in S content. The most active preps. from ox liver probably consist chiefly of a mucotinin

acid but cryst. heparin has not been obtained so far. Since the activity of the substance varies very much according to the animal species from which it is obtained, it follows that each species has its sp. heparin and that activity does not depend solely on SO_4 content. W. McC.

Hypoprothrombinæmia after salicylate administration in man and rabbits. S. Rapoport, M. Wing, and G. M. Guest (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 40—41).—Therapeutic doses of Na salicylate or acetylsalicylic acid caused in 8 out of 15 patients a reduction in prothrombin determined by Fullerton's method (A., 1941, III, 75). Injections of methyl salicylate caused a similar reduction in rabbits but not in dogs. V. J. W.

Stability of thromboplastic-like activity of Russell viper venom under various conditions of storage. R. C. Page and E. J. de Beer (*Amer. J. med. Sci.*, 1943, 206, 336—339).—Solutions of Russell viper venom maintained their thromboplastic activity unimpaired when stored in stoppered or lightly stoppered containers at refrigerator temp. or in stoppered containers at room temp. for at least 126 days. Solutions of Russell viper venom suffered sudden decomp. after 2 months' exposure to air at room temp. The prothrombin clotting times of 2 healthy normal individuals underwent periodic fluctuations over a period of 18 weeks. C. J. C. B.

Thrombin activity and fibrinolysis in purified coagulation systems. S. Hudemann (*Kolloid-Z.*, 1940, 92, 189—207).—Coagulation of fibrinogen by thrombin and by heat produce practically the same quantities of fibrin, supporting the view that thrombin is a fibrin-denaturase, and that no more deep-seated effect is produced on the mol. by thrombin than by heat. Thrombin brings about the more rapid fibrinolysis the more pure is the fibrinogen. The addition of serum-albumin considerably retards fibrinolysis. Thrombin prepared by the Mellanby-Bleibtreu method shows proteolytic activity against fibrin. Heparin has little effect on the coagulation of fibrinogen by thrombin, and has no effect on the fibrinolysis of the fibrin obtained. The addition of a hirudin prep. increases coagulation time. Heating a thrombin solution at 56° for 30 min. considerably decreases the coagulation activity, but the proteolytic activity is unaffected. The coagulation activity is independent of temp. between 18° and 37°. The optimum pH for both coagulation and fibrinolysis is 6.5—7.0. In alkaline solution, the coagulation activity is generally strong, but there is no fibrinolytic activity. Dialysis of thrombin into water increases the amount of the proteolytic enzyme in the pptd. eglobulin. The coagulation activity is present in both the water-sol. and the water-insol. fractions, the total activity being unaltered. Fractional pptn. with $(\text{NH}_4)_2\text{SO}_4$ shows thrombin to be a mixture of enzymes. Thrombin prepared by Eagle's method (A., 1935, 771, 1263) contains a fibrinolytic enzyme. A. J. M.

Action of sodium thiosulphate on blood [clotting]. J. Litwins, L. J. Boyd, and L. Greenwald (*Exp. Med. and Surg.*, 1943, 1, 252—259).—0.007 g. of $\text{Na}_2\text{S}_2\text{O}_4$ added to 1 c.c. of blood *in vitro* increases coagulation time; clotting was prevented by 0.017 g. or more. Intravenous injections of 100 or 200 c.c. of a 6.5%, 100 of a 12%, 50 c.c. of a 25 or 50% solution of $\text{Na}_2\text{S}_2\text{O}_4$ were made in 43 convalescent patients. There was no change (period of observation 7 days) in hæmoglobin concn., red cell, leucocyte, platelet, and differential counts, prothrombin, bleeding and clotting times, red cell sedimentation rate, and cell vol.; the exception was a regular prolongation of clotting time when 50 c.c. of the 50% solution had been given. There was no alteration in blood-Ca, -cholesterol, or -cholesterol esters, or serum-fibrinogen, -albumin, and -globulin. 100 c.c. of the 6.5% solution was given to 100 patients after abdominal operations; there was no case of pulmonary embolism; 3 patients developed thrombophlebitis of the leg vessels which promptly responded to larger doses. 12 additional cases of acute thrombophlebitis in non-surgical cases greatly benefited by the 50% solution. A. S.

Microscopic differences in fibrin network of different species. R. Bucher (*Helv. Physiol. Pharm. Acta*, 1943, 1, C38—39).—Citrate plasma is mixed with a glucose-Ca solution to which 3% $\text{K}_2\text{Cr}_2\text{O}_7$ is added. After adding 5% AgNO_3 the plasma gel is fixed in alcohol and collodion. The microtome sections are stained with 2% cresyl-violet or erythrosin and safran. The fibrin network of human, ox, horse, pig, dog, and sheep plasma has characteristic histological properties. A. S.

Human fibrin as dressing for burns. R. G. Macfarlane (*Brit. Med. J.*, 1943, II, 541—543).—A flat clot obtained from human blood can be sterilised and kept for some days in saline or antiseptics. Films of human fibrin thus obtained were applied to clinical cases and experimental burns. Results were good, but do not justify the lengthy procedure involved in the prep. of the films. I. C.

Effects of single small dose of dicumarol [3:3'-methylenebis-(4-hydroxycoumarin)] in liver disease. S. Shapiro, M. H. Redish, and H. A. Campbell (*Amer. J. med. Sci.*, 1943, 205, 808—811).—50 mg. of Dicumarol (half the min. dose for prolonging prothrombin time in normal individuals) was administered to 18 patients with liver disease and hypoprothrombinæmia. All the cases of Laennec's cirrhosis

with marked or moderate pre-existing prolongation of the diluted plasma-prothrombin time responded. Of 6 cases with slightly prolonged diluted plasma-prothrombin time, 3 showed a further increase; cases with initial normal prothrombin time did not respond.
C. J. C. B.

Dicoumarin in thrombosis. L. Lehman (*Lancet*, 1943, 244, 611—613).—Oral administration of dicoumarin was successful in cases of established venous thrombosis, and in thrombophlebitis, and was apparently useful prophylactically in patients after gynaecological operations.
C. A. K.

Relationship between climatic conditions at Davos and thrombosis and pulmonary embolism. W. Stähli (*Schweiz. med. Wschr.*, 1942, 72, 1321—1325).—Thrombosis and pulmonary embolism are found post mortem at Davos (altitude 1550 m.) as frequently as at sea level. The occurrence of pulmonary embolism in relation to climatic factors is discussed.
A. S.

Thrombosis and embolism in obstetrics and gynaecology. T. Koller (*Schweiz. med. Wschr.*, 1943, 73, 85—89).—A lecture.
A. S.

Thrombosis and embolism after closed injuries to extremities. F. Jakob (*Schweiz. med. Wschr.*, 1943, 73, 117—119).—A review.
A. S.

Use of vitamin-K-active substances in hypoprothrombinæmia. Oral administration of synthetic vitamin-K.—See A., 1943, II, 903.

Relations of dehydration and overhydration of plasma to collapse in artificial fever therapy. H. R. Brown, jun., W. F. Clarke, N. Jones, J. Walther, and S. L. Warren (*J. clin. Invest.*, 1943, 22, 471—485).—The incidence of collapse during artificial fever therapy can be greatly reduced by replacement of water and NaCl lost in sweat as its development is associated with dehydration or, occasionally, overhydration of the plasma. The symptoms accompanying both states are pallor, cold extremities, and high body temp., absence of sweating and urinary excretion, mania, or unconsciousness. Treatment should be controlled by plasma sp. gr. determination.
C. J. C. B.

Gelatin infusion in hæmorrhagic shock. M. Janota, H. Necheles, R. E. Weston, V. Weissman, and S. O. Levinson (*Exp. Med. and Surg.*, 1943, 1, 298—303).—14 different gelatins were transfused into dogs in hæmorrhagic shock. All the untreated and most of the saline-transfused animals died. Most of the gelatin-treated animals survived, even following severe shock; there was remarkable restoration of blood pressure, and plasma vols. were increased above control levels. The gelatin disappeared rapidly from the blood; until then the plasma-non-protein-N level was raised. The transfusion of gelatin prolonged both prothrombin and clotting times considerably.
A. S.

Therapy of shock in experimental animals with plasma and serum-protein solutions. E. E. Muirhead, L. A. Kregel, and J. M. Hill (*Arch. Surg. Chicago*, 1943, 47, 258—282; cf. A., 1943, III, 306).—Shock, fatal in 8 hr., was produced in dogs by severe freezing of one hind limb. Groups of 10 were treated by (1) amputation of the damaged limb 3—4 hr. after the freeze was terminated, (2) intravenous conc. plasma started at 4—5 hr., (3) a combination of (1) and (2). In group (1) 8 died, in group (2) 10 died, and in group (3) none died. Conc. plasma increased the circulating plasma vol. and circulating plasma-proteins by withdrawing fluids into the plasma stream. The visceral lesions of groups (1) and (2) were similar; there were none in group (3).
F. S.

Pectin administration in patients not in shock. D. D. Kozoll, F. Steigmann, and H. Popper (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 66—67).—Intravenous infusion of 1 l. of 0.75—1.5% pectin had more effect than 1 l. of 2.5% glucose + 0.4% NaCl in lowering plasma-protein, hæmatocrit, hæmoglobin, and non-protein-N. It raised venous and arterial pressure slightly, and sedimentation rate markedly.
V. J. W.

Use of isinglass as blood substitute in hæmorrhage and shock. N. B. Taylor, M. S. Moorhouse, and A. J. Stonyer (*Canad. Med. Assoc. J.*, 1943, 49, 251—254).—Purified, powdered isinglass, dissolved in physiological saline solution, in concns. of 4—7% was administered intravenously to 51 patients to detect the occurrence of pyrogenic or other toxic effects and to 10 patients in the treatment of shock and acute hæmorrhage. In a few control cases some febrile reaction occurred. In none of the shock cases did any favourable reaction occur, and the solution appeared to be of val.
C. J. C. B.

Fatal loss of plasma volume after lymph heart destruction in toads. R. L. Zwemer and V. G. Foglia (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 14—17).—Toads with no lymph hearts, kept in an atm. of high humidity but without liquid water, retain const. body wt. until death in about 4 days. In this time their red cell vol. increases from 45 to 95% of the blood.
V. J. W.

Deproteinisation of ox plasma by metaphosphates, and some properties of the precipitate formed. A. A. Horvath (*Amer. J. Pharm.*, 1943, 115, 256—260).—Solutions of HPO_3 - NaPO_3 (Medi-Calgon, pH 6.5) completely deproteinise dil. blood plasma at pH 3.8 or less.

The ppt. after washing is sol. in aq. solutions of neutral salts and urea, and in water at pH 6.2. The blood filtrate contains peptides which are pptd. by trichloroacetic, tungstic, and phosphomolybdic acids.
R. L. E.

Amino-acid nitrogen of healthy human plasma. F. B. Cramer, jun., and T. Winnick (*J. Biol. Chem.*, 1943, 150, 259—260).—The average free α -amino-acid-N contents (10 males and 10 females tested), determined by the method of Hamilton and Van Slyke (C., 1944, Part 1), is 4.2 mg. per 100 ml. The corresponding contents of urea-N and non-protein-N are 12.7 and 25.7 mg.
W. McC.

Ceiling of utilisation of nitrogen: effect of continuous venoclysis with amino-acids of hydrolysed protein during experimental hypalbuminæmia. R. Elman, R. Charnas, and H. W. Davey (*Arch. Surg., Chicago*, 1943, 47, 216—220).—There was a positive N balance and regeneration of serum-albumin in protein-depleted dogs when 1.75 g. of N per kg. per day was given for 2 days by continuous venoclysis. An enzymic hydrolysate of casein containing a mixture of amino-acids and polypeptides was the sole source of N. There was less complete utilisation when the same total dose of N was given in 24 hr.
F. S.

Alimentary azotæmia. I. Rôle of blood absorption from gastrointestinal tract. C. F. Chunn and H. N. Harkins (*Surgery*, 1941, 9, 695—705).—Intra-gastric administration of whole blood in dogs increases blood-urea-N; this is the cause of raised blood-urea in peptic ulcer. Starvation, dehydration, bleeding, hypochloræmia, or shock was not responsible.
P. C. W.

Effect of exercise on blood-pyruvic acid. Z. A. Yanof (*Arch. intern. Med.*, 1943, 72, 239—244).—10 min. after moderate exercise a group of trained subjects had no change in blood-pyruvate; untrained subjects and patients with heart disease and with hypertension had marked rises. The 60-min. changes of the group with heart disease were high and were proportional to functional incapacity.
C. J. C. B.

Rise in potassium concentration in blood stream following ischæmia of muscle masses. R. E. Rewell (*Brit. Med. J.*, 1943, II, 483—484).—Serum-K rose after removal of a tourniquet applied to a limb during the course of orthopædic operations. K may pass into the blood stream from the ischæmic tissues or be liberated from the liver by a substance formed during ischæmia.
I. C.

Chronic abdominal pain due to hypoglycæmia. B. P. Sandler (*Surgery*, 1941, 9, 331—348).—5 cases are reported in which recurrent attacks of abdominal pain were not relieved by appendectomy, cholecystectomy, or herniorrhaphy. All had nervous symptoms of hypoglycæmia and increased glucose tolerance. It is stated that the pain and nervous symptoms were relieved on low-carbohydrate diets.
P. C. W.

Glutamine-like substance in blood and spinal fluid. M. M. Harris (*Science*, 1943, 97, 382—383).—The presence of 5—10 mg. of a glutamine-like substance per 100 c.c. of plasma, serum, and c.s.f. is confirmed. Insulin hyperglycæmia and administration of glucose reduce this level, whilst *dl*- α -alanine and, in some cases, glycine increase it. This substance might be glutamine.
E. R. R.

Glutamine-like substance in blood and spinal fluid, and its determination. M. M. Harris, R. T. Roth, and R. S. Harris (*J. clin. Invest.*, 1943, 22, 569—576).—Comparison of hydrolysis of known glutamine solution and c.s.f. in 10% trichloroacetic acid at 60° and 70° showed similar curves; asparagine solutions behaved differently. Similarly the hydrolysis rates of ultrafiltrates and trichloroacetic acid filtrates of serum and plasma compared closely with glutamine at 70° in 0.8N-trichloroacetic acid. (See also C., 1944, Part I.)
C. J. C. B.

Effect of insulin hypoglycæmia and glucose administration on level of glutamine-like substance in blood serum. M. M. Harris, R. T. Roth, and R. S. Harris (*J. clin. Invest.*, 1943, 22, 577—581).—Insulin and to a smaller extent carbohydrate administration lower the level of a glutamine-like substance present in the blood. The effect of insulin on the level of this substance continues after the insulin hypoglycæmia is alleviated by glucose.
C. J. C. B.

Effect of tourniquets on venous blood-sugar values. W. C. Loughlin, H. O. Mosenthal, and R. Halpern (*J. Lab. clin. Med.*, 1943, 28, 1165—1167).—Without a tourniquet, the venous blood-sugar levels remain const. over a period of 5 min. The application of a venous tourniquet results immediately in changes in the venous blood-sugar amounting to ± 20 —25 mg.-%. The arterial tourniquet causes smaller variations.
C. J. C. B.

Effect of hypoglycæmia and anoxia on survival period of infant and adult rats and cats. H. E. Himwich, J. F. Fazekas, and E. Homburger (*Endocrinol.*, 1943, 33, 96—101).—Infant rats survive insulin hypoglycæmia longer than adults. The survival period of anoxic infants (breathing 4.5—5% O_2), but not of anoxic adults, is prolonged by intravenous glucose. Hypoglycæmia shortens the survival period of both infant and adult rats breathing 4.5—5% O_2 . Anoxia produces hyperglycæmia in fed, and hypoglycæmia in fasted, rats. The dose of insulin producing death in rats and cats is approx. the

same: 10—15 units per kg. Cats survive insulin hypoglycæmia longer than rats. G. P.

Carotinaemia in suckling. M. L. Thomson (*Arch. Dis. Childh.*, 1943, 18, 112).—The mother and child became "jaundiced" following a weekly consumption over 11 months of 2—3 lb. of raw carrot a week. C. J. C. B.

Stability of acid-base equilibrium of blood in animals falling in different age periods. W. de B. MacNider (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 1—2).—Dogs were given open CHCl_3 for 45 min. after receiving 0.25 c.c. of 2% morphine. In those under 6 months alkali reserve was reduced, but re-established within 80 min. In those of 1—6 years, such reduction was slight or absent, but re-establishment took 110 min. In those of 9—19 years with healthy kidneys there was a reduction as in the puppies but re-establishment took 160 min.; in 4 with impaired kidneys no reduction took place. V. J. W.

Nicotinic acid content of blood in diseases. I. Anæmia.—See A., 1943, III, 901.

Significance of distribution ratios of non-electrolytes between plasma and intra-ocular fluid.—See A., 1943, III, 876.

Effects produced by extracts of *H. pertussis* on blood-sugar of rabbits.—See A., 1943, III, 921.

Clinical use of modified technique for determination of serum-bilirubin. B. Sepulveda and A. E. Osterberg (*Arch. intern. Med.*, 1943, 72, 372—376).—Using a new technique (to be described), the serum-bilirubin of normal persons and of patients without hepatic disease was 0.1—0.8 mg.-%. The concns. were 0.5 mg. or less in 95.5% of these persons. The van den Bergh reaction of the serum of all cases was indirect. Vals. for bilirubin giving the indirect van den Bergh reaction may be slightly elevated in cases of hepatic disease without jaundice in which serum-bilirubin giving the direct van den Bergh reaction is not found, and this rise may indicate hepatic damage when hæmolytic jaundice is excluded. The vals. may be elevated when the bromsulphalein test of hepatic function does not disclose dysfunction of the liver; the new technique may thus indicate hepatic dysfunction when the bromsulphalein test does not. The concn. of bilirubin giving the indirect van den Bergh reaction is increased in obstructive and in intrahepatic jaundice, as well as in hæmolytic jaundice. C. J. C. B.

Effect of muscular exercise on serum-choline-esterase level in normal adults and in patients with myasthenia gravis. H. B. Stoner and A. Wilson (*J. Physiol.*, 1943, 102, 1—4).—In normal persons and in patients with myasthenia gravis (whether under prostigmine treatment or not), no significant change in the serum-choline-esterase activity of blood from the antecubital vein was observed as a result of muscular exercise. Blood flow through the arm was stopped for the 4 min. of each experiment; 6 normal and 11 myasthenic persons were investigated. W. H. N.

Experimental inflammation. P. Busse-Grawitz (*Schweiz. med. Wschr.*, 1943, 73, 10—14).—Threads infected with staphylococci were brought into contact with superficial skin lesions in rabbits. After 1 hr. transformation of cellular elements of cutaneous, subcutaneous, or muscle tissues into immature white cells begins; mature white cells were found after 2 hr. Cohnheim's theory of diapédesis of white cells through the capillary wall to the site of inflammation, to form "inflammation cells," is rejected. A. S.

Treatment of varicose ulcers with vitamin- B_1 and acetylcholine. M. Juon (*Schweiz. med. Wschr.*, 1943, 73, 152—153).—Local application of a powder containing 1% of aneurin and 5% of acetylcholine was successful in the treatment of chronic varicose ulcers. A. S.

VI.—VASCULAR SYSTEM.

Action of *l*-ascorbic acid on isolated frog heart. O. Krayer (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 51—52).—The presence in perfusion fluid of serum-globulin or Na diethylthiocarbamate, which inhibit the catalytic action of Cu in the dehydrogenation of ascorbic acid and resulting formation of H_2O_2 , prevents the systolic arrest of the frog's heart by ascorbic acid solutions. V. J. W.

Pathogenic significance of adrenaline and related substances in heart muscle. W. Raab (*Exp. Med. and Surg.*, 1943, 1, 188—225).—A review. A. S.

Experimental studies on functional murmurs and extra-sounds of heart. A. A. Luisada and H. Mautner (*Exp. Med. and Surg.*, 1943, 1, 282—297).—E.c.g. and phonocardiograms were recorded in dogs under morphine-urethane anaesthesia. The following drugs were intravenously injected: adrenaline 0.01—2 mg., acetylcholine 0.1—2.5 mg., mecholyl 0.25—2 mg., doryl 0.125—0.5 mg., ouabain 0.25—3 mg., strophanthin 0.25—3 mg., digiton 0.1—0.5 g., atropine 1—4 mg., curare in doses paralysing the diaphragm, metrazol 1—3 c.c., nicotine 1 mg. per kg. body-wt., quinidine 5—10 mg. per kg. The vagi were cut and the effects of asphyxia were studied. A systolic murmur was often observed in marked tachycardia, independent of blood pressure changes. Prolongation of the heart sounds, in cases

of bundle branch block or ventricular tachycardia, may simulate murmurs. Extra-sounds, giving the appearance of gallop rhythm, occurred when the vagus was stimulated during periods of increased myocardial contractility. 2 loud sounds may follow a blocked auricular beat under conditions of heart block. Marked auricular sounds and a loud 3rd sound were usually found in bradycardia and prolonged auricular-ventricular conduction time. Exceptionally, unexplained extra-sounds were observed. A. S.

Chronic cor pulmonale. G. W. Covey (*Ann. int. Med.*, 1943, 18, 851—857).—A case is reported. A. S.

Calcification of left ventricular infarction recognised during life. M. C. Borman (*Ann. int. Med.*, 1943, 18, 857—865). A. S.

Increase of rate in paroxysmal tachycardias after exercise or inhalation of amyl nitrite. D. Scherf and J. Weissberg (*Exp. Med. and Surg.*, 1943, 1, 31—37).—4 patients showed an increase in the rate of paroxysmal tachycardia following exercise or inhalation of amyl nitrite. None of the patients had a history of rheumatic or arteriosclerotic heart disease. In 3 patients, exercise produced an increase in the no. of extrasystoles and not an increase in automatism of lower cardiac foci. A. S.

Retrograde venography of deep leg veins. J. C. Luke (*Canad. Med. Assoc. J.*, 1943, 49, 86—88).—A technique for retrograde femoral venography is described. In 29 venograms, the valvular mechanism of the femoral vein and its deep tributaries allowed retrograde flow of a contrast medium down the vein, even in normal legs. In the saphenous veins the normal valve stations resist high pressure when retrograde injection is attempted. C. J. C. B.

Venous valves in thromboangiitis obliterans. E. A. Edwards and J. E. Edwards (*Arch. Path.*, 1943, 35, 242—252).—Thromboangiitis obliterans damages the venous valves by inflammation, thrombosis, and dilatation secondary to the obstruction. (12 photomicrographs.) C. J. C. B.

Treatment of immersion foot by dry cooling. C. C. Ungley (*Lancet*, 1943, 244, 681—682).—In 2 cases of immersion foot vasodilatation and pain were relieved by exposure of the feet to a cool room temp. (15—18°), with a fan playing on them to maintain a skin temp. of 23—26°. C. A. K.

Immediate vascular changes in true frostbite. R. Greene (*J. Path. Bact.*, 1943, 55, 259—267).—Freezing to solidification does not necessarily produce necrosis in the tail of the mouse. Microscopical examination of the part of the tail destined to recover showed no const. change other than an initial vasoconstriction followed by vasodilatation. The part of the tail doomed to necrosis shows damage to the arteries and "silting up" of vessels with corpuscles. Though œdema follows freezing and is greater when freezing is more prolonged, it cannot be correlated exactly with the final damage. (10 photomicrographs.) C. J. C. B.

Heart and hypertension. H. Ludwig (*Schweiz. med. Wschr.*, 1943, 73, 229—233).—A lecture. A. S.

Circulatory disturbances in prostatic hypertrophy. M. Mallory, F. Mathers, L. M. Orr, II, and P. R. Kundert (*Ann. int. Med.*, 1943, 18, 835—840).—Acute circulatory failure was frequently found in patients suffering from prostatic hypertrophy. Prostatectomy helped in improving the condition of the heart. A. S.

Saccular aneurysm of abdominal aorta. E. S. Howland and B. E. Sproffkin (*Amer. J. med. Sci.*, 1943, 206, 363—369).—Report of a case with terminal anuria and rupture into the duodenum. C. J. C. B.

Correlations between periarteritis nodosa, renal hypertension, and rheumatic lesions [action of deoxycorticosterone]. H. Selye and E. I. Pentz (*Canad. Med. Assoc. J.*, 1943, 49, 264—272).—In the rat the toxic effect of chronic deoxycorticosterone acetate overdosage is increased by unilateral nephrectomy. Severe overdosage with this drug reproduces in the rat morphological lesions similar to those seen in periarteritis nodosa, malignant hypertension, and rheumatic fever. (Cf. A., 1943, III, 379, 807.) (16 photomicrographs.) C. J. C. B.

Methodical advice for dissection of cava funnel region in cases of pericardial diseases. H. Elias (*Exp. Med. and Surg.*, 1943, 1, 163—168).—Inflow stasis in cases of exudative or constrictive pericarditis is caused by the compression of supradiaphragmatic veins by the pressure of the intrapericardial fluid or, with large amounts, of the anterior wall of the intrapericardial part of the vena cava or even the sinus part of the right auricle. A dissecting technique is described which allows verification of these conditions on post-mortem examination. A. S.

Diagnostic significance of shortened P-R interval. K. Blum (*Schweiz. med. Wschr.*, 1943, 73, 74—75).—8 out of 500 patients between 18 and 70 years had a P-R interval between 0.10 and 0.12 sec. 7 of these patients suffered from endocrine disturbances or arterial hypertension. A. S.

QRS complex of electrocardiogram. M. Gardberg and R. Ashman (*Arch. intern. Med.*, 1943, 72, 210—230).—An analysis is given of the QRS complex of the human e.c.g. and the variations in that complex

which should appear when the heart is rotated to different positions within the thorax. In making the analysis, experimental findings in the dog, known effects of rotations of the heart in man produced by normal procedures or certain pathological conditions, known effects of bundle branch block and of infarction in man, and information derived from studies of precordial leads are correlated. In most subjects, the directions of the electrical axes as revealed by the limb leads and as projected on the frontal plane are correct within $\pm 10^\circ$; the usual error may be less than this. C. J. C. B.

Electrocardiographic criteria of left ventricular hypertrophy. R. Gubner and H. E. Ungerleider (*Arch. intern. Med.*, 1943, 72, 196—209).—Left ventricular hypertrophy is present when left axis deviation occurs in association with any of the following changes. (1) Increase in amplitude of the QRS complex (best expressed by $R_1 + S_3$); hypertrophy is present if this sum exceeds 2.5 mv. and is probably present if it is over 2.2 mv; the increase in voltage is the earliest e.c.g. change in hypertrophy. (2) Any perceptible depression of the ST segment in lead I, even of as slight degree as 0.5 mm. Lowering of T_1 below 1 mm. or further degrees of abnormality of T_1 . C. J. C. B.

Case of myocardial infarction masked by bundle branch block but revealed by occasional premature ventricular beats. W. Dressler (*Amer. J. med. Sci.*, 1943, 206, 361—363).—A case is reported in which myocardial infarction was associated with left bundle branch block. Significant e.c.g. changes suggestive of myocardial infarction were absent in the regular beats but were displayed by premature beats of ventricular origin. C. J. C. B.

Initiation of ventricular fibrillation due to coronary occlusion. A. S. Harris and A. G. Rojas (*Exp. Med. and Surg.*, 1943, 1, 105—122).—The anterior descending ramus of the left coronary artery in dogs and one monkey was occluded for periods not exceeding 30 min. Ventricular fibrillation developed during the first 10 min., if at all. Fibrillation could be produced, where it did not develop within 10 min., by readmitting blood to the ischaemic area. It started with an accelerating series of ventricular ectopic beats, usually preceded by single or groups of extrasystoles; sometimes these groups of ectopic beat showed a definite rhythm. Local leads from the ischaemic area show a progressive reduction in voltage of the spike with broadening and retardation of R; in many cases the main deflexion eventually disappeared. Rhythmic or non-rhythmic potentials may appear in the ischaemic zone which are not propagated to the rest of the ventricle and continue while fibrillation occurs in the rest of the ventricle. Leads from the border of the ischaemic area show spikes 4 times the normal size and elevated R-T segments. The partially ischaemic border zone is thought to be the origin of the ectopic impulses. There are striking similarities between rhythms produced by local ischaemia and those by stimulation with galvanic currents. A. S.

Single unit analysis of heart ganglion discharge in *Limulus polyphemus*. C. L. Prosser (*J. Cell. Comp. Physiol.*, 1943, 21, 295—305).—Rhythmic discharges from the isolated ganglion consist of slow waves on which axon spikes are superposed. These slow waves are increased by isotonic sucrose and their probable function is the synchronisation of units. Records from portions of ganglia containing only a few cells indicate that each cell discharges several times in one cardiac outburst, at increasing intervals towards its end. Increase of K or Na or decrease of Ca increases heart rate, frequency of units, and no. of units acting, and vice versa. High K or zero Ca lessens synchronisation and causes continuous activity. High Ca or zero K abolishes activity. V. J. W.

Case of congenital dilatation of the pulmonary artery. H. L. Heimann and M. M. Posel (*Brit. Med. J.*, 1943, II, 512).—Case report. The e.c.g. did not show axis deviation; the T wave was inverted (coronary type); the S-T segment depressed; the three limb leads showed diaphasic QRS complexes. I. C.

Heart size and pulmonary findings during acute coronary thrombosis. E. Massie and W. C. Miller (*Amer. J. med. Sci.*, 1943, 206, 353—360).—No consistent change in cardiac size or shape was noted in 16 patients. C. J. C. B.

Acute cardiac failure in newborn infants. H. Willi (*Schweiz. med. Wschr.*, 1943, 73, 223—226).—2 out of 4 newborn infants suffering from acute cardiac failure died. A. S.

Regulation of circulation and its failure. A. Fleisch and C. Petitpierre (*Schweiz. med. Wschr.*, 1943, 73, 141—145).—A lecture. A. S.

Graphic study of auscultatory blood pressure measurement. F. M. Groedel and M. Miller (*Exp. Med. and Surg.*, 1943, 1, 148—162).—Simultaneous e.c.g. and sound records from the antecubital space were taken. In normal subjects the Korotkow sound phenomena are due to compression of the brachial artery by the cuff. The 1st and 2nd heart sounds were transmitted to the antecubital space, especially in children and patients with mitral valve disease. Systolic murmurs were often recorded in patients with various types of valvular disease, particularly aortic. The transmitted acoustic phenomena appeared in the arm or leg with a const. delay after

the peak of the R wave (0.16 sec. at the level of the diastolic, 0.24 sec. at the systolic, blood pressure). Abnormally long delay was only found in patients with cardiac decompensation; shortening of the delay occurs in left ventricular hypertrophy. A. S.

Blood pressure and respiratory changes produced by strychnine convulsions. Changes in velocity of blood flow during spinal anaesthesia.—See A., 1943, III, 911.

Dependence of friction coefficient of human blood on capillary diameter at different velocities of flow in normals and hypertensives. H. Suter (*Helv. Physiol. Pharm. Acta*, 1943, 1, C25—27). A. S.

Objective method for determination of circulation time. B. Jablono (*Science*, 1943, 97, 515—516).—The passage of non-toxic dyes, e.g., methylene-blue, phenolsulphonphthalein, injected into the arm or leg, is detected and measured by its effect of the transmission of light through various translucent tissues, as indicated by a photoelectric cell. E. R. R.

Circulatory system of combatants during world war I. F. M. Groedel (*Exp. Med. and Surg.*, 1943, 1, 94—102).—A review. A. S.

Effect of temperature on blood flow and deep temperature in human forearm. H. Barcroft and O. G. Edholm (*J. Physiol.*, 1943, 102, 5—20).—Plethysmographic measurements of blood flow in the human forearm show its behaviour over a period of hours when the arm is exposed to various external temp. It is greater the greater the temp., but between 13° and 35° tends to fall slightly during the first 2 hr. From 37° to 42.5° the flow continues to rise for 1 hr., then decreases steadily. At 45° the max. flow is attained in less than 1 hr. and maintained thereafter. Between 42.5° and 45° the first signs of tissue damage due to heat are seen; neither the falling flow at 42.5° nor the sustained flow at 45° can yet be explained. The deep muscle temp. not far from the middle of the thickness of the upper forearm ranges from 18° after 2 hr. immersion at 13.0° to 39.0° after 30 min. immersion at 42.5—45°. Arithmetical reasons are advanced for attributing the increased flow at high temp. partly to that through the muscles. W. H. N.

Sympathetic vasoconstrictor tone in human skeletal muscle. H. Barcroft, W. McK. Bonnar, O. G. Edholm, and A. S. Efron (*J. Physiol.*, 1943, 102, 21—31).—Plethysmographic measurements of blood flow in the human forearm show it to be increased when the muscular, as distinct from the cutaneous, innervation is blocked, even after circulation in the skin is suppressed by adrenaline electrophoresis. The increase fails to occur in the sympathetomised forearm. Human skeletal muscle probably has sympathetic vasoconstrictors, possessing tone such that relaxation would increase blood flow through the musculature of the body by about 1½ l. per min. This is far less than the increase of exercise. Adrenaline electrophoresis is described. W. H. N.

Vascular disease following toxæmia of pregnancy (pre-eclampsia and eclampsia). A. Golden, L. Dexter, and S. Weiss (*Arch. intern. Med.*, 1943, 72, 301—318).—Permanent vascular disease may follow toxæmia of pregnancy; the clinical course of this hypertension was studied. A latent period of months may intervene between toxæmia of pregnancy and the development of permanent hypertension or albuminuria. After toxæmia of pregnancy hypertension may persist for at least a year and then disappear. The postpartum course may be predominantly hypertensive or albuminuric, depending on the predominance in pregnancy. The course is usually rapidly progressive, death occurring from uræmia, cardiac failure, or cerebral hæmorrhage. Retinal changes, such as vascular sclerosis, hæmorrhages, and exudates occur, but not true albuminuric retinitis. Nephrosclerosis was the characteristic postmortem finding. The pathological condition in the kidneys in other respects was variable, however, and at times may duplicate that of chronic glomerulonephritis. C. J. C. B.

Substances causing vasoconstriction. V. E. Henderson (*Anesthesiology*, 1940, 1, 323—340).—A review, with 65 references. P. C. W.

Antipressor action of o-quinonoid adrenaline derivatives in experimental hypertension in rats. K. A. Oster and H. Sobotka (*J. Pharm. Exp. Ther.*, 1943, 78, 100—107).—Adrenochrome derivatives given parenterally lower the blood pressure in rats with hypertension produced by renal ischaemia; they have no effect on the blood pressure in normal rats. It is suggested that they inactivate the pressor substances released by the ischaemic kidneys. No toxic manifestations or fever are produced. Halogeno-adrenochromes fulfil the requirements of an antipressor drug in the rat. Acute experiments in rats, cats, and rabbits eliminate parasympathomimetic, direct muscular, or sympatholytic mechanisms. The catabolism of pressor amines is discussed, and a chemical mechanism for the antipressor action of quinones suggested. Species differences are stressed. P. C. W.

Effect of surgical operations on blood pressure. J. D. Adamson and S. Dubo (*Canad. Med. Assoc. J.*, 1943, 49, 161—166).—The blood pressure of 208 cases before and after major operations and 28 additional cases with hypertension who were not operated on was

followed during hospitalisation. There was a similar reduction in blood pressure in all cases, which was much greater (both absolutely and as a %) in those with high blood pressure. The actual reduction and the % reduction in systolic and diastolic is comparable to what is attributed to sp. operations on the sympathetic nervous system. Subjective symptoms may also disappear during hospitalisation whether or not operation is performed. C. J. C. B.

Irreversibility characteristic of shock. C. J. Wiggers (*Exp. Med. and Surg.*, 1943, 1, 2—13).—Recent work is reviewed. A. S.

Variability of shock syndrome in toxic drug shock. F. Neuwelt, S. O. Levinson, and H. Necheles (*Surgery*, 1941, 9, 503—507).—No correlation was found between the degree of shock and the dose of histamine, croton oil, or peptone administered to anaesthetised or unanaesthetised dogs. Where shock is produced, blood pressure changes, alkali reserve, and blood concn. may vary widely. Profound or fatal capillary shock may be produced without the development of haemoconcn. P. C. W.

Effect of intracisternal injection of potassium phosphate in haemorrhagic hypotension and shock in dog. E. A. Smolik (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 70).—0.4—0.5 c.c. of an isotonic solution of KH_2PO_4 and K_2HPO_4 , pH 7.6, was introduced into the cisterna magna of 15—18-kg. dogs. In normal dogs this caused an increase of blood pressure and pulse and respiratory rates, but in dogs in which blood pressure had been less than 50 mm. Hg for 1 hr., or 30 mm. for 30—45 min., results were variable and generally not satisfactory. V. J. W.

Relation of crush syndrome to that of burns and other types of traumatic wounds of human tissues. W. E. Lee (*Ann. int. Med.*, 1943, 18, 991—996).—A lecture. A. S.

Problems of fluid balance in traumatised patients. J. E. Rhoads (*Ann. int. Med.*, 1943, 18, 988—990).—A lecture. A. S.

Effect of anaesthesia on lymph flow (local procaine, ether, pentobarbital sodium).—See A', 1943, III, 911.

VII.—RESPIRATION AND BLOOD GASES.

Reflex inspiratory stimulation following unilateral phrenicotomy. K. Bucher (*Helv. Physiol. Pharm. Acta*, 1943, 1, C12—14). A. S.

Periodic changes in respiratory depth, produced by changes in the lung. R. V. Christie and G. W. Hayward (*J. Physiol.*, 1943, 102, 88—94).—Periodic changes in respiratory depth may occur in anaesthetised animals, which are due to change in the distensibility of the lung and not to any change in the activity of the respiratory centre. Varying pulmonary congestion may affect distensibility. The bearing on Cheyne—Stokes breathing is discussed. W. H. N.

Determination of oxygen-combining power of blood.—See C., 1944, Part 1.

Oxygen affinity of human maternal and foetal haemoglobin. E. F. McCarthy (*J. Physiol.*, 1943, 102, 55—61).—Dissociation curves show that human foetal haemoglobin has a lower affinity for O_2 than maternal haemoglobin. This relation is reversed in suspensions of corpuscles, since the maternal corpuscle causes a marked decrease while the foetal corpuscle does not affect the O_2 affinity of haemoglobin. W. H. N.

Medical care of aviation personnel. D. N. W. Grant (*Ann. int. Med.*, 1943, 18, 926—928).—A lecture. A. S.

Medical aspects of high altitude flight. D. N. W. Grant (*Ann. int. Med.*, 1943, 18, 1006—1011).—A lecture. A. S.

Effect of high altitudes on pulse wave velocity of healthy subjects. K. Wiesinger and H. Steinmann (*Helv. Physiol. Pharm. Acta*, 1943, 1, C32—35).—The pulse wave velocity of 8 healthy subjects, under resting conditions, was 5.4% higher on Jungfrauoch (3457 m.) than in Lauterbrunnen (800 m.). The diastolic blood pressure increased by 4.5%. A. S.

Treatment of paroxysmal pulmonary oedema with special reference to forms occurring under wartime conditions. A. A. Luisada (*Exp. Med. and Surg.*, 1943, 1, 22—30).—A review. A. S.

Air embolism. R. Meyer-Wildisen (*Schweiz. med. Wschr.*, 1943, 73, 48—50).—A review. A. S.

VIII.—MUSCLE.

Myosin and potassium. C. Montigel (*Helv. Physiol. Pharm. Acta*, 1943, 1, C47—48).—Aq. solutions of myosin, prepared by the Edsall and Greenstein method, contain 0.62% of K (related to the dry prep.). Addition of muscle extracts, acetylcholine, choline, or adenosinetriphosphoric or adenyphosphoric acid lowers the K content. A. S.

Muscle and nerve in biotin-deficient rats. B. Lazere, J. D. Thomson, and H. M. Hines (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 81—82).—At no stage of deficiency was the capacity of the motor nerve to elicit

tension in the gastrocnemius impaired. In terminal states some muscular weakness was present. Neuromuscular regeneration after crushing of nerve did not differ from that in controls. V. J. W.

Ergograph for teaching purposes.—See C., 1944, Part 1.

Apparent muscle fatigue and Scheminzky effect. N. Scheinfinkel (*Helv. Physiol. Pharm. Acta*, 1943, 1, C22—24).—If a rabbit's gastrocnemius muscle *in situ* is stimulated through its motor nerve at rates of 360 per min., fatigue sets in rapidly, but the contractions return immediately to their original level when the frequency of stimulation is suddenly diminished ("apparent fatigue"). An anti-fatigue effect in the isolated frog's muscle is observed when the direction of the stimulating current is suddenly reversed ("Scheminzky effect"). Both phenomena are based on different mechanisms. A. S.

Physiology of shivering. R. J. S. McDowall (*J. Physiol.*, 1943, 102, 1p).—Exposure of cat muscles to cold may result in irregular contractions, independent of the central nervous system, which are abolished by introducing hot saline into the circulation. W. H. N.

Effects of anaesthetic agents on muscular contraction.—See A., 1943, III, 910.

IX.—NERVOUS SYSTEM.

Anodal excitation. A. S. Householder (*Bull. Math. Biophysics*, 1943, 5, 91—94).—The condition for the occurrence of anodal excitation is derived from Rashevsky's equations; expressions for the anodal rheobase and min. shock intensity are also given. F. O. H.

Photochemical experiments on single nerve fibres. M. Hutton-Rudolph (*Helv. Physiol. Pharm. Acta*, 1943, 1, C15—19).—Exposure of an internodal piece of a single motor nerve fibre in frogs to ultra-violet rays lowers the rheobase to 50—200 mv. (controls 100—500 mv.), reaching its lowest val. after 2 min. This phase of hyperexcitability is followed by a rapid increase of the rheobase until the fibre becomes unexcitable after 11—15 min. exposure. Unexcitability occurs more rapidly if a node of Ranvier is exposed. This is prevented if the rays below 300 μ . are filtered through a quartz cuvette with aneurin (1:100). Exposure to light above 300 μ . has no effect on the rheobase. A. S.

Sheath birefringence as related to fibre size and conduction velocity of catfish Mauthner, Müller, and peripheral fibres. L. Werndle and G. W. Taylor (*J. Cell. Comp. Physiol.*, 1943, 21, 281—293).—All fibres have a sheath of tangential protein and radial lipid mols. In Müller and peripheral fibres, sheath birefringence increases with fibre diameter from 0 at 1.5 μ . to 0.012 at 8 μ . In Mauthner fibres, sheath birefringence is only 0.0036 for 25- μ . fibres and 0.005 for 60- μ . fibres. The ratio sheath thickness: fibre diameter decreased from 0.8 at 15 μ . diameter to 0.3 at 2 μ . In Mauthner fibres it was about 0.5. V. J. W.

Electron microscope studies of squid giant nerve axoplasm. A. G. Richards, jun., H. B. Steinbach, and T. F. Anderson (*J. Cell. Comp. Physiol.*, 1943, 21, 129—143).—12 photomicrographs ($\times 20,000$) are given, showing the presence of thick and thin fibrils. These are disintegrated by sea-water and coagulated by distilled water. It is suggested that the axoplasm is a thixotropic gel, the longitudinally oriented birefringent particles of which constitute the fibrilla. V. J. W.

Accommodation in single fibres. G. M. Schoepfle (*J. Cell. Comp. Physiol.*, 1943, 21, 161—168).—An exponentially rising current was applied to single fibres of the frog's peroneal nerve and the responses shown by oscillograph. In some fibres there was a rise of threshold with an increased rate of rise of current, in others not. In all nerves there was a min. gradient below which there was no response, although the final voltage was above the highest threshold observed with steeper gradients. V. J. W.

Histamine in nervous tissue. H. Kwiatkowski (*J. Physiol.*, 1943, 102, 32—41).—A substance pharmacologically indistinguishable from histamine and inactivated by histaminase can be extracted from various nerves. Relatively high contents are found in distal parts of cutaneous nerves, and those known to produce vasodilatation. Central nervous system, motor fibres, and those from special sense organs contain little or no histamine. Histamine appears in successive 1-c.c. samples of venous blood from the cat's hind limb after stimulation of the cut posterior roots. "Histaminergic" nerves are postulated. W. H. N.

Polarographic and optical evidence for liberation of acetylcholine and aneurin in nerve section following stimulation. A. von Muralt (*Helv. Physiol. Pharm. Acta*, 1943, 1, C20—22). A. S.

Liberation of aneurin on stimulation of peripheral nerve. A. Liechti, A. von Muralt, and M. Reinert (*Helv. Physiol. Pharm. Acta*, 1943, 1, 79—88).—The sciatic nerve in frogs was stimulated and frozen in liquid air. The liberation of aneurin in the stimulated nerve was shown using the rat bradycardia test. The heart rate was counted using an amplification of the R-wave of the e.c.g. and automatic relays. A. S.

Vitamin-B₁ and growth of spinal ganglia in tissue culture. A. S. Burt (*J. Cell. Comp. Physiol.*, 1943, 21, 145—159).—No differences were found when various concns. of thiamin were added to medium for culture of spinal ganglia of 9—16-day chick embryos.

V. J. W.

Unusual osseous disease with neurologic changes. C. M. Riley and H. Shwachman (*Amer. J. Dis. Child.*, 1943, 66, 150—154).—Both children described had a peculiar gait, which was characterised by a straight leg, a wide base, and a calcaneus limp; neither child could run. Ankle clonus and hyperreflexia were present. 1 child showed extreme anorexia, with emaciation; the other showed anorexia only. Both children fatigued easily. Roentgenograms of the long bones showed symmetric areas of increased density and dilatation of the bony shaft, with scattered areas of diminished density involving all the long bones.

C. J. C. B.

Correlation between sex and chemical constitution of human brain. A. Weil and E. Liebert (*Quart. Bull. Northwest Univ. Med. Sch.*, 1943, 17, 117—120).—The adult female human brain contains more cephalin than the male; the latter is richer in lecithins, galactolipins, and sphingomyelin than the female brain. In both sexes, the cephalin fraction increases with age at the expense of the other lipin fractions in both grey and white matter. The lecithin and cephalin fractions of the female brain are richer in P than those of the male.

A. S.

Pathology [of central nervous system] of convalescent poliomyelitis in man. J. H. Peers (*Amer. J. Path.*, 1943, 19, 673—687).—In 3 cases of poliomyelitis who survived 7, 15, and 18½ weeks from onset of illness residual lesions were present in the cerebral cortex as perivascular collars of lymphoid cells and interstitial foci or microglia and astrocytes confined to the paracentral lobules. Minimal lesions were found in the basal ganglia and thalami. In the mid-brain the substantia nigra was most damaged. Lesions in the pons were confined to the tegmentum. In the cerebellum, lesions were found only in the tectal nuclei and in the cortex of the vermis. The medulla showed cell loss and scarring in the reticular substance. The spinal cord presented almost complete loss of nerve cells throughout the entire length of the anterior grey substance. In the white matter there was mild diffuse demyelination of most of the ventral and lateral columns except the pyramidal tracts. In the Gasserian, dorsal root, and sympathetic ganglia and meninges there were a few small foci of lymphoid cells; no lesions were found in the choroid plexus. (20 photomicrographs.)

C. J. C. B.

Study of sensory ganglia in *Macaca mulatta* after gastrointestinal administration of poliomyelitis virus. G. V. McClure (*Amer. J. Path.*, 1943, 19, 655—665).—Focal inflammatory lesions in the vagal, Gasserian, and intervertebral ganglia of 14 monkeys given poliomyelitis virus by stomach or rectal tube, and in 8 monkeys not exposed to the virus, were counted. The intervertebral ganglia were affected in 12—16% of animals. Similar lesions were not found in the central nervous systems. (15 photomicrographs.)

C. J. C. B.

Acetylcholine and mechanism of nerve activity. D. Nachmansohn (*Exp. Med. and Surg.*, 1943, 1, 273—277).—A lecture.

A. S.

Effects of pressure on conduction in peripheral nerve. F. H. Bentley and W. Schlapp (*J. Physiol.*, 1943, 102, 72—82).—Application of direct pressure to 4 cm. of mammalian nerve does not cause block by ischaemia, owing probably to diffusion of O₂ from the normal part. Pressures over 130 mm. Hg will, however, produce block which has different (longer) time relations from ischaemic block, and is probably due to deformation.

W. H. N.

Experiments on blood supply of nerves. F. H. Bentley and W. Schlapp (*J. Physiol.*, 1943, 102, 62—71).—Experiments on the popliteal nerve of the cat show that a small but definite blood supply is essential for maintaining conduction, as measured by action potentials; anatomically there is a wide margin of safety. Complete ischaemia of the limb causes loss of conduction in the distal part of the nerve after 30 min., but not in the proximal part unless this is protected from contact with the tissues by a rubber sheath. Loss of conduction in the distal part is postponed by laying it alongside the proximal part. Survival of nerve in the thigh as distinct from the leg is not due to a leaking tourniquet, though it is supposed that diffusion of O₂ from the immediate environment is responsible. A pneumatic cuff inflated to systolic blood pressure abolishes conduction in the nerve under it by virtue of local ischaemia. A further 50 mm. Hg pressure is needed to make the cuff into a tourniquet abolishing conduction peripherally. Recovery, probably due to returning circulation, can occur after 4 hr. ischaemia.

W. H. N.

Functional results of crossing sensory nerves in rat. R. W. Sperry (*J. comp. Neurol.*, 1943, 78, 59—90).—Reinnervation, in 16 rats, of the right foot by nerves that originally had supplied the left foot produced a false localisation of sensation and a maladaptive reversal of hind-limb reflexes. Despite prolonged training under various conditions the maladaptive spinal reflexes remained in every case wholly uncorr. The experiments are interpreted as furnishing

evidence of pronounced stability in the spinal reflex organisation in the rat.

J. D. B.

Influence of stimulation of anterior and posterior roots on activity of proprioceptors of skeletal muscle of frog. G. V. Gerschuni and S. P. Narikaschvili (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 37, 73—76).—Using curarised preps. of m. flexor superfic. digiti from 14 frogs, and a technique similar to that of Matthews (*Physiol. Abs.*, 1931, 16, 459), it was shown that stimulation of the relevant anterior or posterior spinal roots caused a decrease in frequency and regularity of proprioceptive discharges in response to stretch of the muscle. Owing to electrotonic spread of stimulating current, differentiation between anterior and posterior root effects was not possible.

A. D. M. G.

Influence of sympathetic nervous system on activity of proprioceptors of skeletal muscle of frog. A. M. Maruseva (*Compt. rend. Acad. Sci. U.R.S.S.*, 1942, 37, 237—240).—Stimulation of appropriate sympathetic ganglia with nicotine usually reduces the activity of the proprioceptors of the m. flexor superfic. digiti if they are discharging at a fast rate, but if adaptation is allowed to occur, the rate of discharge may be increased by up to 40%. The results were also obtainable on a prep. containing only one muscle spindle.

A. D. M. G.

Lipids of human spinal marrow. K. Schuwirth (*Z. physiol. Chem.*, 1943, 278, 1—6).—As determined by two methods, the dry marrow contains water-sol. extractives 4.9 and 5.4, fat + cholesterol 14.8 and 19.7, ether-sol. glycerophosphatides 29.5 and 10.1, sphingomyelin 2.6 and 2.8, cerebrosides 5.1 and 6.2, and gangliosides 0.0 and 0.03%. The corresponding water contents of the fresh marrow are 75.0 and 74.5%. The glycerophosphatides have a lower content of highly unsaturated acids than have those of brain. The cerebrosides (cerebrogalactosides) contain lignoceric, cerebronic, nervonic, and oxynervonic acid. On hydrolysis the sphingomyelin yields lignoceric and stearic acid.

W. McC.

Chemical mechanisms in chromatolysis. I. Gersh and D. Bodian (*J. Cell. Comp. Physiol.*, 1943, 21, 253—279).—Absorptions at λ 265 (ribonucleotide) and 280 (protein) μ . were determined in normal nerve cells and in cells at varying times after axon section. Chromatolysis is accompanied by increased transmission in both bands reaching a max. on the 6th day (2 plates).

V. J. W.

Mechanism of vasomotor reflexes produced by stimulating mammalian sensory nerves. H. Gordon (*J. Physiol.*, 1943, 102, 95—107).—Pressor and depressor vascular responses from stimulating the central end of cut mixed nerves in the cat have separate afferent fibres, those causing a pressor response having a higher threshold and possibly belonging to the C group. They are differentiated by varying the strength and duration of the stimuli, while exposing the nerve to conditions, e.g., asphyxia and cocaine, calc. respectively to eliminate the large or small fibres.

W. H. N.

Central mechanism of respiratory reflexes of vagal origin. I. Localisation of inspiratory centre. O. A. M. Wyss and M. Croisier (*Helv. Physiol. Pharm. Acta*, 1943, 1, 89—104).—The inspiratory centre was localised in rabbits at the level of the nucleus of the hypoglossal nerve, based on the absence of inspiratory effects following ipsilateral central vagal stimulation after electrocoagulation of this area for a length of 2—3 mm. The medial and lateral portions of the formatio reticularis are part of the inspiratory centre.

A. S.

Homolateral reflex exaggeration after brain-stem lesion. F. A. Mettler and F. T. Zimmerman (*J. comp. Neurol.*, 1943, 78, 113—128).—Damage of the pyramid or substantia nigra or injury of the brachium pontis or brachium conjunctivum does not result in exaggeration of the knee jerk in the cat. Lesions of the tegmentum do evoke irregularity of the knee jerk. If the lesion is below the level of the red nuclei the more active reflex is on the side of the injury. If the lesion involves the prerubral areas (i.e., areas of passage of fibres from telencephalic extrapyramidal mechanisms) the greater reflex is on the contralateral side. The evidence indicates that interference with the normal function of the uncrossed reticulo-spinal or rubro-spinal systems, or both, may be responsible for exaggeration of the reflex.

J. D. B.

Congenital paralysis of lateral rotators of eyes with paralysis of muscles of face.—See A., 1943, III, 876.

Skin resistance changes and measurements of pain threshold. H. L. Andrews (*J. clin. Invest.*, 1943, 22, 517—520).—In general, the skin resistance change produced by the radiant stimulus used in the Hardy-Wolff technique (A., 1940, III, 716) is increased with a subjective report of pain. In non-addicts and in post-addicts, there is a reduction in the skin resistance response following a dose of morphine and demerol and a smaller reduction following codeine. Following morphine, the reduction in skin response is maintained considerably beyond the pain threshold effect. The reduced skin resistance response is probably associated with a reduced pain appreciation, which offers an explanation of the clinical relief of pain in the post-addict.

C. J. C. B.

Pain and surgery. A. Fehr (*Schweiz. med. Wschr.*, 1943, 73, 1—4).—A lecture.

A. S.

Comparison of mammalian and reptilian tecta. C. C. Huber and E. C. Crosby (*J. comp. Neurol.*, 1943, 78, 133—168).—A morphological study of the tectum of the midbrain in a large no. of reptiles and mammals. J. D. B.

Nuclear pattern of non-tectal portions of midbrain and isthmus in opossum. R. T. Woodburne (*J. comp. Neurol.*, 1943, 78, 169—190). J. D. B.

Nuclear pattern of non-tectal portions of midbrain and isthmus in armadillo. E. C. Crosby and R. T. Woodburne (*J. comp. Neurol.*, 1943, 78, 191—211). J. D. B.

Nuclear pattern of non-tectal portions of midbrain and isthmus in rodents. L. A. Gillilan (*J. comp. Neurol.*, 1943, 78, 213—251). J. D. B.

Nuclear pattern of non-tectal portions of midbrain and isthmus in shrew and bat. E. C. Crosby and R. T. Woodburne (*J. comp. Neurol.*, 1943, 78, 253—288). J. D. B.

Nuclear pattern of non-tectal portions of midbrain and isthmus in ungulates. L. A. Gillilan (*J. comp. Neurol.*, 1943, 78, 289—364). J. D. B.

Nuclear pattern of non-tectal portions of midbrain and isthmus in dog and cat. J. O. Brown (*J. comp. Neurol.*, 1943, 78, 365—405). J. D. B.

Nuclear pattern of non-tectal portions of midbrain and isthmus in mink (*Mustela vison*). B. Tamthai (*J. comp. Neurol.*, 1943, 78, 407—440). J. D. B.

Nuclear pattern of non-tectal portions of midbrain and isthmus in primates. E. C. Crosby and R. T. Woodburne (*J. comp. Neurol.*, 1943, 78, 441—482). J. D. B.

Structural changes in external geniculate body of rat following removal of eyes.—See A., 1943, III, 879.

Termination of brachium pontis. F. A. Mettler and A. J. Lubin (*J. comp. Neurol.*, 1942, 77, 391—398).—On the results of interruption of the brachium pontis along the line where it is penetrated by the trigeminus in 7 cats it is concluded that the ponto-cerebellar fibres end in the cerebellum as mossy and not as climbing fibres and that most of the fibres terminate in the ipsilateral side. The climbing fibres are presumed to represent endings of an intrinsic rather than an afferent cerebellar system. J. D. B.

New method to produce nystagmus. B. Kisch (*Exp. Med. and Surg.*, 1943, 1, 169—170).—Intravenous injection of 1—1½ grains of nembutal in rabbits produces pronounced nystagmus at the initiation and towards the end of anaesthesia. A. S.

Optic and post-optic systems in brain of *Amblystoma tigrinum*. C. J. Herrick (*J. comp. Neurol.*, 1942, 77, 191—353).—A detailed account of the cytology and fibre connexions of the optic and related systems in this amphibian with special reference to the arrangement and possible function of the neuropil. J. D. B.

Physiological significance of "tegmental reaction." S. Bürgi (*Helv. Physiol. Pharm. Acta*, 1943, 1, 3—22).—In addition to the "tegmental reaction," stimulation of the tegmental region in non-anaesthetised cats produces turning movements of the body towards and away from the side of stimulation, and lifting up of the head and of the upper parts of the body. If the animal is free to move, locomotion in circles occurs. The reactions are similar to the motor effects of diencephalic stimulation. The "tegmental reaction" as described by other authors (flexion of the ipsilateral and extension of the contralateral fore limb, torsion of the trunk towards the side of stimulation) is explained as an artefact due to the experimental conditions not allowing free movement of the animal's body. A. S.

Relationship between hypothalamus and respiratory metabolism. W. Bloch (*Helv. Physiol. Pharm. Acta*, 1943, 1, 53—78).—The resting O₂ consumption of 14 non-anaesthetised cats in a metabolic chamber varied from 510 to 770 c.c. per kg. per hr. (±10%) at a R.Q. val. of 0.75—0.80. Focal destruction of the central hypothalamic nuclei, using the technique of Hess, had no effect on a few animals; in most cases, O₂ consumption and CO₂ production were more diminished than could be expected from the associated fall in body temp. In a group of animals, recovery of gaseous metabolism occurred within 20 days. Attempts to correlate the disturbances with damage to certain nuclei were unsuccessful. Marked cachexia was observed in 3 cats, obesity and polycythaemia in 1, acute pulmonary oedema in 2, and multiple gastric hæmorrhagic erosion in 1 cat. A. S.

Olfactory discrimination after destruction of anterior thalamic nuclei.—See A., 1943, III, 880.

Subcortical centre of emotional rage reaction in cats. W. R. Hess and M. Brügger (*Helv. Physiol. Pharm. Acta*, 1943, 1, 33—52).—The reaction consists of spitting, baring of the claws, erection of the hairs on the back and tail, flapping of the ears, dilatation of the pupils, and, occasionally, micturition and defæcation; the animal is likely to attack persons in the vicinity; in some instances, salivation was also noted. The reaction can be produced by stimulation of a

restricted area of approx. 2 mm. diameter in the pericolumnal part of the septum pellucidum, involving the medial pre-optic area and the ventro-caudal hypothalamic zone between the descending columna fornicis and Vicq d'Azyr's tract. A. S.

Effect of neosynephrin on gaseous exchange of brain. H. E. Himwich, C. Daly, and J. F. Fazekas (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 78—79).—In dogs under Dial, injection of 2 c.c. of 1% neosynephrin lessened the O₂ difference between arterial and cerebral venous blood by raising the venous O₂, presumably because the raised blood pressure caused a more rapid cerebral blood flow. V. J. W.

Effect of iodoacetate on respiration and glycolysis in excised rat brain. F. A. Fuhrman and J. Field, 2nd (*J. Cell. Comp. Physiol.*, 1943, 21, 307—317).—All concns. which inhibited anaerobic glycolysis also inhibited O₂ consumption, but the former process began sooner and developed more rapidly. Anaerobic glycolysis in 10⁻⁵M. iodoacetate was much less if brain slices were kept in this solution in presence of O₂ for 1 hr. previously, although this concn. does not inhibit O₂ consumption. Delay in inhibition of O₂ consumption by iodoacetate is shortened by a decrease in pH but not by grinding up. Increase in pH from 5.8 to 8.5 after onset of inhibition did not affect its course. V. J. W.

Fibre and numerical analysis of pyramidal tract in series of non-digital mammals (ungulates). A. M. Lassek (*J. comp. Neurol.*, 1942, 77, 399—403).—Fibre counts of the pyramidal tract at a level through the upper part of the medulla were made in cow, deer, goat, pig, mule, and sheep. The counts varied between a quarter and half a million fibres arranged in a characteristic fashion, closely packed and of small and medium size. Most of the fibres seem to terminate in the cervical region. It is concluded that the ungulate pyramidal tract cannot be concerned with digital or skilled movements. J. D. B.

Present status of clinical electroencephalography. F. A. Gibbs (*Ann. int. Med.*, 1943, 18, 1012—1014).—The records of 1000 normals and 1200 epileptics were studied. Seizure discharges were found in 30% of the epileptics and in fewer than 1% of the controls; very slow or very fast discharge in 25% of the former and in only 2% of the normals; moderately slow or fast activity was twice as common in the epileptics as in the controls. Only 15% of the adult epileptics and 10% of epileptic children were classified as normal, in contrast to 85% classified as normal in the control group. A. S.

Age incidence and prognosis of epilepsy. F. J. Nattrass (*Brit. Med. J.*, 1943, II, 481—482).—Of 602 cases of epilepsy, 81 had their first epileptic attack after the age of 40 years. I. C.

Arachnoiditis (diffuse proliferative leptomenigitis). A. Blumstein and A. B. Baker (*Ann. int. Med.*, 1943, 18, 809—824).—The clinical and post mortem findings of 4 cases of disseminated arachnoiditis are reported. X-Ray examination following intracisternal injection of lipiodol showed arrest of the oil at many levels. Typical symptoms were posterior and anterior root involvement over widely separated areas, due to the proliferative leptomenigitis. Intramedullary cord changes are due to vascular occlusion resulting from perivascular proliferative changes. A. S.

Epiloia. L. M. Quill and E. C. Marting (*Surgery*, 1941, 9, 581—590).—Epiloia (epilepsy with adenoma sebaceum of the skin and tuberosus sclerosis of the brain) is described in 7 cases from 3 generations of 1 family. Nail-bed tumours were present in all cases. The hereditary nature of the disease is supported. P. C. W.

Facial nævus flammeus, intracranial hæangioma, and psychosis. M. Tramer (*Schweiz. med. Wschr.*, 1943, 73, 44—48).—Report of a case. A. S.

Acute infectious polyneuritis (Guillain-Barre syndrome). J. A. Jones, J. W. Holmes, and M. Weinstein (*Amer. J. med. Sci.*, 1943, 206, 305—309).—A brief review with report of 3 cases. C. J. C. B.

Treatment of atypical trigeminal neuralgia. W. Schar (*Schweiz. med. Wschr.*, 1943, 73, 89—90).—Trigeminal neuralgia which persists after electrocoagulation of the Gasserian ganglion can be dramatically relieved by anaesthesia of the stellate ganglion. A. S.

Incidence of syphilis among juvenile defectives. J. Lloyd (*Brit. Med. J.*, 1943, II, 420).—In young mental defectives the incidence of syphilis is 0.78%. Syphilis is therefore a less common ætiological factor of amentia than in the past. I. C.

Probable mechanism by which somatic changes in certain emotional states are mediated. A. T. Milhorat, S. M. Small, E. J. Doty, and W. E. Bartels (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 23—25).—Blood samples from psychiatric patients showing anxiety and fear modified the rhythmic contractions of rabbit intestine *in vitro*. Amplitude was decreased and base line raised, and the effect lasted at least 30 min. The causative substance thus differs from adrenaline, and it disappears if the blood stands for 15—20 min. V. J. W.

Treatment of functional gastro-intestinal disturbances of neuro-psychiatric origin. J. C. Yaskin (*Ann. int. Med.*, 1943, 18, 949—967).—A review. A. S.

Psychoneuroses in war time. L. H. Ziegler (*Ann. int. Med.*, 1943, 18, 941—948).—A review. A. S.

Military neuropsychiatry in the present war. E. H. Parsons (*Ann. int. Med.*, 1943, 18, 935—940).—A lecture. A. S.

Brain of man in relation to his constitution. A. Weil (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, 17, 169—178).—A historical review. A. S.

Convulsions during anaesthesia. Experimental analysis of rôle of hyperthermia and respiratory acidosis.—See A., 1943, III, 911.

Functional development of foetal brain.—See A., 1943, III, 858.

(A) Results of prefrontal lobectomy on acquired and on acquiring correct conditioned differential responses with auditory, general cutaneous, and optic stimuli. (B) Distribution of cortical potentials resulting from insufflation of vapours into nostrils and stimulation of olfactory bulbs and pyriform lobe.—See A., 1943, III, 875.

Cysts in third ventricle. E. Sigrist (*Schweiz. med. Wschr.*, 1943, 73, 116—117).—2 cases are reported. A. S.

Case of traumatic ventricular pneumocephalus. M. Gaines (*Brit. Med. J.*, 1943, II, 512—513).—Case report. I. C.

Psychosomatic medicine. E. A. Strecker (*Ann. int. Med.*, 1943, 18, 736—740).—A lecture. A. S.

Total spinal block. CoTui, C. L. Burnstein, and W. F. Ruggiero (*Anesthesiology*, 1940, 1, 280—291).—Total spinal block was produced in dogs in the lateral decubitus position by the infiltration of 3—5% procaine solution into the spinal subarachnoid space through a catheter inserted in an opening of the atlanto-occipital membrane. Respiration was paralysed, tendon reflexes inhibited, and blood pressure lowered by 25—50%; there was an acceleration of pulse rate during the establishment of final block, and bradycardia when block was established. The blood pressure is lowered if the animal is placed in the dorsal decubitus position and when the head is lowered or raised. Small hæmorrhages easily tolerated by the normal animal reduced the blood pressure to shock levels which persisted until recovery from the spinal block. Administration of CO₂ causes a fall in blood pressure. P. C. W.

Inefficacy of lumbar puncture for removal of red blood cells from the cerebrospinal fluid. J. M. Meredith (*Surgery*, 1941, 9, 524—533).—Lumbar puncture does not remove red blood cells from the subarachnoid space. P. C. W.

X.—SENSE ORGANS.

Mathematical biophysics of discrimination and conditioning. III. H. D. Landahl (*Bull. Math. Biophysics*, 1943, 5, 103—110).—The theory of recognition learning is generalised to include five variables, viz., errors, trials, possible no. of choices, no. of items, and fraction of prompting. An extension of the theory to recall learning necessitates the introduction of a variable, i.e., the no. of trials without responses; strengths of reward and punishment are also introduced as variables, thus determining a curve in nine dimensions. F. O. H.

Scope of prevention in ophthalmology. I. Mann (*Brit. Med. J.*, 1943, II, 482—483).—The prevention of blindness is discussed from the point of view of medical organisation, education, and research. I. C.

Industrial eye health problems. H. S. Kuhn (*Amer. J. Publ. Health*, 1943, 33, 1103—1106).—A survey, based on recent work, of the factors making for max. efficiency in war production. Adequate goggles for protection against all kinds of trauma are needed as well as visual testing before employment and periodical tests of special groups of employees. Tests should include a determination of the distant and near visual acuity with and without glasses, phorias, depth perception, colour appreciation levels, and the near-points of convergence and accommodation. Attention must be paid to actual working distance when prescribing close work glasses. J. H. A.

Ocular manifestations of neurosis commonly found among soldiers. I. C. Michaelson (*Brit. Med. J.*, 1943, II, 538—541).—A review. I. C.

Graves' disease with dissociation of thyrotoxicosis and ophthalmopathy. S. Hertz, J. H. Means, and R. H. Williams (*West. J. Surg. Obstet. Gynec.*, 1941, 493—498).—Review and discussion. P. C. W.

Toxic effects of sulphonamides on eyes. H. P. Wagener (*Amer. J. med. Sci.*, 1943, 206, 261—267).—A general review. C. J. C. B.

Correlation of the phenomena of crossed and obliquely crossed cylinders with cylinder retinoscopy and clinical refraction. C. Hymes (*Trans. Amer. Acad. Ophthal. Otolaryngol.*, 1943, 454—461).—An explanation of the physical and physiological basis of the use of cross-cylinder and cylinder retinoscopy. The cross-cylinder technique can be used to determine the amount and axis of an astigmatism but not for assessing the amount of a spherical correction. K. T.

Binocular and unocular threshold of vision. M. H. Pirenne (*Nature*, 1943, 152, 698—699).—The differences between binocular and unocular thresholds is known to be smaller than if physiological summation occurred. The threshold in either eye, measured under optimal conditions, is known to fluctuate in a way explicable by variations in the no. of incident quanta; thus each eye has a certain probability of seeing the light at each instant. The summation of these two independent probabilities agrees quantitatively with the difference found between the unocular and binocular thresholds. K. J. W. C.

Effect of supersonic waves on visual thresholds. K. C. Kektschev and P. Ostrovski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 370—373).—Following the discovery that X-rays and ultra-violet light can affect visual thresholds, supersonic waves produced by a Galton whistle (22,000 cycles) and a magnetostriction apparatus (32,800 cycles) were found to produce a lowering of the abs. threshold on three subjects, by about 12% with the former and about 20% with the latter. Suitable controls and means for masking sonic vibrations of the sources were used. The effect was reduced or absent if the ears were plugged. The results are described as the response of the special senses to inadequate stimuli causing reflexes of the autonomic nervous system, which may respond to sensory stimulation by a wider spectrum than can reach the cortex and consciousness. K. J. W. C.

Ophthalmic prisms: some uses in ophthalmology. G. P. Guibor (*Amer. J. Ophthal.*, 1943, 26, 833—845).—The phenomena projection, reciprocal innervation, and synkinesis are discussed in relation to the scientific prescription of prisms, together with their significance in paralysis of divergence and of the external rectus and in concomitant convergent strabismus. Undercorrection of the deviation is advised, and the prisms are never incorporated in the glasses until after a therapeutic trial with loose "fit overs." Several case reports are given. J. H. A.

Reaction of rabbit eye to normal horse serum. T. F. Schlaegel and J. B. Davis (*Amer. J. Ophthal.*, 1943, 26, 785—798).—A series of rabbits was sensitised by 4 or 5 weekly intradermal injections of 0.1 c.c. of normal horse serum, and a week later a further 0.1 c.c. was injected into the ciliary body and vitreous of the right eye. A second series of animals received the intraocular injection only. Signs of uveitis were seen after 24 hr. in the right eye of every rabbit in the first series. The animals were killed after periods ranging from $\frac{1}{2}$ to 29 days; the uveal tract of the right eye was found to be infiltrated with lymphocytes, monocytes, plasma cells, giant cells, and epithelioid cells, and in some cases a massive gliosis covered the inner surface of the retina. Similar though less intense changes were found in the control group, but not until 14 days had elapsed. The left eye was normal in both series. It is suggested that the ocular changes represent an allergic reaction to one of the breakdown products of horse serum, probably a phospholipin. J. H. A.

Correlation of photochemical events with action potential in retina. V. J. Wulff (*J. Cell. Comp. Physiol.*, 1943, 21, 319—326).—In the intact and deganglionated grasshopper eye a sigmoid relation between intensity of flickering light and electrical potential of the eye was found; this is of the same form as the relation found by Peskin (*A.*, 1943, III, 105) between concn. of visual purple in frogs and light intensity. The relation between e.m.f. and photoproduct concn. is concluded to be linear, contrary to the results of Granit, Munsterhjelm, and Zewi (*A.*, 1939, III, S36). K. J. W. C.

Night blindness after exposure to light. H. Derman (*Schweiz. med. Wschr.*, 1943, 73, 98—99).—50 cases of night blindness after exposure to strong sunlight are reported. The condition was cured by a few days' rest in darkness. There was no evidence of A-hypovitaminosis although administration of vitamin-A accelerates the recovery. A. S.

Night blindness and vitamin-A. A. Fleisch and J. Posternak (*Helv. Physiol. Pharm. Acta*, 1943, 1, 23—31).—89 school children of Lausanne between 9 and 12 years, tested during Feb.—May, 1942, showed no signs of vitamin-A deficiency. A. S.

Laurence-Moon-Bardet-Biedl syndrome. G. Dell'Acqua (*Schweiz. med. Wschr.*, 1943, 73, 36—41).—Report of the syndrome in a girl of 13 years. There was pubertus præcox with premature menstruation and closure of the epiphyses. A. S.

Ocular pathology of methyl alcohol poisoning. W. H. Fink (*Amer. J. Ophthal.*, 1943, 26, 802—815).—A detailed description of the degenerative changes in choroid, retina, and optic nerve found in dogs and rabbits suffering from acute and chronic methyl alcohol poisoning. These changes were identical whether pure or commercial methyl alcohol or formic acid was used, and differed only in degree according to the length of exposure. Similar changes were found in the central nervous system (especially the cerebrum), kidneys, liver, and muscles. It is thought that the toxic action of the drug is due to the inability of the body to oxidise it to CO₂ and water, and its breakdown instead into highly poisonous substances which cause cellular degeneration, œdema, and circulatory dis-

turbances in the more specialised tissues. The retina and optic nerve are probably affected simultaneously and independently.

J. H. A.

Fundamental colour sensations in man's colour sense. G. F. Göthlin (*Kungl. Svensk. Vetenskapsakad. Handl.*, 1943, 20, 1—75).—After a historical survey, experimental determinations of the colour threshold from 420 to 540 $m\mu$. are described; the threshold between 430 and 460 $m\mu$. can be split into two components, a red and a blue, of which the blue is always lower. It is concluded that blue is a fundamental colour-sensation but that violet does not result from stimulation of the blue and red systems. There is no single wavelength in the spectrum which is judged to be yellow by all people; this is evidence against yellow being a simple receptor-response. Mutual inhibition of complementary colour-sensations is also thought to occur.

K. J. W. C.

Spectral sensitivity of fovea and extrafovea in Purkinje range. H. V. Walters and W. D. Wright (*Proc. Roy. Soc.*, 1943, B, 131, 340—361).—Luminosity curves have been recorded, by matching against a red field, at a series of brightness levels for a 2° field situated at the fovea and at 3° and 10° from the fovea. At low brightness levels there was a definite but small shift towards the blue in the max. of the foveal luminosity curve. This may be accompanied by a hump on the red side of the curve at about 0.60 μ . For the extrafoveal areas a gradual shift from the photopic towards the scotopic curve was recorded. The significance of this gradual transition and the accompanying changes in shape of the curve are discussed with reference to the relation between rod and cone functions. Certain applications of the effects of the changed relative brightness of the parts of the spectrum at brightness levels within the Purkinje range are discussed in relation to photometry.

E. N. W.

Distribution of colour-blind men in Great Britain. P. E. Vernon and A. Straker (*Nature*, 1943, 152, 690).—The incidence of defective colour vision in 6000 naval recruits is found to be significantly correlated with the geographical areas from which they come; it is lowest in N.E. Scotland and nearly twice as great in S.W. England. Colour defect may be racially connected with pigmentation, as light hair and eyes are commonest in the north and east and dark in the south and west.

K. J. W. C.

Test for colour readers. P. Thomson (*Oil and Soap*, 1943, 20, 164).—Of 82 unselected subjects tested on reproductions of colour-blindness test slides, 59 interpreted more than 90% of the slides correctly; the remaining 23 only saw between 60% and 90% of the slides correctly. It is concluded that colour acuity varies over a fairly wide range.

E. N. W.

Coloboma of optic nerve: report of a case. T. Steinberg (*Amer. J. Ophthalm.*, 1943, 26, 846—849).—The case described, a youth aged 20, exhibited most of the typical features of coloboma of the optic nerve in the left eye, but was unusual in that the choroid was not affected. The literature is reviewed, and there is a photograph of the grey cupped disc with diagrams showing the enlarged blind spot and slightly contracted peripheral field.

J. H. A.

Representation of central foveæ and horizontal meridians in the visual radiation (radiatio optica) of human brain. S. L. Polyak (*J. Mt. Sinai Hosp.*, 1942, 9, 698—707).—The report of a case which died of a bacterial endocarditis with a cyst in the right occipital lobe. A left incomplete inferior quadrantic homonymous hemianopia with sparing of central vision occurred suddenly about 2 months before death. When the subjective findings were compared post mortem with the injury to the brain it appeared that the visual loss was due to a partial interruption of the external sagittal layer which is thought to contain the afferent fibres of the visual radiation. There was, also, almost complete interruption of the horizontal branch of the radiation in the anterior levels through the occipital lobe, so that the fibres carrying impulses from the periphery of the right upper homonymous halves of both retinas were cut. There was also a degenerate zone in the inner half of the lateral geniculate nucleus where the optic nerve fibres from the same retinal quadrants are thought to terminate. The bearing of these findings on the theories of the cerebral representation of the retina and particularly on the suggested course of the macular fibres is discussed.

K. T.

Striate area of primates. G. von Bonin (*J. comp. Neurol.*, 1943, 77, 405—420).—It is shown that Lorente de Nó's stratification of the iso-cortex is applicable to the striate area. In the primates studied stratification is simplest in *Galago* and most elaborate in *Tarsius*. In descending order from *Tarsius* follow *Cebus*, mangabée, macaque, the large apes, and man. The complexity of the pattern of stratification appears to be proportional to the relative size of the striate area as compared with the size of the whole cortex.

J. D. B.

Effect of explosions on the acoustic apparatus. H. B. Perlman (*Trans. Amer. Acad. Ophthalm. Otolaryngol.*, 1943, 442—453).—An explanation of how the ear reacts to the shock pulse of an explosion so that a sensation of sound is produced and of how and why the auditory sensation produced by gunfire varies according to the distance of the observer from the gun. The displacement of the ossicular chain caused by comparatively small shock pulses is

A 3 (A., III.)

enormously greater than anything that can be produced by sound waves. The ear is partially protected from the results of such quick and violent pressure changes by (1) its inability to follow very rapid changes, (2) the structure of the incudo-malleolar joint which prevents transmission of great inward movements of the malleus to the incus because of dislocation, (3) the way in which the axis of motion of the stapes footplate changes when there is abnormally large movement of the incus so as to reduce the consequent movement of cochlear fluid. Various devices for artificially protecting the ear are described. Exposure to a sufficiently severe shock pulse produces permanent high-tone deafness, probably due to local injury in the cochlea, as well as rupture of the drum.

K. T.

Hyomandibular of Eusthenopteron and tetrapod middle ear. T. S. Westoll (*Proc. Roy. Soc.*, 1943, B, 131, 393—414).—The following are discussed: (1) the hyomandibular of Eusthenopteron, (2) the tetrapod columella auris and stapes, (3) the evolution of the tympanic cavity in tetrapods, (4) the amphibian middle ear, (5) the middle ear of primitive reptiles, (6) the middle ear of Pelycosauria, Therapsida, and Mammalia, and (7) the homology of the tympanic cavities of tetrapods. In view of the homology, a somewhat different view from that of Goodrich is held, i.e., that the tympanic cavity and membrane are homologous in tetrapods. It is concluded that there was, primarily, one main diverticulum which, by pushing out new recesses, may have come to envelop different structures and that the different conditions have arisen by evolution and modification of a primitive dorsal diverticulum which is essentially homologous but greatly reduced in mammals.

P. G.

Effect of A.T. 10 on otosclerosis. P. de Gunten (*Schweiz. med. Wschr.*, 1943, 73, 77—79).—The labyrinthine changes produced by administration of A.T. 10 in rats are not identical with experimental otosclerosis and provide no evidence that the parathyroid is involved in otosclerosis. Treatment of otosclerotic patients with A.T. 10 is not justified.

A. S.

Vestibular nystagmus. F. Kobrak (*J. Laryngol. Otol.*, 1943, 58, 167—187).—A discussion of the technique and significance of the various types of nystagmus test for vestibular function. The caloric tests cannot be used to replace the rotatory tests since they test rather different aspects of vestibular function. The use of nystagmus tests in diagnosing various forms of hereditary deafness, especially otosclerosis, is described and the conception of a central state of "Nystagmus Bereitschaft" is elaborated.

K. T.

Ménière's syndrome and migraine. M. Atkinson (*Ann. int. Med.*, 1943, 18, 797—808).—Ménière's syndrome and migraine are due to vascular disturbances. In some cases, both conditions are coincidental or migraine attacks merge into Ménière's conditions. Treatment which was successful in relieving the vertigo of patients with Ménière's syndrome was also successful in relieving migraine, when present in the same case.

A. S.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Effect of various hormones on chemical and physical properties of bone.—See A., 1943, III, 857.

Prevalence of mild hypothyroidism with normal metabolic rate. H. J. VanderBerg (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 508—513).—Discussion with 2 illustrative cases.

P. C. W.

Pregnancy occurring in cretinism and juvenile and adult myxœdema. G. Parkin and J. A. Greene (*J. clin. Endocrinol.*, 1943, 3, 466—468).—6 cases are reported.

P. C. W.

Maintenance of normal basal metabolic rate after thyroidectomy. J. L. DeCourcy (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 419—422).—The incidence of recurrent hyperthyroidism after operation was reduced to 1% by careful adjustment of the basal metabolic rate by thyroid therapy. Administration of desiccated thyroid gave better effects than I in the treatment of hyperthyroidism in cases who refused operation. Development of hyperplasia in cases of diffuse non-toxic goitre may be prevented by thyroid administration.

P. C. W.

Quantitative relationship between basal metabolic rate and thyroid dosage in patients with true myxœdema. A. W. Winkler, J. Criscuolo, and P. H. Lavietes (*J. clin. Invest.*, 1943, 22, 531—534).—Myxœdematous patients do not develop tolerance to dried thyroid, even after years of medication. In myxœdema, the dose of dried thyroid necessary to restore the basal metabolic rate to normal is 1—3 grains daily.

C. J. C. B.

Tolerance to oral thyroid and reaction to intravenous thyroxine in subjects without myxœdema. A. W. Winkler, P. H. Lavietes, C. L. Robbins, and E. B. Man (*J. clin. Invest.*, 1943, 22, 535—544).—Some non-myxœdematous subjects can tolerate as much as 6 grains of dried thyroid daily for long periods, without effect on the basal metabolic rate or on the pulse rate; many tolerate 3—4 grains. These subjects respond to thyroxine intravenously, but require much larger doses than do myxœdematous subjects to produce a comparable rise in the basal metabolic rate. Non-myxœdematous

subject may be able to inactivate thyroid substance and intravenous thyroxine.
C. J. C. B.

Liver damage in thyroid disease. V. E. Chesky, C. R. Schmidt, and W. R. Walsh (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 499—507).—A study of liver function in 300 goitre patients. Cases of nodular toxic and diffuse hyperplastic goitre show the greatest impairment of liver function (hippuric acid test). Conventional pre-operative treatment has little effect on impaired liver function which does respond to sp. measures designed to improve it.
P. C. W.

Surgical treatment of thyrotoxicosis as related to geriatrics. T. O. Young (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 431—438).—A review of the literature and a study of 136 patients over 60 years of age.
P. C. W.

One reason for failure in surgical control of toxic hyperplastic [exophthalmic] goitre. G. B. Kent (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 423—430).—Removal of insufficient amounts of the thyroid gland is blamed for lack of success in surgical treatment of thyrotoxicosis.
P. C. W.

Effect of thyroidectomy on resistance to low environmental temperature. C. P. Leblond and J. Gross (*Endocrinol.*, 1943, 33, 155—160).—Adult rats thyroparathyroidectomised 2 weeks previously die within a week when exposed to temp. of 0—2°, while normal, parathyroidectomised, or thyroxine-treated thyroidectomised rats survive for several weeks. The behaviour of the thyroidectomised rats during the first few days of exposure was comparable with that of normal rats, showing that the first reactions to cold (increased metabolism, food consumption, and adrenal wt.) are not mediated by the thyroid gland. The survival of thyroidectomised rats at 0—2° is lengthened by shortening the interval between operation and exposure, by using heavier rats, or by previous adaptation to cold temp. Previous exposure to warm temp. (33—34°) shortens the survival.
P. C. W.

Influence of thyroid activity on renal function. E. M. MacKay and J. W. Sherrill (*J. clin. Endocrinol.*, 1943, 3, 462—465).—The renal function (Addis urea ratio test) was tested in 41 normal or thyroid patients with basal metabolic rates varying from -38 to +71. There was a direct relation between basal metabolic rate and renal function particularly among the hypothyroid patients. The less definite correlation in the hyperthyroid patients is attributed to difficulties in making renal function tests.
P. C. W.

Influence of growth and effect of thyroxine on phosphorus metabolism in mouse. M. Falkenheim (*Amer. J. Physiol.*, 1942, 138, 175—179).—Using radioactive P, the rate of P turnover in mice was found to decrease with age, the decrease being greatest in the tibia followed in descending order by brain, liver, spleen, kidney, blood, and heart. Thyroxine affects only the tibia of older mice in which it increases the P turnover.
T. F. D.

Total protein and organic iodine in colloid of individual follicles of thyroid gland of rat. I. Gersh and R. F. Baker (*J. Cell. Comp. Physiol.*, 1943, 21, 213—227).—Sections of rat thyroid under a quartz microscope were irradiated from a Hg arc and the absorption of individual follicles at λ 280 μ m. (for protein) and 334 μ m. (for org. I) was determined by a photoelectric cell. Changes produced by anterior pituitary extract, KI, hypophysectomy, or sulphaguanidine were compared with those previously reported (A., 1941, III, 159) in the guinea-pig.
V. J. W.

Proteolytic activity of thyroid gland. A. J. Dziemian (*J. Cell. Comp. Physiol.*, 1943, 21, 339—345).—Activity was determined by digestion of edestin at pH 4. It was increased in rats and guinea-pigs by treatment with thyrotropic hormone. In rats, feeding with KI increased it up to 16 days, but it returned to normal in 38 days. It was decreased by sulphaguanidine or by hypophysectomy.
V. J. W.

Severe hypoglycaemia due to islet adenoma of pancreas with surgical cure. W. L. Winters, P. Gottardo, and R. W. McNealy (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 488—492).
P. C. W.

Insulin lipohypertrophy. M. G. Goldner (*J. clin. Endocrinol.*, 1943, 3, 469—474).—The literature is summarised and 2 new cases are reported. Similar conditions could not be produced in mice. The hypertrophy is not an inflammatory reaction.
P. C. W.

Absorption rates of insulin, globin insulin, and protamine zinc insulin labelled with radioactive iodine.—See A., 1943, III, 910.

Liver and intensity of pancreatic and pituitary diabetes. V. G. Foglia (*Rev. Soc. argent. Biol.*, 1942, 18, 5—12).—In *Bufo arenarum*, Hensel, total hepatectomy produces death within 6 days. After removal of 55% of the liver tissue the animals survive, but simultaneous partial hepatectomy and pancreatectomy is more lethal than either of these operations performed separately. Total removal of the liver is rapidly followed by hypoglycaemia and prevents the development of hyperglycaemia after pancreatectomy and after treatment with anterior hypophysis of normal, pancreatectomised, or pancreatectomised and hypophysectomised animals. The severity of pancreatic and hypophyseal hyperglycaemia is slightly reduced by removal of 55% of liver and considerably reduced when 75% of

the organ is extirpated. The glycaemic levels were determined 24 or 48 hr. after the operations or injections.
I. C.

Diabetes mellitus associated with Addison's disease. N. W. Nix (*Canad. Med. Assoc. J.*, 1943, 49, 189—191).—A case report.
C. J. C. B.

Adrenaline and sympathetic poisons. D. Bovet (*Schweiz. med. Wschr.*, 1943, 73, 127—132, 153—157).—A lecture.
A. S.

Effect of adrenaline on heat formation in frog's liver. L. Asher and N. Scheinfinkel (*Helv. Physiol. Pharm. Acta*, 1943, 1, C10—12).—Intramuscular injection of 0.25—0.50 μ g. of adrenaline increases the temp. in the frog's liver by up to 0.061°. Injection of Ringer's solution had no effect. The adrenaline concn. used had no vascular effect on the liver.
A. S.

Adrenaline and related substances in blood and tissues. W. Raab (*Biochem. J.*, 1943, 37, 470—473).—Although Shaw's method for determination of adrenaline (A., 1938, III, 162) in blood and tissues is non-sp., in that closely related compounds and ascorbic acid are also chromogenic, it is of val. in the estimation of adrenal and adrenergic function. The chromogen equiv. has been determined in various pathological conditions, together with the effect of injection of thyroxine, insulin, deoxycorticosterone acetate, etc.
P. G. M.

Effect of cocaine on inactivation of adrenaline and sympathin.—See A., 1943, III, 909.

Histophysiology of adrenal cortex. E. Tonutti (*Helv. Physiol. Pharm. Acta*, 1943, 1, C27—28).—Regressive transformation of the adrenal cortex can occur (1) by involution producing shrinking of the adrenal gland and atrophy or (2) by storage of degenerative protein components, producing hypertrophy and increase in wt. Castration or thyroidectomy produces (2) in guinea-pigs, but (1) in rats. Measurements of wt. of the gland can lead to wrong conclusions as to function.
A. S.

Excretion of water and chloride in normal and adrenalectomised cats following ingestion of water or salt. H. Wirz (*Helv. Physiol. Pharm. Acta*, 1943, 1, C35—37).—The animals received by mouth 5% of their body wt. of water or a 2% NaCl solution. Animals with severe adrenal insufficiency show marked water retention on ingestion of water; water excretion is normal after ingestion of the NaCl solution but Cl excretion is less than in normals. Treatment with deoxycorticosterone cures the disturbances.
A. S.

Determination of adrenal cortex hormone efficacy according to Ingle's method. W. Vöggtli (*Helv. Physiol. Pharm. Acta*, 1943, 1, C28—31).—Ingle's findings are due to severe operation shock and not necessarily due to adrenal cortex insufficiency (deoxycorticosterone acts on mineral, corticosterone on carbohydrate, metabolism; cf. A., 1940, III, 846).
A. S.

Relation of body weight to liver-glycogen storage potency of adrenal cortical extracts. H. C. Bergman and D. Klein (*Endocrinol.*, 1943, 33, 174—176).—The amount of glycogen stored by the liver in fasted adrenalectomised male rats injected with a given dose of adrenal cortical extract is independent of body wt. (130—340 g.) or liver wt.

Adrenal cortical extract and paredrine in shock. I. H. Shleser and R. Asher (*Amer. J. Physiol.*, 1942, 138, 1—6).—Shock, produced in the dog by venous occlusion of a limb, is relieved by adrenal cortical extract which reduces the fluid lost in the oedematous limb. Deoxycorticosterone acetate is less effective in this respect but has a greater effect on survival. Paredrine (*p*-hydroxyphenylisopropylamine) is of no benefit in shock produced by this means since it favours loss of fluid through capillaries with impaired permeability.
T. F. D.

Conversion of deoxycorticosterone into pregnane-3(a):20(a)-diol. W. R. Fish, B. J. Horwitt, and R. I. Dorfman (*Science*, 1943, 97, 226—228).—Deoxycorticosterone was administered orally, once daily (200 mg.) for 15 days, to ovariectomised chimpanzees. The urine was hydrolysed with HCl, extracted with CCl₄, and the neutral fraction separated by the Girard-Sandulesco ketone reagent. The non-ketonic hydroxy-compounds were fractionated with digitonin, the fraction yielding a sol. digitonide, purified chromatographically, eluted with 1% alcohol in benzene, and recryst. from aq. alcohol, affording pregnane-3(a):20(a)-diol in yield representing 2—3% conversion.
E. R. R.

Adrenal failure of pituitary origin. Plasma-protein studies (Tiselius). E. P. McCullagh, L. A. Lewis, and W. F. Owen (*Cleveland. Clin. Quart.*, 1943, 10, 88—104).—4 cases of adrenal cortex deficiency with evidence of organic pituitary lesions are reported. There was a very low urinary androgen excretion and the water excretion test was positive in all cases. In 3 cases the total plasma-protein content was low normal (using the electrophoretic technique of Tiselius, as modified by Longworth); in 1 case it was abnormally low. The albumin and α -globulin fractions were diminished, β - and γ -globulin and fibrinogen were normal or increased. The patients responded well to deoxycorticosterone acetate, testosterone propionate, and thyroid treatment.
A. S.

Response of hypophysectomised rats to intraperitoneal glucose injections. S. Joseph, M. Schweizer, and R. Gaunt (*Endocrinol.*, 1943, **33**, 161—168).—The transfer of fluid, electrolyte, and protein into the peritoneal cavity, and their reabsorption together with glucose, were the same in normal and hypophysectomised rats injected intraperitoneally with isotonic glucose solution. The hypophysectomised rats were abnormal in the severity of the hæmoconcn. produced, the absence of hæmodilution as ascitic fluid was absorbed, lowness of blood pressure and body temp., stasis of the peripheral circulation, oliguria, and mortality from shock. The abnormalities and deaths were prevented by the administration of adrenal cortical extracts and deoxycorticosterone. Adrenalectomised rats transferred smaller amounts of fluid and electrolytes to the peritoneal cavity after the injection than did normal or hypophysectomised rats. P. C. W.

Cushing's syndrome. K. W. Thompson and L. Eisenhardt (*J. clin. Endocrinol.*, 1943, **3**, 445—452).—Analysis and discussion of 93 cases. P. C. W.

Lactogenic hormone content of anterior pituitary of pigeon. V. Hurst, J. Meites, and C. W. Turner (*Proc. Soc. Exp. Biol. Med.*, 1943, **53**, 89—91).—Assays by crop-gland method show that pituitaries of hen birds contain 2—3 times as much hormone as those of cocks, and that those of the common pigeon contain 2—3 times as much per unit body wt. as those of the White King variety. V. J. W.

Effects of thyrotropic hormone, gonadotropic factor, pituitary growth substance, and insulin on phosphatase content of rat femurs. C. H. Whicher and E. M. Watson (*Endocrinol.*, 1943, **33**, 83—86).—Single subcutaneous injection of thyrotropic or gonadotropic hormone or intraperitoneal injection of KI increased the alkaline phosphatase content of diaphysis and epiphysis of rat's femur. A prep. of growth hormone and 40 units of protamine-Zn-insulin had no effect on bone-phosphatase. G. P.

Detection and significance of [pituitary] melanophore-expanding substance in urine and blood with special reference to retinitis pigmentosa.—See A., 1943, III, 878.

XII.—REPRODUCTION.

Factors influencing the reproductive cycle in chimpanzee; period of adolescent sterility and related problems. W. C. Young and R. M. Yerkes (*Endocrinol.*, 1943, **33**, 121—154).—The effects of age, pregnancy, season, illness, and social relations on the sexual cycle were examined in 653 cycles recorded in 5 chimpanzees. The cycle was divided into a pre-swelling phase of genital inactivity, a swelling phase during the growth of follicle, a post-swelling luteal phase, and menstruation. The menarche occurred at an average age of 8 years 11 months. The cycle has an average length of 50 days during the first months after the menarche, which declines to 35 days later. During the adolescent period of lengthened cycles the animals are sterile; this period lasts for 1—1.5 years. Ovulation occurs during this period, and the sterility is probably due to deficient luteal function. There may be a reversion to this adolescent condition following pregnancy. The cycle was unaffected by isolation, copulation, or the sex of the cage mate. During the winter months, particularly in young animals, a prolonged pre-swelling phase causes temporary amenorrhœa. Most of the individual variation in cycle lengths occurs in the pre-swelling and swelling phases. The relative sterility during adolescence is associated with a short post-swelling phase. Variation in the length of the phases in adult animals was unrelated to fertility. The cycles in the rhesus monkey, baboon, chimpanzee, and man are compared. The longer cycle in the chimpanzee is due to the longer interval between the end of menstruation and ovulation, which occurs 24 hr. before the end of the genital swelling phase. P. C. W.

Mode of reception of ovum by Fallopian tube. A. Westman (*Schweiz. med. Wschr.*, 1943, **73**, 145—147).—Salpingography shows that the Fallopian tube in women periodically curves around the ovary so that the Graafian follicle is immediately received by the tube. This finding was confirmed by direct observations during laparotomy. A. S.

Effect of low atmospheric pressures on reproductive system of male rat. A. S. Gordon, F. J. Tornetta, and H. A. Charipper (*Proc. Soc. Exp. Biol. Med.*, 1943, **53**, 6—7).—Exposure of adult rats to 250—280 mm. Hg for 6 hr. daily for 14—18 days caused degenerative changes in the testis and diminished wt. of accessory organs. Simultaneous administration of extracts of pregnancy urine and pregnant mare serum partly but not wholly maintained testis wt., and increased accessory organ wts. beyond normal vals. V. J. W.

Reproductive system of pregnant hermaphrodite rabbit. E. M. Sheppard (*J. Anat.*, London, 1943, **77**, 288—293).—A case of pregnancy in a hermaphrodite rabbit is recorded for the first time. There were a separate ovary and testis on each side. The internal female organs were those of a normal female; the external genitalia were of the intersexual type. Histologically the female organs were normal but

the testes, which were in the scrotum, were undergoing fatty degeneration. This type of hermaphroditism is discussed. W. J. H.

Attainment of sexual maturity in female albino rat as determined by copulatory response. R. J. Blandau and W. L. Money (*Anat. Rec.*, 1943, **86**, 197—215).—The average age for the onset of heat was 49.4 days, ranging from 37 to 67 days (S.D. 5.46 days). The first heat period averaged 9.07 hr., ranging from 1 to 20 hr. (S.D. 4.08 hr.). Nine cases of "intermittent" œstrus were observed. Throughout the first seven œstrous cycles the first heat period was shorter than the succeeding periods, and the first and second reproductive cycles were longer than the remaining cycles. The first period of heat began in most between 7 p.m. and 5 a.m. and the first ovulation occurred between 5 and 10 hr. after the onset of the first period of heat. The average no. of ova shed during the first heat period was 7.8, and the average no. recovered after at least six cycles had elapsed was 9.2. 70% of females mated during the first heat period became pregnant, the average size of the litter being 6. W. F. H.

Stimulating effects of ultra-violet radiation on bioelectric potentials of avian egg. A. L. Romanoff (*J. Cell. Comp. Physiol.*, 1943, **21**, 123—127).—Light from a Hg arc was passed through a filter having a max. transmission at 365 m μ . This increased the p.d. between blastoderm and albumin of 15-hr.-incubated eggs. Irradiation at λ 310 m μ . caused only half as much stimulation. V. J. W.

Stimulation of development of avian embryo by X-rays. A. A. Bless and A. L. Romanoff (*J. Cell. Comp. Physiol.*, 1943, **21**, 117—121).—Moderate doses (250 r.) stimulate early development of the hen's egg; large doses inhibit it, 5000 r. being always fatal. Any irradiation causes irregularities in process of development. V. J. W.

Effect of formaldehyde fumigation on mortality of chick embryos. W. M. Insko, jun., D. G. Steele, and C. M. Hinton (*Kentucky Agric. Exp. Sta. Bull.*, 1941, No. 416, 119—138).—Incubating eggs were fumigated with formaldehyde at concns. up to 7 times normal (35 c.c. of 40% aq. aldehyde and 17.5 g. of KMnO₄ per 100 cu. ft.). A relationship was established between mortality of the embryos and concn. of formaldehyde but this was insignificant below a concn. of 4 times normal. Embryos when 2—3 days old and chicks after drying out were the most susceptible to fumigation. A. A. M.

Inhibition of œstrogenic effects on reproductive system of male rat by testosterone injections. C. K. Weichert and H. B. Hale (*Endocrinol.*, 1943, **33**, 16—22).—0.01 mg. of diethylstilbœstrol per day injected for 14 days into normal immature male rats, beginning on the 7th day of life, resulted in a high degree of squamous metaplasia of the epithelium in the duct of Cowper's gland and in the proximal portion of the duct of seminal vesicle, slight squamous metaplasia in the bulbus urethræ, and cornification in the prostatic utricle. When injections were begun on the 14th or 21st day of life these changes were slight. Treatment with diethylstilbœstrol inhibited the normal development of Cowper's gland, of seminal vesicle, and of the anterior prostatic gland. In male rats, castrated on the 5th day, the squamous metaplasia after similar injections was more marked than in normals treated with diethylstilbœstrol, even if the injections were begun on the 14th or 21st day. 0.25 mg. of testosterone propionate injected together with 0.01 mg. of diethylstilbœstrol to castrated rats abolished the effect of the latter. G. P.

Beneficial effect of œstrogens on altitude tolerance of rats. B. D. Davis and B. F. Jones (*Endocrinol.*, 1943, **33**, 23—31).—Normal and adrenalectomised rats were exposed in a decompression chamber to lowered barometric pressures, corresponding to 27,000—31,000 ft., for 1—3½ hr. The mortality rate of both normal and adrenalectomised rats thus exposed and treated previously for 6—8 days with large (toxic) doses of diethylstilbœstrol or œstradiol benzoate was lower than that of untreated controls. Progesterone and testosterone had no such effects. G. P.

Physical properties of allantoic and amniotic fluids of chick. III. Surface tension. P. A. Walker (*J. Gen. Physiol.*, 1943, **27**, 29—36; cf. A., 1943, III, 740).—The average surface tension (γ) of allantoic fluids at 25° steadily decreased from 55 to 50 dynes per cm. during the 7th to the 13th day of incubation, increased steadily to 56 dynes at the 16th day, and decreased to 54 dynes at the 19th day. The vals. for amniotic fluid increased from 50 to 54 dynes at the 7th to the 9th day and were then approx. level except for a spike rise to 56 dynes at the 15th to the 18th day. The decrease of γ in the allantoic fluid at the 7th to the 13th day can be correlated with the increase of N compounds and enzymes, but the remaining results cannot be interpreted on the basis of existing information. F. S.

Effect of lactation on implantation of fertilised ova in mice. S. Bloch (*Schweiz. med. Wschr.*, 1943, **73**, 245—250).—Implantation of fertilised ova in mice is prevented by spontaneous lactation after parturition or if lactation is initiated by suckling or is increased by feeding dried mammary gland preps. The effect can be prevented by administration of œstradiol dipropionate, which inhibits lactation. Feeding mammary gland preps. does not inhibit ovulation nor does it produce luteinisation in the ovaries. It is thought that

the lactating mammary gland in mice liberates a substance which antagonises implantation of fertilised ova. A. S.

Regulation of lactation. W. R. Hess (*Schweiz. med. Wschr.*, 1943, 73, 183—185).—A review. A. S.

Effect of 2:7-dihydroxynaphthalene on tumour incidence and growth of the mammary gland in mice of the line A albino and C3H strains.—See A., 1943, III, 896.

Endometrial biopsy. J. C. Burch and D. Phelps (*J. clin. Endocrinol.*, 1943, 3, 475—480).—Review and discussion. P. C. W.

Calcified thrombus in human placenta. E. Brandenberger and H. R. Schinz (*Schweiz. med. Wschr.*, 1943, 73, 171).—The Roentgen diagram showed that the thrombus consisted of a Ca-PO₄ compound, resembling apatite crystals. A. S.

Historical and experimental studies on menstrual toxin. D. I. Macht (*Amer. J. med. Sci.*, 1943, 206, 281—303).—Menstrual serum was tested for toxicity by phytopharmacologic tests on *Lupinus albus* seedlings; various doses were injected into rats and psychological tests carried out. Small doses of menotoxic serum profoundly depressed the neuromuscular system. Such injections were particularly disturbing in rope-walking and rope-climbing experiments; the activity of rats in the maze was also impaired as shown by the slower movements and longer running time. The literature is very fully reviewed. C. J. C. B.

Significance of labour pain. H. Guggisberg (*Schweiz. med. Wschr.*, 1943, 73, 179—181). A. S.

Effect of gonadotropic hormones on intraocular prostatic implants in male rabbit. B. Krichesky, J. A. Benjamin, and B. Rosenberg (*Endocrinol.*, 1943, 33, 32—38).—12 daily injections of either chorionic gonadotropin (30—500 i.u. per kg. per day) or hypophyseal gonadotropin (50—500 rat units per kg. per day) caused a rapid increase, reaching its peak 4—8 days after the first injection, in the area of intraocular prostatic implants in male prostatectomised rabbits followed by gradual regression of the size of implants to pre-injection-levels in spite of continued hormone injections ("primary response"). 6—18 days after cessation of injections a second increase and regression in the size of the transplants occurred ("secondary response"), which equalled the primary response. A second series of injections a month after the first series, with the same gonadotropins, produced only the secondary response. In a second series, when different gonadotropins from those used in the first series were injected, both primary and secondary responses were observed. G. P.

Stimulating action of colchicine on pituitary-induced ovulation of frog. M. K. McPhail and K. M. Wilbur (*J. Pharm. Exp. Ther.*, 1943, 78, 304—313).—Frog ovaries were suspended in 30 c.c. of Ringer's solution containing female frog pituitary, and eggs extruded in 36 hr. counted. This no. was increased by presence of 10⁻³—10⁻⁶ colchicine and decreased by 10⁻². It was inhibited by papaverine or adrenaline and not affected by acetylcholine or acetanilide. Ovulation by injected pituitary was augmented by simultaneous injection of colchicine; colchicine alone had no action. V. J. W.

Dosage relationships in augmentation of pituitary gonadotropic extract by blood and hæmin. W. H. McShan, L. E. Casida, and R. K. Meyer (*J. Pharm. Exp. Ther.*, 1943, 78, 197—202).—In 21-day-old rats the optimum dose of extract for max. augmentation is that which by itself will produce ovarian wt. of 33—43 mg. "Augmented" ovaries contain a lower % of solids, due to presence of fewer corpora lutea and more cystic follicles. V. J. W.

Effect of continued oral administration of diethylstilbœstrol on blood pressure, heart rate, and respiration of albino rats. C. S. Matthews, F. E. Emery, and P. L. Weygandt (*Endocrinol.*, 1943, 33, 177—180).—45 adult ovariectomised rats and 35 adult male rats received 1 mg. of diethylstilbœstrol daily by stomach tube for periods up to 100 days. No deviation in blood pressure, heart rate, or respiratory rate was detected. P. C. W.

Specificity of diabetogenic effect of diethylstilbœstrol in partially depancreatised rats. D. J. Ingle and J. Nezamis (*Endocrinol.*, 1943, 33, 181—185).—Progesterone, calciferol, posterior pituitary extract, phenol, a combination of pregnane derivatives from pregnancy urine extract, or massive intraperitoneal water injections had no diabetogenic effect in partially depancreatised rats which responded to diethylstilbœstrol. P. C. W.

Clinical experience with diethylstilbœstrol. W. M. Wilson (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 467—475). P. C. W.

Clinical effects of stilbœstrol. The "adaptation" phenomenon. B. Vidgoff (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 476—477).—3 of 23 patients treated with stilbœstrol (1 mg. twice weekly by intramuscular injection) became refractory after 2—6 months' treatment. P. C. W.

Clinical report on stilbœstrol. J. C. Brougner (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 478—479). P. C. W.

Estrogen and 17-ketosteroid excretion in patients with breast carcinoma.—See A., 1943, III, 898.

Treatment of prostatic carcinoma by oestradiol and diethylstilbœstrol.—See A., 1943, III, 898.

Oral therapy with sodium œstrone sulphate. I. Induction of bleeding and cycle regulation in functional amenorrhœa. II. Induction of hæmostasis and cycle regulation in functional uterine hæmorrhage. V. H. Turner, C. D. Davis, and E. C. Hamblen (*J. clin. Endocrinol.*, 1943, 3, 453—454, 455—456).—I. Daily oral administration of 2.5—12.5 mg. of Na œstrone sulphate ("Premarin") for 20 days produced withdrawal bleeding lasting 1—9 days in 16 of 18 women with functional amenorrhœa.

II. Daily doses of 5—12.5 mg. produced hæmostasis in 13 of 14 women with functional uterine bleeding after 2—7 days' therapy. Cyclic withdrawal bleeding was produced in 20 women after hæmostasis had been achieved. P. C. W.

Inactivation of œstrone in normal male rabbits. G. R. Biskind and M. A. Meyer (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 91—94).—œstrone pellets implanted in rabbit spleen have no atrophic action on testes and accessories after 91 days. Implanted subcutaneously, they produce the same changes as in rats, resembling the results of experimental cryptorchidism in rabbits. V. J. W.

Treatment of amenorrhœa. M. Berliand (*J. clin. Endocrinol.*, 1943, 3, 457—461).—Bleeding was produced in 5 women with primary amenorrhœa by injections of 50 mg. of progesterone and of 5 mg. of œstradiol benzoate spread over 4—5 days. In 10 women with secondary amenorrhœa bleeding was produced either by the injection of 25 mg. of progesterone and of 5 mg. of œstradiol benzoate given over 2 days (7 cases) or by the injection of 50 mg. of progesterone alone given over 2 or 5 days (3 cases). P. C. W.

Rôle of œstrogenic substances in production of malignant mammary lesions. W. H. Parsons and E. F. McCall (*Surgery*, 1941, 9, 780—786).—Discussion with the report of a case of breast adenocarcinoma perhaps caused by massive œstrogen therapy. P. C. W.

œstrogen, diabetes, and menopause. S. Gitlow and D. M. Kurschner (*Arch. intern. Med.*, 1943, 72, 250—259).—Of 15 patients 8 had a concomitant onset of diabetes and the menopause, 2 had diabetes aggravated by the menopause, and in 3 diabetes appeared long after the menopause. The patients with concomitant diabetes and the menopause all responded favourably to œstrogen, as well as those with aggravation of diabetes at the time of the menopause. Improvement in the diabetes closely paralleled that of the menopausal symptoms. Subjective improvement was always accompanied by marked reduction of glycosuria and hyperglycæmia. The urine frequently became sugar-free. C. J. C. B.

Synthetic œstrogenic compounds. Monosubstituted derivatives of α -di-*p*-hydroxyphenylpropane.—See A., 1944, II, 12.

Analogues of hexœstrol.—See A., 1944, II, 13.

Sterility of ovarian origin. R. L. Rochat (*Schweiz. med. Wschr.*, 1943, 73, 208—209). A. S.

Therapeutic value of inflation of Fallopian tube. A. Reist (*Schweiz. med. Wschr.*, 1943, 73, 206—208).—568 inflations of the Fallopian tubes because of sterility were carried out in 381 patients; there were no untoward effects. Obstruction was found in 127 cases. 75 of the remaining 254 patients have conceived (46 with primary, 29 with secondary, sterility); 4 women had abortion within 3 months of pregnancy, 2 developed extrauterine pregnancies; 50 women conceived within 3 months of the tubar inflation, 33 within the next menstrual cycle. A. S.

Importance of hystero-salpingography in diagnosis and treatment of sterility. J. H. Müller (*Schweiz. med. Wschr.*, 1943, 73, 204—205).—Primary sterility was found in 64, secondary in 36, out of 100 patients. Both Fallopian tubes were found open in 46 patients, closed in 32 cases, 1 Fallopian tube was found obstructed in 22 cases. Doubtful results were obtained in 34 cases. Uterine hypoplasia was found in 20 women, retroflexion in 13. 64 patients did not conceive 1—7 years after the examination; 20 patients became pregnant. A. S.

Use of salpingography in diagnosis and treatment of female sterility. H. Scherer (*Schweiz. med. Wschr.*, 1943, 73, 147).—80 salpingographies were carried out without untoward effects. 55 women suffered from primary, 25 from secondary, sterility. Obstruction of one or both Fallopian tubes was found in 64% (of the uterine portion in 24 cases, isthmic and ampullary part in 17, and of the ovarian end in 10 cases). 10 women conceived within 6 months of the salpingography. A. S.

Sterility. J. S. Henry (*Canad. Med. Assoc. J.*, 1943, 49, 167—172).—A lecture. C. J. C. B.

Ovarian and placental function in Addison's disease.—See A., 1943, III, 883.

Hippuric acid excretion test in pregnancy.—See A., 1943, III, 894.

Pseudo-hermaphroditismus masculinus. T. Koller (*Schweiz. med. Wschr.*, 1943, 73, 191—193).—A case is reported. A. S.

Unusual form of ectopia testis. T. C. Skinner (*Brit. Med. J.*, 1943, II, 546).—An ectopic testis descended through the femoral ring into

the upper part of the thigh in a man of 36. The ectopic testis was on the right side, the normal testis occupying the right half of the scrotum. I. C.

Seminal inadequacy. II. Use of extract of chorionic gonadotropin and "pituitary synergist." C. D. Davis, J. H. M. Madden, and E. C. Hamblen (*J. Clin. Endocrinol.*, 1943, 3, 357—363).—20 men from childless couples were injected intramuscularly with 30—45 "synergy units" of a mixed prep. of chorionic gonadotropin and pituitary synergist ("Synapoidin" Parke, Davis) daily for 4—12 weeks. No alterations in the semen were produced. (Cf. A., 1943, III, 741.) P. C. W.

Gonadotropin excretion in normal men and women and cases of hysterectomy, menopause, migraine, epilepsy, and eunuchoidism. R. Main, W. Cox, R. O'Neal, and J. Stoeckel (*J. Clin. Endocrinol.*, 1943, 3, 331—334).—Normal and hysterectomised women showed 1 or 2 peaks of urinary gonadotropin excretion during the menstrual cycle or corresponding time interval. A case of premature menopause showed a consistent high urinary gonadotropin excretion which was reduced in proportion to the dose of oestrogen administered. No urinary gonadotropin was excreted in 1 eunuchoid man, 1 normal man, and 2 epileptic men. 1 epileptic man and 1 normal man with migraine excreted large amounts; successful dietary treatment of the migraine abolished the gonadotropin excretion. P. C. W.

Production of ovulation in hypophysectomised rats. I. W. Rowlands and P. C. Williams (*J. Endocrinol.*, 1943, 3, 310—315).—In hypophysectomised immature rats in which the ovarian atrophy is overcome and the ovarian follicles are stimulated by the injection of 40 i.u. of serum-gonadotropin ovulation was produced by the subsequent injection of chorionic, pig-pituitary, sheep-pituitary, or serum gonadotropin. The optimal interval between the injections of serum and chorionic gonadotropins was 4 days. Effective dose of chorionic gonadotropin was 50 i.u. Ruptured follicles were found in the ovaries 12—13 hr. after the chorionic gonadotropin injection and ova appear in the tubes 1 hr. later. The ova have passed through the tubes or disintegrated 96 hr. after the ovulation-producing injection. P. C. W.

Induction of superovulation and superfecundation in rabbits. A. S. Parkes (*J. Endocrinol.*, 1943, 3, 268—279).—Horse pituitary extracts were used to increase the no. of mature ovarian follicles in rabbits. Optimal effects were produced by an injection period of 5 days, and further injections produced insensitivity which was not overcome by drastic increases in dose. The optimal daily dose was not the same in different rabbit breeds. Females so primed showed ovulation of a no. of follicles greatly in excess of normal when mated or injected intravenously with 20 i.u. of chorionic gonadotropin. Superfecundation was shown by the large no. of embryos found at the end of the 1st third of pregnancy in primed and mated rabbits in which ovulation was also assisted by chorionic gonadotropin injections. Superfecundated rabbits failed to produce an abnormal no. of young at term. P. C. W.

Androgen action in fish. C. L. Turner (*Biol. Bull.*, 1942, 83, 389—400).—Either methyltestosterone or ethinyltestosterone will induce female *Gambusia affinis* to develop certain distinctively male characters of the pectoral fin. G. P. W.

Effect of testosterone propionate on pituitary gonadotropic potency of castrated male rats. C. G. Heller, A. Segaloff, and W. O. Nelson (*Endocrinol.*, 1943, 33, 186—188).—Adult male rats castrated 3 weeks previously were injected thrice weekly for 3 weeks with 1, 2, 5, or 10 mg. of testosterone propionate. The rats were killed and examined and their anterior pituitary glands suspended in tap water and injected into immature female rats. The 1-mg. doses of testosterone propionate caused hypertrophy of the prostate glands and seminal vesicles and involution of the castration hypertrophy of the thymus. Even with the 10-mg. doses, however, the increased gonadotropic potency of the pituitary gland and its increase in wt. caused by castration were not restored to normal. P. C. W.

Perlingual administration of androgenic hormones in gynaecology. R. Wenner, H. von Wattenwyl, and C. A. Joël (*Schweiz. med. Wschr.*, 1943, 73, 125—127).—Perlingual administration of methyltestosterone was successful in the treatment of climacteric disturbances, pain in the breasts of unknown origin, and in some cases of dysmenorrhœa. A. S.

Two cases of interstitial-cell tumours of human testis.—See A., 1943, III, 899.

XIII.—DIGESTIVE SYSTEM.

Carbohydrate digestion in sheep. I. A. T. Phillipson. **II.** A. T. Phillipson and R. A. McAnally (*J. Exp. Biol.*, 1942, 19, 186—198, 199—214).—I. The pH, osmotic pressure, and org. acid production in the rumen of the sheep on various diets are recorded.

II. The rate of fermentation of various carbohydrates in the rumen has been investigated and is discussed. G. P. W.

Absorption of sodium *o*-iodohippurate from rumen of lambs. R. A. McAnally and A. T. Phillipson (*J. Physiol.*, 1943, 101, 14p).—Isolation of the first three compartments of the stomach from the rest of the alimentary tract by ligatures did not prevent the absorption of Na *o*-iodohippurate from their interior. This radio-opaque salt was visible in the bladder in 1 hr., giving a dense shadow in 4 hr. Org. I was also demonstrated chemically in the urine. W. H. N.

Gastro-intestinal diseases and military service. N. Markoff (*Schweiz. med. Wschr.*, 1943, 73, 157—160).—A lecture. A. S.

Control of gastro-intestinal tone and motility with novatropine. S. J. Martin and R. C. Batterman (*Anesthesiology*, 1940, 1, 300—304).—2.5—7.5 mg. of novatropine (= homatropine methobromide) injected into unanæsthetised or anæsthetised people eliminated or reduced the tone and motility of the alimentary tract. P. C. W.

Effect of amidopyrine on intestinal motility.—See A., 1943, III, 909.

Calcium deficiency and gastric lesions in rat. T. F. Zucker and B. N. Berg (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 34—36).—A Calcium deficient diet causes in rats ulcerations of the gastric antrum resembling those previously described (A., 1942, III, 393) in other deficiencies. V. J. W.

Peptic ulcer and dyspepsia in the Army. H. Tidy (*Brit. Med. J.*, 1943, II, 473—477).—Statistical analysis of the incidence and characters of gastric and duodenal ulcers and gastric disturbances in the army. I. C.

Peptic ulcer in United States Navy. V. W. Logan and P. W. Bransford (*Ann. int. Med.*, 1943, 18, 929—934).—A lecture. A. S.

Traumatic gastric hæmorrhage. N. G. Markoff (*Schweiz. med. Wschr.*, 1943, 73, 73—74).—Discussion of a case. A. S.

Peptic ulcer and diarrhoea following removal of prevertebral ganglia in dogs. R. Lium (*Surgery*, 1941, 9, 538—553).—Removal of the cœliac and superior and inferior mesenteric ganglia in dogs produces diarrhoea with mucus and blood in the fæces and increased rectal activity. 4 of 9 dogs so treated had peptic ulcers. Intra-mucosal hæmorrhage, inflammation, and œdema were common in the gut. MgSO₄, pentobarbital, or atropine (1 g., anæsthetic dose, and 0.5 mg. respectively) given intravenously relaxes the colon; Ca reverses the effect of Mg but has no effect by itself. P. C. W.

Effects of iodoacetic acid, glyceraldehyde, and phosphorylated compounds on small intestine of rabbit. W. Feldberg (*J. Physiol.*, 1943, 102, 108—114).—The phosphorylated compounds phosphoglyceric acid, Cori ester, Embden ester, and Harden-Young ester cause only a slight glucose-like stimulation of the longitudinal muscle of isolated rabbit intestine. The stimulating action of glucose and to a smaller extent that of pyruvate is inhibited by iodoacetic acid and *dl*-glyceraldehyde, and on removing these agents the response to pyruvate recovers. That to glucose recovers after glyceraldehyde, but remains depressed after iodoacetic acid. W. H. N.

Gastric carcinoma and mucosal relief technique. F. E. Templeton (*Cleveland Clin. Quart.*, 1943, 10, 61—80).—The use of the filming-fluoroscope in gastro-intestinal diagnosis is discussed, with special emphasis of the differential diagnosis of gastric carcinoma. A. S.

Megacolon and constipation in adults. A. Brunner (*Schweiz. med. Wschr.*, 1943, 73, 171—173).—Severe constipation in adults, caused by megacolon, was cured by lumbar sympathectomy. The success of the operation can be estimated by the effect of a previous lumbar sympathetic anæsthesia. A. S.

Occlusion of external pancreatic secretion in man. A. Brunschwig and J. G. Allen (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 43—47).—Resection of the head and duct of the pancreas in 3 patients was followed by no pathological results in 1, and only by impaired digestion of fats in the other 2. V. J. W.

Acute pancreatitis. G. K. Rhodes (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 266—270).—Brief discussion based on experience of 35 cases. P. C. W.

Pancreatitis. H. L. Popper and F. Plotke (*Surgery*, 1941, 9, 706—711).—Blood-amylase and -lipase in dogs were increased by the intravenous injection of trypsin, the transfusion of serum from a dog with damaged pancreas, or pancreatic stimulation by mecholyl and eserine. The procedures increased the normal vals. 4—8 times. In all cases a decline in concn. started within 1 hr. and within 8—24 hr. normal vals. were regained. P. C. W.

Pancreozymin, stimulant of secretion of pancreatic enzymes in extracts of small intestine. A. A. Harper and H. S. Raper (*J. Physiol.*, 1943, 102, 115—125).—The name "pancreozymin" is given to a substance, accompanying secretin in alcoholic extracts of the small intestine of the pig, dog, and cat, which increases the concn. of enzymes in the pancreatic juice of the cat when injected intravenously. It is thermostable, resistant to acid and to pepsin but not to alkali or to pancreatic juice. It dialyses slowly through Cellophane. Its distribution in the small intestine is similar to that of secretin, from which it can be separated. It does not occur in

gastric mucosa. The response of the pancreas to pancreozymin is unaffected by vagal or splanchnic section or by atropine, and is not due to vasodilator substances. It is suggested that a hormonal as well as a nervous control of enzyme secretion must be recognised. Pancreozymin has no hypoglycæmic action. W. H. N.

Absorption of volatile acids from rumen of sheep. R. A. McAnally and A. T. Phillipson (*J. Physiol.*, 1943, 101, 13r).—The chief non-gaseous product of cellulose breakdown in the rumen is volatile fatty acid, chiefly acetic, which is absorbed from the rumen and reticulum and can be measured in the blood from these organs. Substitution of water, or solutions of Na acetate, propionate, or butyrate, for the normal contents of the rumen proves that no acid occurs in the effluent blood in the absence of acid in the rumen, and that the lower is the mol. wt. the better is the absorption. 2—4 g. of acetic acid are probably absorbed from the rumen in 1 hr. W. H. N.

Lipocaine in treatment of diarrhoea of hyperthyroidism. E. C. Bartels (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 439—446).—Administration of lipocaine (6—18 capsules daily for 10 days) inhibited refractory diarrhoea in 6 cases of hyperthyroidism. There was no improvement in liver function (hippuric acid test). P. C. W.

XIV.—LIVER AND BILE.

Liver function. E. A. Nixon (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 454—457).—A brief discussion of liver function tests with descriptions of illustrative cases. P. C. W.

Limitations of liver function tests. A. C. Ivy and J. A. Roth (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, 17, 179—193).—A review. A. S.

Dicumarol [3 : 3'-methylenebis-(4-hydroxycoumarin)] in rats with impaired liver function.—See A., 1943, III, 865.

Effect of anoxia on metabolism of liver slices from fed and fasted rats. F. N. Craig (*J. Biol. Chem.*, 1943, 150, 209—212).—Liver slices from rats fed on a high-carbohydrate diet take up 25% more O₂ if kept in O₂ than if first kept for 70 min. in N₂. The corresponding val. for slices from rats fasted for 24 hr. is 75%. Fasting also diminishes production by the slices, in N₂, of lactic acid. Little or no production of the acid occurs in O₂. W. McC.

Respiration of frozen and dehydrated guinea-pig liver.—See A., 1943, III, 827.

Rôle of liver from standpoint of the anaesthetist.—See A., 1943, III, 911.

Sterols of lower marine animals. I. M. Defner (*Z. physiol. Chem.*, 1943, 278, 165—168).—The unsaponifiable matter of the liver of *Sepia officinalis* yields cholesterol, which is purified by adsorption on Al₂O₃. Similarly *Anemonia sulcata* yields actiniasterol (2 double linkings) and a sterol probably similar to clionasterol. The actiniasterol is accompanied by a sterol containing only one double linking. *Phallusia mammilata* yields neither sterol nor bile acid. W. McC.

Rôle of anterior pituitary in maintenance of normal blood-sugar levels and local mobilisation of liver-glycogen.—See A., 1943, III, 886.

Structure of galactose phosphate present in liver during galactose assimilation.—See A., 1943, III, 828.

Liver-glycogen and oxidative processes in intermediate metabolism when dietary proteins are replaced by amino-acids and their mixture.—See A., 1943, III, 827.

Comparison of influence of some crystalline hormones of adrenal cortex on deposition of glycogen in liver.—See A., 1943, III, 884.

Action of amino-acids and proteins on liver-fat deposition.—See A., 1943, III, 904.

Changes in lipin content of serum and of liver following bilateral renal ablation or ureteral ligation.—See A., 1943, III, 816.

Dietary fatty livers in mice and sensitivity to exogenous œstrogen.—See A., 1943, III, 811.

Diet and prevention of liver damage. I. S. Ravdin, E. Thorogood, C. Riegel, R. Peters, and J. E. Rhoads (*J. Amer. Med. Assoc.*, 1943, 121, 322—325).—Chemical analyses of liver biopsies showed a close correlation between obesity and the lipin content of the liver. The average lipin content of severely damaged livers from 10 patients not prepared by diet was 14.2%. The lipin content of livers of 37 patients given a diet of 20% protein, 74% carbohydrate, and 6% fat for 5 days or more was 4.2%. C. A. K.

Protective action of vitamin-C against experimental hepatic damage. K. H. Beyer (*Arch. intern. Med.*, 1943, 71, 315—324).—Vitamin-C deficient guinea-pigs showed 50% more fat in the livers than controls when given the hepatotoxin N₂H₄. Gross and microscopic evidence bore out the severity of the fatty degeneration in the -C-deficient animals and the mild involvement in the controls. (4 photomicrographs.) C. J. C. B.

Vitamin-B complex in dogs : production of cirrhosis of liver.—See A., 1943, III, 823.

Incidence of infectious jaundice in diabetics. W. Löffler (*Schweiz. med. Wschr.*, 1943, 73, 195—198).—14% of 142 diabetics contracted infectious jaundice during an epidemic while only 2.5% of non-diabetic patients were ill with jaundice. There was deterioration of sugar tolerance of the diabetics during jaundice with acidosis. A. S.

Hippuric acid [liver] test in thyrotoxicosis.—See A., 1943, III, 882.

Lymphocytic reaction in epidemic hepatitis. R. F. Landolt (*Schweiz. med. Wschr.*, 1942, 72, 1346—1353).—The sedimentation rate of the red cells was increased in 21 cases of epidemic hepatitis. There was a normal red cell count, but sometimes leucopenia. The differential count showed marked lymphocytosis with many plasma cells. The relationship between epidemic hepatitis and glandular fever is discussed. A. S.

Infective hepatitis treated with glucose, insulin, and ascorbic acid. D. R. Macdonald (*Brit. Med. J.*, 1943, II, 261—262).—Report on 5 cases of infective hepatitis treated with 2—5 oz. of glucose daily, insulin (10 units twice daily), and ascorbic acid (75 mg. 3 times daily). In three cases complete remission of all symptoms occurred in 3—4 days. All cases improved after a period well below the average duration of the disease. I. C.

Liver deficiency anæmia in case of acute infective hepatitis.—See A., 1943, III, 862.

Acute yellow liver atrophy in children. O. Geiser (*Schweiz. med. Wschr.*, 1942, 72, 1434—1436).—2 children died of acute yellow atrophy of the liver. The cases were observed during an epidemic of hepatitis. A. S.

Hepatic injury in dogs resulting from a vitamin-B-free diet. V. A. Drill, C. B. Shaffer, and J. H. Leatham (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 328—330).—Removal of vitamin-B from the diet of dogs caused anorexia and abnormally high retention of bromsulphalein by the liver. Both symptoms appeared at about the same time, and liver function returned to normal while the anorexia continued. The livers showed chronic passive congestion. V. J. W.

Malignant tumours in persons with cirrhosis of liver.—See A., 1943, III, 898.

Glycerophosphatases of rat liver cancer produced by feeding p-dimethylaminoazobenzene.—See A., 1943, III, 897.

Effect of injury to pancreas or liver on amylase and lipase content of blood.—See A., 1943, III, 866.

Esterase content of livers of mice and its excretion in strains susceptible or insusceptible to mammary cancer.—See A., 1943, III, 819.

Properties of crystalline horse-liver catalase and derivatives.—See A., 1943, III, 841.

Determination of acid-soluble glycerophosphoric acid in liver.—See A., 1943, III, 856.

Rôle of liver in metabolism of œstrogens.—See A., 1943, III, 810.

Inactivation of endogenous androgens by liver in rabbits.—See A., 1943, III, 812.

Simple liver preparation orally effective in treatment of human amyloid disease. J. Loukides, H. G. Grayzel, and M. Jacobi (*J. Lab. clin. Med.* 1943, 28, 1321—1322).—The method of prep. of a fresh liver pulp is described. $\frac{1}{4}$ — $\frac{1}{2}$ lb. daily cures human amyloidosis. C. J. C. B.

Conjugation in vitro of phenol by guinea-pig liver.—See A., 1943, III, 909.

Effect of division of sphincter of Oddi on bile-diastase of dog. S. H. Gray, C. J. Heifetz, and J. G. Probststein (*Arch. Surg. Chicago*, 1943, 47, 160—164).—When the sphincter of Oddi is divided and a cannula inserted into the gall-bladder of the dog, there results a reflux of duodenal contents into the common bile duct and gall-bladder as measured by the appearance of diastase in the cannulated bile. F. S.

Involvement of liver in disease of gall-bladder. J. L. Batty and S. Gray (*Arch. intern. Med.*, 1943, 72, 176—184).—The colloidal Au test of hepatic function gave 46% positive results on 100 patients with proved disease of the gall-bladder. The incidence of disease of the liver was highest in the patients with jaundice and infection (58.8%) and lowest in the patients with quiescent disease of the gall-bladder (36.7%) who presented no history or evidence of fever or jaundice. The incidence also increased with the duration of infection of the gall-bladder or jaundice but decreased with time in the group with quiescent disease of the gall-bladder. C. J. C. B.

Hæmorrhagic diathesis in cholæmia. H. Dyckerhoff and R. Marx (*Biochem. Z.*, 1940, 307, 35—48).—The probable relationships between liver damage, impaired flow of bile, and cholæmic disturbance of hæmorrhage are discussed. An increased time of coagulation for oxalated plasma-thrombokinase system does not necessarily

imply a lack of prothrombin; it may be due to an inhibitor, not excluding thrombokinase itself. The serum-antithrombin in cholæmic rabbits is greatly increased. The disturbance of blood coagulation in cholæmia is not exclusively due to lack of vitamin-K; liver damage and coagulation inhibitors are probably essential factors. F. O. H.

Excretion of exogenous and endogenous oestrogens in bile of dogs and man.—See A., 1943, III, 810.

Rôle of bile in absorption of steroids.—See A., 1943, III, 805.

XV.—KIDNEY AND URINE.

Influence of eosinophil cells of hypophysis on kidney function.—See A., 1943, III, 808.

Effect of massive quantities of sodium bicarbonate on acid-base equilibrium and on renal function.—See A., 1943, III, 912.

Pituitary hypothyroidism with impaired renal function.—See A., 1943, III, 885.

Dicumarol in rats with impaired kidney function.—See A., 1943, III, 865.

Effective renal blood flow, glomerular filtration rate, and tubular excretory mass in arterial hypertension. P. P. Foa, W. W. Woods, M. M. Peet, and N. L. Foa (*Arch. intern. Med.*, 1943, 71, 357—367).—Diodrast and inulin clearances were used to measure the effective renal blood flow and filtration rate in 17 patients with arterial hypertension. Measurements were made before bilateral supra-diaphragmatic splanchnicectomy with lower dorsal sympathetic ganglionectomy and 2 weeks—12 months after the operation; there was no change in renal blood flow, even when the blood pressure was reduced. There was a reduction of blood pressure in 8 patients. Constancy of renal blood flow combined with reduced blood pressure suggests decreased vascular resistance and intrarenal arteriolar vasodilatation, with a resultant increase in pulse pressure within the kidney. The patients with the highest effective renal blood flow, the greatest vasomotility, and the least thickening of the systemic arterioles received the most benefit from the operation. C. J. C. B.

Environmental temperature and renal blood flow. G. V. Byfield, S. E. Telser, and R. W. Keeton (*J. Amer. Med. Assoc.*, 1943, 121, 118—123).—The effect of a hot environment (99.5° F., 19 or 55% R.H.) on renal functions was studied in normal subjects, and in cases of essential hypertension and glomerulonephritis. The inulin clearance in all subjects was unchanged by raised temp., and the renal plasma flow (Diodone clearance) was unchanged in patients with normal inulin clearances. In patients with decreased inulin clearances the renal plasma flow was slightly but significantly decreased. C. A. K.

Hypertension, hydroxytyramine, and action of renal hypertensor extracts. Experimental treatment of hypertension with kidney extracts. Blood pressure of foetal rat and its response to renin and angiotonin. Separation from kidney tissue of substance capable of reducing blood pressure in experimentally induced hypertension.—See A., 1943, III, 790.

Arteritis in rats with experimental renal hypertension. Unilateral pyelonephritis and hypertension. [Nephrectomy in] renal hypertension.—See A., 1943, III, 870.

Physiology of renal circulation. Effects of temporary occlusion of renal circulation in rabbits.—See A., 1943, III, 869.

Bilateral nephrectomy as effective as heavy metal injury in production of experimental necrotising arteritis in dogs. Alteration of blood plasma-proteins not essential.—See A., 1943, III, 790.

Ætiology of renal failure following crush injuries. R. J. Bing (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 29—30).—Intravenous injection of methæmoglobin in dogs in acidosis after oral administration of 100 g. of NH₄Cl caused renal degeneration and death from uræmia. Similar infusions of metmyoglobin or hæmoglobin had no toxic effects, nor had methæmoglobin in normal animals. V. J. W.

Bright's disease—clinical and pathological study. L. J. Adams and S. R. Townsend (*Canad. Med. Assoc. J.*, 1943, 49, 282—290).—A review of 99 cases. (8 photomicrographs.) C. J. C. B.

Diuretic action of pitressin after acute nephritis.—See A., 1943, III, 808.

Calcium treatment of renal diseases. O. Spühler (*Schweiz. med. Wschr.*, 1942, 72, 1341—1346).—Repeated intravenous injections of 20 c.c. of 20% "Calcium-Sandoz" were beneficial in patients suffering from orthostatic albuminuria, post-nephritic and nephrotic albuminuria, acute glomerulo-nephritis, and renal glycosuria. There was marked diuresis in cases of nephrotic œdema. Glomerular filtration rate is diminished (inulin clearances). A. S.

Destruction of pitocin by aminopeptidase in brewers' yeast and by hypertensinase extracts of kidney.—See A., 1943, III, 809.

Rôle of kidneys from standpoint of the anæsthetist.—See A., 1943, III, 911.

Transplantation of ureters into large bowel. G. G. Turner (*Brit. Med. J.*, 1943, II, 535—538).—A review, with report of some cases. I. C.

Urinary steroids from breast cancer patients.—See A., 1943, III, 811.

Quantitative relationships between blood- and urine-ketone levels in diabetic ketosis.—See A., 1943, III, 828.

Factors which interfere with the benzidine and Meyer's tests for blood in milk and urine.—See A., 1943, III, 789.

Accurate and sensitive clinical method of demonstrating blood in urine, fæces, and gastric juice.—See A., 1943, III, 856.

Colour produced in urine by iodine. P. E. Simola (*Z. physiol. Chem.*, 1943, 278, 92—96; cf. A., 1936, 1537).—5% alcoholic I solution is added dropwise to 3—5 c.c. of urine until the yellow colour is deeper than that of the original liquid. The mixture is boiled for a few sec. and then extracted with amyl or butyl alcohol. Pregnancy urine yields a red or violet-red extract in 90% of cases tested. The corresponding proportion for other urine, healthy and pathological, is 20%. A similar reaction with Br is probably due to the same substance. The substance which reacts with I is not histidine or histamine. W. McC.

Electrophoretic and chemical analysis of protein in nephritic urine. S. S. Blackman, jun., and B. D. Davis (*J. clin. Invest.*, 1943, 22, 545—549).—Total protein concn. varied from 0.45 to 3.45% g.-%; the results obtained by the 2 methods agreed closely. γ -Globulin concn. was high in urine of patients with progressive renal insufficiency; it was very low in the urine of a patient with chronic lipid nephrosis and normal renal function. The absence of fibrinogen in the urine in progressive nephrotic nephritis suggests that the hyaline materials in the glomeruli and tubules of these cases are derived from globulins other than fibrinogen. The Bence-Jones protein in the urine of a patient with multiple myeloma and renal insufficiency behaved electrophoretically like a β -globulin. C. J. C. B.

Urinary stones [relation to vitamin-A deficiency]. R. K. Brown and E. C. Brown (*Surgery*, 1941, 9, 415—423).—The causes of the solitary urinary bladder stone often found in small boys in Syria are discussed. Obstruction, heredity, infection, and dryness of the climate are not primary causes. Observations are consistent with the view that the stones form about keratinised urinary epithelium produced by seasonal vitamin-A deficiency. P. C. W.

XVI.—OTHER ORGANS, TISSUES, AND BODY-FLUIDS. COMPARATIVE PHYSIOLOGY (not included elsewhere).

Medical research in war time. E. Mellanby (*Brit. Med. J.*, 1943, II, 351—356).—A review. I. C.

Problems of the internist in the Navy. R. E. Duncan (*Ann. int. Med.*, 1943, 18, 920—925).—A lecture. A. S.

Importance of restitution and adaptation mechanisms in surgery. T. Naegeli (*Schweiz. med. Wschr.*, 1943, 73, 29—33; 61—65).—A review. A. S.

Relative merits of scalpel and high-frequency current in nephrectomy. C. C. Higgins and M. Glazier (*Surgery*, 1941, 9, 220—228).—Experiments in rabbits shows that nephrotomy with the high-frequency current causes less primary hæmorrhage, less extravasation of blood, and less infarction than when the scalpel is used. There is no significant difference in healing rate. P. C. W.

Thermal burns. S. D. Gordon and R. A. Gordon (*Canad. Med. Assoc. J.*, 1943, 48, 302—303).—A review of 50 cases. C. J. C. B.

Treatment of phosphorus burns. I. M. Rabinowitch (*Canad. Med. Assoc. J.*, 1943, 48, 291—302).—A review. C. J. C. B.

Extra-uterine aseptic autolysis in skin of foetal lamb. W. J. Ellis (*J. Coun. Sci. Ind. Res. Australia*, 1943, 16, 173—178).—The technique for aseptic removal of foetal lamb skin is described. Marked autolytic changes during incubation were indicated by the increases in non-protein-N. R. H. H.

Physico-chemical conditions of skin and bacterial growth.—See A., 1943, III, 847.

Changes in finger nails in internal diseases. K. Weiss (*Schweiz. med. Wschr.*, 1943, 73, 91—95).—A review. A. S.

Destructive action *in vivo* of dilute acids and acid drinks and beverages on rats' molar teeth. F. J. McClure (*J. Nutrition*, 1943, 26, 251—257).—The substitution of dil. HCl (pH 1.5) or lactic acid (pH 2.4) for the drinking-water of weanling rats has a marked destructive effect on both enamel and dentine at approx. the same rate, the effect of the former acid being the more marked. The upper molars are less severely affected, the dissolution being particularly severe on the lingual surface of the lower molars, the crowns being almost entirely destroyed in 42—70 days. Corrosion

of the lower molars is also observed when acid beverages (ginger ale, grapefruit and cranberry juice, and cola, pH varying between 2.6 and 3.5) are given. The pH of rat's oral cavity varies between 7.7 and 8.2 and the washings of the cavities have pH 7.8—8.0.

H. G. R.

Effects of radiation on bone, cartilage, and teeth.—See A., 1943, III, 914.

Stability of diphosphopyridine nucleotide in rat tissues. B. J. Jandorf (*J. Biol. Chem.*, 1943, 150, 89—97).—Diphosphopyridine nucleotide is stable in rat brain (40 min.), and kidney and muscle (90 min.), which contain 203, 533, and 551 μg . per g. respectively. In liver the initial val. of 1050 falls to a stable val. of 756 μg . per g. after 20 min.

R. L. E.

Separation of biological fats from mixtures by adsorption. III. Separation of phosphorus- and nitrogen-free lipins. W. Trappe (*Biochem. Z.*, 1941, 307, 97—106; cf. A., 1943, III, 780).—Free fatty acids and phospholipins from total lipin extracts are adsorbed on Al_2O_3 (Brockmann) from CHCl_3 solution. Hydrocarbons, but not cholesterol or fatty acids, are eluted from Al_2O_3 or activated SiO_2 by light petroleum, CCl_4 , or benzene. Fatty acids may be separated from cholesterol by the use of a CHCl_3 -alcohol mixture (9:1), the former only being eluted by ether. Hydrocarbons and cholesterol esters may be separated by the use of frankonite KL, which is preferable to Al_2O_3 or SiO_2 with unsaponified lipin extracts. The ratio lipin : adsorbing agent required is 1:50 with non-saponified extracts, and 1:25—1:30 after saponification.

P. G. M.

Asymmetry of the organism as linked up with optical activity of its constituent substances. Amino-acids from proteins of leg of dextro-voluted and lævo-voluted forms of *Fruticicola lantzi*, Landh. A. R. Kizel (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 601—603).—There is no difference between the optical rotation of the respective amino-acids isolated from the muscle-proteins myogen and myosin prepared from the legs of two morphologically opposite forms of *F. lantzi*, one having a shell with a right-handed, and the other having a shell with a left-handed, whorl. It is concluded that asymmetry of the organism is not related to the optical activity of its constituent substances.

J. N. A.

Absorption of oxygen by glutathione in alkaline solutions.—See A., 1944, I, 19.

XVII.—TUMOURS.

Liver tumours following cirrhosis caused by selenium in rats. A. A. Nelson, O. G. Fitzhugh, and H. O. Calvery (*Cancer Res.*, 1943, 3, 230—236).—Eleven of 53 rats developed adenoma or low-grade carcinoma in cirrhotic livers, and 4 others advanced adenomatoid hyperplasia after having survived 18—24 months on diets containing traces of Se. No tumours occurred in 73 rats surviving less than 18 months, although after 3 months cirrhosis was frequent. In control rats the incidence of spontaneous hepatic tumours was less than 1%.

F. L. W.

Quantitative determination of the growth of a transplantable mouse adenocarcinoma. J. G. Hofman, H. L. Goltz, M. C. Reinhard, and S. G. Warner (*Cancer Res.*, 1943, 3, 237—242).—A quant. measure of the Marsh-Simpson tumour in Marsh-albino mice was carried out to establish the relation between latent period and inoculum size. A growth curve was established beginning with a single cell. The vol. growth of the tumour in these mice is exponential with time, $V = V_0 e^{\mu t}$, where $\mu = 0.37$ per day.

F. L. W.

Cerebral tumour in a dog resembling human medulloblastoma. K. T. Neuburger and C. L. Davis (*Cancer Res.*, 1943, 3, 243—247).—A large spontaneous cerebral tumour in a dog is described. It obliterated most of the lateral ventricles. Histologically the neoplasm resembled human medulloblastoma. Its probable origin was the periventricular layers of immature cells.

F. L. W.

Morphology of the peripheral blood of rats. I. Normal rats. II. Rats injected subcutaneously with carcinogenic hydrocarbons. III. Rats with induced and transplanted tumours. C. Reich and W. F. Dunning (*Cancer Res.*, 1943, 3, 248—257, 258—265, 266—274).—I. Significant differences were found in the mean hæmoglobin vals. and in the red and white cell counts of the peripheral blood of rats of several inbred strains. Rats under 100 days of age have lower hæmoglobin vals. and red and white cell counts with a lower % of polymorphonuclear leucocytes and a higher % of lymphocytes and monocytes than older rats; after this age little change occurs up to 500 days. Males tend to have higher hæmoglobin and red cell counts and lower white cell counts than females. Pregnant and lactating females have lower hæmoglobin and red cell counts than normal females but white cell counts and differential vals. are little affected by either condition. The max. decrease in hæmoglobin and in red cells occurs during the 7 days after birth. The strains with the longest life spans had the highest total leucocyte counts and the highest % of neutrophil polymorphonuclear leucocytes. The strain with the lowest hæmoglobin val. had the highest spontaneous tumour history.

II. Blood changes after injection of methylcholanthrene and benzpyrene were studied. Rats injected with 8—12 mg. of methylcholanthrene died within 90 days. There was a slight increase in hæmoglobin vals. and in red and white cell counts after 10 days. 20 days after injection there was no change in any of these vals. A slight increase in white cell count was observed after 30 days. Rats receiving 1—6 mg. of methylcholanthrene showed an increase in red and white cell counts during the first 40 days. After 40—50 days the hæmoglobin vals. and the red cells decreased but there was no increase in white cell counts. The % of monocytes remained high. The blood picture was similar when tumours were first observed (60—320 days). After injection of benzpyrene there was no change in hæmoglobin vals. up to 50 days but the red cells and % of monocytes increased. When tumours appeared the hæmoglobin decreased and the red cell counts fell. Total white cells increased slightly.

III. The subcutaneous injection of paraffin containing methylcholanthrene or benzpyrene increased the % of monocytes in peripheral blood. Rats with early tumours induced by these hydrocarbons showed decreases in hæmoglobin. Continued growth of the tumours reduced the hæmoglobin vals. and red cell counts and increased the total white cells and the % of polymorphonuclear neutrophil leucocytes. The progressive growth of seven different transplanted sarcomas reduced the hæmoglobin vals. and increased the white cells and the % of polymorphonuclear neutrophil leucocytes. The degree of anæmia appeared to be related to the malignancy of the growth but the leucocytosis was apparently independent.

F. L. W.

Glutamic acid from tumours. V. Klingmüller (*Z. physiol. Chem.*, 1943, 278, 97—119).—Crit. examination of the methods of Kögl and Chibnall shows that these procedures, preferably slightly modified, are satisfactory for the isolation of glutamic acid from the proteins of tumours. The highest yield of *d*(-)-glutamic acid obtained by these methods is 0.2—0.3% of the dry wt. of the protein. Hence the acid plays no important part as a constituent of malignant tissue.

W. McC.

Relationship between growth of Walker tumour and diminished *d*-amino-acid oxidase activity. U. Westphal (*Z. physiol. Chem.*, 1943, 278, 222—229).—In rats having Walker tumours, the *d*-amino-acid oxidase content of the liver is restored to the normal val. by excision of the tumour. If excision is incomplete, restoration is also incomplete. The content is not decreased in healthy rats by severe burns. The results suggest that the occurrence of *d*-amino-acids in tumour-proteins is not a cause of the growth of malignant tissue but results from a decrease in the amount of *d*-amino-acid oxidase available for acting on *d*-amino-acids taken into the organism.

W. McC.

(A) Effect of subcutaneous injection of individual amino-acids on appearance, growth, and disappearance of Emge sarcoma in rats. (B) Effects of a caseine hydrolysate. H. H. Beard (*Exp. Med. and Surg.*, 1943, 1, 123—135, 136—142).—(A) 18 mg. of amino-acids, in 3 c.c. of saline at pH 7.0, were subcutaneously injected daily for 2 weeks and then every other day for 3 further weeks in young rats, beginning with the day of tumour grafting. The average increase in tumour growth was 28 g. in 291 control animals with 280 tumours, and 9 g. in 368 treated rats with 349 tumours. In the control group 7 out of 280 (2.6%) of the growths disappeared spontaneously, and 164 out of 349 (47%) in the experimental group. The rating for the prevention of growth ranged from 1 for leucine and tryptophan to 12 for arginine; for disappearance of tumours 1 for arginine and histidine to 19 for threonine. Essential amino-acids (with the exception of threonine) were more effective for tumour disappearance than non-essential acids.

(B) Injecting 200 mg. or oral administration of 3 g. per day of a casein hydrolysate, beginning the day of transplantation, had no effect on the tumour characteristics.

A. S.

Experiments on pre-cancerous conditions. H. von Meyenburg and H. Fritzsche (*Schweiz. med. Wschr.*, 1943, 73, 201—204).—The findings of Peyton Rous, Kidd, and MacKenzie on the effects of short-lived application of coal tar, injury to the rabbit's ear, and a second application of coal tar are confirmed.

A. S.

Cancer of stomach, with special reference to early diagnosis. I. W. Held and I. Busch (*Ann. int. Med.*, 1943, 18, 719—735).—A review.

A. S.

Large islet-cell tumour of pancreas. A. Brunshwig (*Surgery*, 1941, 9, 554—560).—A case is reported.

P. C. W.

Multiple bilateral pulmonary adenomatosis in man. J. L. Sims (*Arch. intern. Med.*, 1943, 71, 403—409).

C. J. C. B.

Fields of vision in cases of tumour of Rathke's pouch.—See A., 1943, III, 879.

Cholesterol content of urine in patients with cancer.—See A., 1943, III, 894.

Association of hydrothorax with ovarian fibroma (Meigs' syndrome).—See A., 1943, III, 888.

XVIII.—ANIMAL NUTRITION.

Nutrition in war. F. C. Bing (*J. Lab. clin. Med.*, 1943, 28, 1295—1304).—A review. C. J. C. B.

Diet in old age. E. L. Tuohy (*J. Amer. Med. Assoc.*, 1943, 121, 42—48).—A review. C. A. K.

Dietary conditions in industry. R. Goodhart (*J. Amer. Med. Assoc.*, 1943, 121, 93—96).—A review. C. A. K.

Nutritional state of staff in a London sector hospital. H. P. Wright (*Brit. Med. J.*, 1943, II, 171).—In young nurses the average hæmoglobin was 88% (Haldane standard) and there were signs of vitamin-C deficiency in the diet. The protein intake was about 50 g. daily. Members of the laboratory staff (mostly men) who received home-prepared diets were better nourished. I. C.

Nutrition in pregnancy and lactation. J. H. Ebbs (*J. Amer. Med. Assoc.*, 1943, 121, 339—345).—A review. C. A. K.

Diseases of nutrition. H. E. Butt, R. M. Hoyne, and R. M. Wilder (*Arch. intern. Med.*, 1943, 71, 422—438).—A review of recent literature. C. J. C. B.

Anthropological approach to dietary problems.—See A., 1943, III, 784.

Effect of diet on cholesterol concentration in blood and bile. N. Gough (*Brit. Med. J.*, 1943, II, 390—391).—In patients fed with diets containing varying amounts of cholesterol, in normal subjects after a single meal of high cholesterol content, in patients with biliary fistulae, and in a dog in which a tube had been inserted in the common bile duct, the levels of cholesterol in blood or bile bore no relation to the content of cholesterol in the diet. I. C.

Nutritive and physiological values of yeast constituents.—See B., 1943, III, 294.

Chronic toxicity of sulphanilamides in growing rats as influenced by type of diet, addition of faeces to diet, and appetite.—See A., 1943, III, 831.

Possible carcinogenicity of overcooked meats, heated cholesterol, aldehyde, and heated sesame oil.—See A., 1943, III, 818.

Growth and metabolism of young hypophysectomised rats fed by stomach tube.—See A., 1943, III, 885.

Nutrition of populations. II. Protein nutrition of a rural population in Middle Tennessee. J. B. Youmans, E. W. Patton, W. R. Sutton, R. Kern, and R. Steinkamp (*Amer. J. Publ. Health*, 1943, 33, 955—964).—Frequent and severe deficiencies in protein intake especially in negroes and females were found in the 1200 persons examined. Hypoalbuminæmia was present in 10% of the people, and in 29% of coloured females over 16 years of age. No correlation was obtained between the intake of calories or protein and the serum-protein. C. J. C. B.

Biological value of dietary proteins. III. Severe nutritional disturbance of metabolism: prevention by cystine. A. Hock and H. Fink (*Z. physiol. Chem.*, 1943, 278, 136—142).—Rats on a diet in which 77% of the protein is derived from brewers' or wood-sugar yeast grow slowly and exhibit high mortality. Their livers (glycogen content 100 mg.-%) undergo pathological changes. Normal growth and mortality are restored by replacing half of the yeast-protein by animal protein. The same end is achieved by supplementing the diet with 0.2% of L-cystine. Since other cystine-deficient proteins, e.g., casein, behave like yeast-protein, the metabolic disturbance is due to cystine deficiency. W. McC.

Effect of high-protein diets on size and activity of adrenal cortex in albino rat. Effect of diet in rats on adrenal weights and on survival following adrenalectomy.—See A., 1943, III, 883.

Rôle of dietary protein in hæmoglobin formation. A. U. Orten and J. M. Orten (*J. Nutrition*, 1943, 26, 21—31).—Low-protein (lactalbumin) diets produced a mild chronic anæmia in rats. The anæmia was rectified by an adequate supply of protein administered without alteration in mineral or vitamin content or calorific val. of the diet. In low-protein animals hæmoglobin formation was not improved by an increased intake of calories or Fe. Adequate dietary protein is necessary for normal production of hæmoglobin. A. G. P.

Amino-acids required for growth in mice and the availability of their optical isomerides. C. D. Bauer and C. F. Berg (*J. Nutrition*, 1943, 26, 51—63).—Moderate growth of mice occurred when 20 purified amino-acids were used as protein sources. Both optical forms of methionine and phenylalanine, but only the natural forms of valine, leucine, isoleucine, and threonine, were utilised. Omission of arginine did not affect growth rates; mice probably synthesise arginine fairly rapidly. Probably none of the above-named acids nor lysine, histidine, or tryptophan is absolutely indispensable for mice. A. G. P.

Effect of tryptophan deficiency on reproduction. A. A. Albanese, R. McI. Randall, and L. E. Holt, jun. (*Science*, 1943, 97, 312—313).—9 female rats, given a tryptophan-free diet *ad lib.* immediately after

mating, all lost wt., failed to produce litters, and developed symptoms of tryptophan deficiency (alopecia, corneal vascularisation) much earlier than unmated rats. The embryos were normal at the 9th day of gestation, but almost completely resorbed by the 14th day. The rat's store of tryptophan is probably exhausted in about 10 days. E. R. R.

Inherited differences in choline requirement of rats. R. W. Engel (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 281—282).—In 2 strains of rats, developed by selection, mortality was twice as great in one as in the other on the same choline intake. V. J. W.

Utilisation of *d*-glucono- δ -lactone by the young white rat. R. Eyles and H. B. Lewis (*J. Nutrition*, 1943, 26, 309—317).—The growth of young rats on a diet with inadequate caloric val. as a limiting factor is increased by the addition of either glucose or the gluconolactone, these substances being equally effective in promoting growth. H. G. R.

Nutritive differences in rations containing unhydrogenated or hydrogenated fats as shown by rearing successive generations of rats. H. G. Miller (*J. Nutrition*, 1943, 26, 43—50).—The nutritive val. of a "sterility" ration (casein-dextrin-lard-cod-liver oil-minerals) for rats was not improved by substitution of soya-bean oil for the lard. Use of partly hydrogenated soya-bean or cottonseed oils instead of lard resulted in a marked improvement in the no. of young born the no. weaned, and in the breeding of successive generations. Hydrogenation does not destroy vitamin-E in vegetable oils. A. G. P.

Digestibility of higher saturated fatty acids and triglycerides. R. Hoagland and G. G. Snider (*J. Nutrition*, 1943, 26, 219—225).—Stearic and palmitic acids are incompletely absorbed by mature male rats when a fat mixture containing 5—25% of the acid in olive oil and constituting 5% of the diet is fed, the approx. digestive coeffs. being 9.4—21 and 23.8—39.6%. Myristic and lauric acids are practically 100% digestible at levels of 5—15% in the fat mixture but somewhat lower at 25%. Tristearin is poorly absorbed, the digestive coeff. being 6 and 8% at a level of 5 and 10% in the fat mixture, whereas the vals. for tripalmitin are 84 and 82%, and for trimyristin and trilaurin are 100%. H. G. R.

Production of fatty degeneration of heart muscle by a high-fat diet.—See A., 1943, III, 867.

Effect of simultaneous mineral and choline deficiencies on liver-fat.—See A., 1943, III, 814.

Nutritional iron deficiency anæmia in wartime.—See A., 1943, III, 862.

Nutritional anæmia in children and women: a wartime problem.—See A., 1943, III, 786.

Availability of calcium of milk. K. H. Coward, E. W. Kassner, and L. W. Waller (*Brit. Med. J.*, 1943, II, 39—40).—Batches of rats were fed on a diet supplemented with either milk or a mixture of Ca and PO₄ salts. From the comparison of the wts. and ash content of the bones in the two groups, it is concluded that Ca of milk is no more and no less easily available for calcification in growing rats than that of an inorg. salt mixture of Ca and P. I. C.

Effect of increasing calcium content of diet on rate of growth and length of life of unmated females. H. L. Campbell, C. S. Pearson, and H. C. Sherman (*J. Nutrition*, 1943, 26, 323—325).—A limited addition of Ca to a diet containing minimal adequate Ca results in a more rapid rate of growth and an increase of 8% in the length of life of unmated rats. H. G. R.

Calcium and phosphorus metabolism in the chick. I. Comparative effect of vitamin-D₂ and -D₃ and of dihydrotachysterol given orally and intramuscularly. E. W. McChesney (*J. Nutrition*, 1943, 26, 81—94).—In chicks the relative efficiency of vitamin-D₃: -D₂ was 35:1 and of dihydrotachysterol: -D₃, 4.5:1 (rat units). -D₂ administered intramuscularly in oil or propylene glycol was less effective than -D₃ given at the same unit level and induced a low mineral balance. Dihydrotachysterol given intramuscularly was less effective in relation to -D₃ than when given orally. In oral dosages -D₂ and -D₃ in amounts equiv. in antirachitic effect maintained normal Ca and P metabolism. Dihydrotachysterol in corresponding amounts failed to maintain normal serum-Ca levels or retention of minerals. Administration of small doses of -D₂ or dihydrotachysterol in oil weakened the chicks. -D₃ is utilised more effectively when administered intramuscularly in propylene glycol but less effectively in oil than when given orally in oil. A. G. P.

Symptoms of mineral deficiency in rat and mouse. M. E. Shills and E. V. McCollum (*J. Nutrition*, 1943, 26, 1—19).—Female rats and mice reared, from weaning, on a low-Mn diet ultimately produced non-viable young although able to rear foster-young. No abnormalities in the oestrous cycle or in behaviour towards young were apparent in Mn-deficient rats. Rats receiving Mn-deficient diets from weaning showed no decrease in growth rate, but the young, especially male, of rats placed on low-Mn diets in late pregnancy grew more slowly on Mn-deficient diets than did litter-mates receiving Mn. Increase in Ca and P contents of basal diets dimin-

ished the growth rates of first-generation males. Deficient males were sterile. A symptom of Mn deficiency characterised by loss of equilibrium and of co-ordination is described. Livers of deficient rats showed diminished arginase activity. A. G. P.

Vitamins.

Vitamins and physiological function. G. N. Jenkins and J. Yudkin (*Brit. Med. J.*, 1943, II, 265—266).—A group of 178 children aged 11—12 were examined after half of them had received vitamin supplements daily at school for one year. The supplements provided each school day were 5000 i.u. of vitamin-A, 1 mg. of -B₁, 25 mg. of -C, and 500 i.u. of -D. No difference was observed between the control group and the supplemented groups in resting pulse rate, vital capacity, breath-holding, or 40 mm. Hg endurance test. I. C.

Vitamins in dehydrated seeds and sprouts. P. R. Burkholder (*Science*, 1943, 97, 562—564).—Considerable increases in the contents of riboflavin, nicotinic acid, biotin, pantothenic acid, pyridoxine, folic acid, inositol, and thiamin during the germination of oats, wheat, barley, and maize are reported. E. R. R.

Causes in variation in vitamin content of plants grown for food.—See B., 1943, III, 289.

Influence of vitamins and coliform bacteria on sulphaguanidine tolerance by young chickens.—See A., 1943, III, 830.

Composition of sweat, with special reference to the vitamins.—See A., 1943, III, 817.

Vitamin-antivitamin. I. Reversible inhibition of dehydrogenases by removal of codehydrogenase.—See A., 1943, III, 839.

Levels of vitamin-A and -C nutrition in Glossop school children and effect of deficiencies on their physical condition. G. Kohn, E. H. M. Milligan, and J. F. Wilkinson (*Brit. Med. J.*, 1943, II, 477—481).—400 school children were divided into 2 groups: the vitamin group (receiving supplementary vitamins) and the control group. After 3 months all the children of the vitamin group were vitamin-C saturated and 72% of the control group were unsaturated: of these 36 showed a blood-C of 0.3 mg.-% after 6—7 months. Deficiency of -A was also limited to the control group. Children deficient in -A gained less wt. than the children of the vitamin group. The performance of the children deficient in -C and in -A + -C in the endurance test was worse at the end of the test period than at its beginning, and all groups compared with the vitamin group showed significant decrease in the total energy figures. Massive doses of -C to deficient boys did not improve the performance in the endurance test or strength test. The incidence of infection is higher in children deficient in -C and -A compared with the children of the vitamin group. I. C.

(A) **Factors influencing vitamin-A level in blood of rats. (B) Influence of vitamin-A on serum-lipins of normal and deficient rats.** H. W. Josephs (*Johns Hopkins Hosp. Bull.*, 1942, 71, 253—264, 264—281).—(A) Serum-vitamin-A is very const. in rats under wide variations of intake. The effect of recent ingestion on serum-A level is greater the higher the concn. of -A in the liver; except for this there is no evidence that the storage level has any influence on serum-A concn. When rats are placed on an -A-deficient diet at weaning the -A concn. of liver and blood falls and reaches depletion by the 20th day although clinical signs of depletion do not appear until at least a week later.

(B) The development of -A deficiency is associated with a gradual fall in serum-lipins which takes place between the disappearance of -A from the liver and blood and the appearance of clinical manifestations of deficiency. When deficient rats were given excessive doses of -A the increases in serum-A and -lipins were more pronounced than in normal animals. The rise in serum-lipins is thought to be a sp. effect of -A and the possible application to the determination of -A deficiency in man is discussed. T. F. D.

Effect of concentration on absorption of vitamin-A. A. G. Reifman, L. F. Hallman, and H. J. Deuel, jun. (*J. Nutrition*, 1943, 26, 33—42).—In rats the rate of absorption of vitamin-A was proportional to the concn. of -A in the food material. -A was not destroyed by intestinal bacteria in a 3-hr. period. No relationship was apparent between the absorption of -A and that of neutral fat. A. G. P.

Effect of phosphatides on utilisation of vitamin-A and carotene. C. A. Slanetz and A. Scharf (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 17—19).—Vitamin-A-depleted 60-g. rats, receiving 2 U.S.P. units of carotene daily, failed to grow unless soya-bean phosphatides were added to the diet to the extent of 1%. Some growth took place if cod-liver oil took the place of carotene but less than with carotene and phosphatides. Soya-bean oil had nearly as much effect as phosphatides. V. J. W.

Diet of hens and vitamin-A potency of their eggs. H. J. Almqvist, G. Mackinney, and E. Mecchi (*J. Biol. Chem.*, 1943, 150, 99—105).—Dietary carotene and vitamin-A (750—1667 i.u. per day) are deposited

in the egg with equal efficiency, mainly as -A (more than 125—470 i.u. per egg). R. L. E.

Vitamin-A absorption in infantile eczema. P. A. di Sant'Agnes and V. de P. Larkin (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 343—344).—Blood-concn. of vitamin-A after ingestion of a standard dose of halibut oil was lower in 4 infants with intractable eczema than in controls. V. J. W.

Minimum vitamin-A requirements in infants as determined by vitamin-A concentration in blood. J. M. Lewis and O. Bodansky (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 265—266; cf. A., 1942, III, 538).—In vitamin-A-deficient infants a daily intake of about 200 units of -A per kg. is needed to raise the plasma-concn. to normal val. of 45 units per c.c. V. J. W.

Plasma-vitamin-A. I. Determination of vitamin-A and carotene content of plasma for clinical and nutritional studies. A. F. Abt, H. C. S. Aron, J. F. Bimmerle, H. N. Bundesen, M. A. Delaney, H. J. Fagen, C. J. Farmer, O. C. Wenger, and J. L. White. II. **Relationship of plasma-vitamin-A to pregnancy and anaemia in syphilitic patients.** A. F. Abt, H. C. S. Aron, H. N. Bundesen, M. A. Delaney, C. J. Farmer, R. S. Greenebaum, O. C. Wenger, and J. L. White (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, 16, 241—245, 245—253).—I. See C., 1944, Part 1.

II. 996 determinations were made in 572 fasting syphilitics or sero-negative members of the family. Men had an average of 107 i.u. per 100 c.c. of plasma, non-pregnant women 94, pregnant women 76, children 70. There was a parallel relationship between blood-haemoglobin concn. and plasma-A in the groups of non-pregnant women and in children. A marked rise in plasma-A occurred in 13 out of 16 women after parturition, with unchanged dietary or environmental conditions. The average carotene vals. were highest in pregnant women with the lowest -A vals. Men with high -A levels had the lowest plasma-carotene concn.; pregnant women were intermediate. This inverse relationship does not necessarily hold for any particular subject. A. S.

Effectiveness of vitamin-A in treatment of defective colour vision.—See A., 1943, III, 804.

Degeneration and repair of rat retina in avitaminosis-A.—See A., 1943, III, 802.

Stability of carotene in acetone and petroleum ether extracts of green vegetables. I. Photochemical destruction of carotene in presence of chlorophyll. II. Stabilising effect of sodium cyanide.—See A., 1943, III, 855.

Carotene content of fresh and frozen green vegetables.—See B., 1943, III, 299.

Vitamin-B deficiency. A. G. Clarke and F. Prescott (*Brit. Med. J.*, 1943, II, 503—505).—17 cases of a deficiency of vitamin-B complex are reported. Mental symptoms were present (depression, psychoneurosis, anxiety, polyneuritis) and oral lesions were a regular feature (glossitis, angular stomatitis, and cheilosis). The condition is pptd. when physical or mental factors lead to loss of appetite or impaired absorption. Treatment included -B₁ (3—9 mg. daily) riboflavin (3—9 mg. daily), and nicotinic acid (100—500 mg. daily). All patients responded to treatment except two. I. C.

Hypochromic anaemia and vitamin-B deficiency.—See A., 1943, III, 862.

Relation of B-vitamins to ovarian function during experimental hyperthyroidism.—See A., 1943, III, 888.

B-vitamin requirements of Propionibacteria.—See A., 1943, III, 922.

B-vitamins in honey. G. Kitzes, H. A. Schuette, and C. A. Elvehjem (*J. Nutrition*, 1943, 26, 241—250).—Honey contains pantothenic acid 0.55, riboflavin 0.26, nicotinic acid 1.1, thiamin 0.044, pyridoxine 0.10, biotin 0.00066, and folic acid 0.03 µg. per g., considerable variation between the samples being observed. A decrease in the pantothenic acid content occurs on ageing. Pollen and royal jelly contain pantothenic acid 27.0, 320.0, riboflavin 16.7, 28.0, nicotinic acid 100, 111, thiamin 6, 18, pyridoxine 9, 10.2, biotin 0.25, 4.1 and folic acid 0 and 0.5 µg. per 100 g., respectively. It is suggested that the high biotin and pantothenic acid contents of royal jelly are connected with the metabolism of the young bee. H. G. R.

Mode of action of vitamin-B₁. E. Góth (*Schweiz. med. Wschr.*, 1942, 72, 1275—1277).—Beneficial results from aneurin administration can only be expected in cases of proved B₁-hypovitaminosis. A. S.

Action of vitamin-B₁ on carbohydrate metabolism. M. O. Saka (*Schweiz. med. Wschr.*, 1942, 72, 1327—1329).—The hyperglycaemia, following intravenous injection of a 25—30% glucose solution (1 g.-% glucose per kg. body-wt. in rabbits), is less marked and prolonged if, simultaneously, 10 mg. of aneurin are injected. A. S.

Effect of aneurin on urea synthesis. F. Leuthardt and B. Glasson (*Helv. Physiol. Pharm. Acta*, 1943, 1, C45—46).—The urea formation from NH₄Cl or glutamine, with or without addition of pyruvic acid, in vitamin-B₁-deficient rats is increased by administration of aneurin. A. S.

Relationship between vitamin-B₁ and anterior lobe of pituitary. M. Julesz (*Schweiz. med. Wschr.*, 1943, 73, 41—44).—Injections of vitamin-B₁ in 13 women, kept on a ketogenic diet or during the climacteric, suppressed or temporarily diminished urinary prolan-A excretion in 11 cases. -B₁ has no effect on prolan-A *in vitro*. -B₁ is beneficial in climacteric flushes. A. S.

Influence of thiamin on induced hyperthyroidism. R. D. Williams and E. C. Kendall (*Arch. intern. Med.*, 1943, 72, 185—195).—2 physically healthy women, maintained continuously on a basal diet providing only 0.22 mg. of thiamin per 1000 calories but adequate in all other respects, received large doses (0.5—0.6 g.) of desiccated thyroid gland for 241 days. Thiamin hydrochloride was liberally provided during the first period, of 22 days; it was restricted to 0.45 mg. per day during the second period of 136 days, and was provided in increasing amounts during the 3rd period of 81 days. The basal metabolic rate of each subject rose to +25 during the initial period of administration of thiamin and desiccated thyroid. It fell to -9 and +11 respectively, during the period of restriction of thiamin, but rose to +25 and +30 in the 3rd period, when thiamin hydrochloride was again provided. Throughout the period of administration of desiccated thyroid the concns. of pyruvic acid and lactic acid in the blood after administration of glucose were high, but they were higher during the period of restriction of thiamin. The thyroid hormone is thus less effective in promoting the metabolic activity of the organism in a state of thiamin deficiency. C. J. C. B.

Influence of hyperthyroidism on urinary excretion of thiamin and riboflavin.—See A., 1943, III, 881.

Influence of thiamin intake of the pig on the thiamin content of pork with observations on the riboflavin content of pork. R. C. Miller, J. W. Pence, R. A. Dutcher, P. T. Ziegler, and M. A. McCarty (*J. Nutrition*, 1943, 26, 261—274).—Growth and food consumption of pigs do not vary when the thiamin intake is varied between 7 and 29 mg. per day. Thiamin in pork muscle is increased by 100% when the intake is increased from 7 to 17 mg. and by 15—20% on the further increase to 25 mg. per day. The average vals. on the fresh basis for the shoulder, centre loin, and ham end of the loin on the low and high level of intake are 7.9 and 17.3, 9.5 and 23.1, and 10.3 and 23.9 µg. per g. The liver has a low val. compared with the muscle and there is some increase as the thiamin intake is increased but the chief deposition occurs in the muscle tissue where the accumulation is relatively rapid. The tissues have nearly reached saturation when the thiamin content of the feed is 5800 µg. per lb. The riboflavin content of the muscle is low, 2.2—3.5 µg. per g. on fresh muscle, whereas the liver contains 40.5—43.8 µg. per g. H. G. R.

Vitamin-B₁ content of canned pork.—See B., 1943, III, 299.

Urocanic acid decomposition and B₁-avitaminosis. S. Edlbacher and G. Viollier (*Helv. Physiol. Pharm. Acta*, 1943, 1, C43—44).—The activity of urocaninase on the formation of urocanic acid from histidine is increased in the liver of B₁-avitaminotic rats. After subcutaneous injection of 0.2 g. of l-histidine per 100 g. body wt. into normal rats, 20% of the histidine is excreted in urine within 24 hr. The histidinuria of B₁-deficient animals is diminished to 2—10%. A. S.

Vitamin-B₁ content of wheat germ and germ bread. E. C. G. Wilson (*New Zealand J. Sci. Tech.*, 1942, 24, B, 25—34).—The vitamin-B₁ content was determined by the rat-growth method with the following results: wheat germ 5.16, control white bread 0.12—0.30, "10%" germ bread 0.75, wholemeal bread 1.40 i.u. per g. J. E. P.

Distribution of vitamin-B₁-destructive enzyme in fish. H. F. Deutsch and A. D. Hasler (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 63—65).—Ground-up fish or fish viscera was either heated at 100° for 15 min. or untreated. It was then mixed with yeast and air-dried at room temp., the mixture being assayed for vitamin-B₁ after 12 hr. When 31 fresh-water fish were used unheated the vitamin was destroyed, but with 9 species of salt-water fish no destruction took place. V. J. W.

Assessment of level of nutrition. Y. L. Wang and L. J. Harris (*Brit. Med. J.*, 1943, II, 451—452).—Technical note on the determination of vitamin-B₁ in urine. I. C.

New principle for production of thiamin-deficient diets and for the biological assay of thiamin in foodstuffs. Combined determination of thiamin and nicotinic acid in foodstuffs by chemical methods.—See B., 1943, III, 300.

Determination of thiamin in blood.—See A., 1943, III, 866.

Riboflavin in blood regeneration. H. Spector, A. R. Maass, L. Michaud, C. A. Elvehjem, and E. B. Hart (*J. Biol. Chem.*, 1943, 150, 75—87).—Mild anaemia of a microcytic, hypochromic type developed in dogs on a synthetic diet deficient in riboflavin, and with slight bleeding anaemia was severe. Young and adult dogs need 30 and 15 µg. of riboflavin per kg. body wt. respectively to maintain appetite and body wt., and for good haemoglobin production and rapid recovery from anaemia. Adult dogs can maintain normal blood-

haemoglobin, with weekly bleeding, on 15 µg. of riboflavin daily, but growing dogs need more than 30 µg. under these conditions. A normocytic, hypochromic anaemia is produced by bleeding dogs on a diet containing riboflavin. R. L. E.

Riboflavin in soil. C. C. Carpenter (*Science*, 1943, 98, 109—110).—Riboflavin occurs in soil, and is taken up by some plants. The amount of vitamin appears to be related to the quantity of organic matter present. E. R. R.

Ocular criteria of deficiency of riboflavin.—See A., 1943, III, 876.

Riboflavin for rosacea keratitis, marginal corneal ulcers, and catarrhal corneal infiltrates.—See A., 1943, III, 799.

Synthesis of riboflavin by lactose-fermenting yeasts.—See A., 1943, III, 916.

Epidemic of beriberi amongst Somali troops in East Africa command. A. D. Charters (*Trans. R. Soc. Trop. Med. Hyg.*, 1943, 37, 55—62).—18 cases are reported. They had been living on a diet containing 244 i.u. of vitamin-B₁ per day for 2 months, followed by 309 i.u. for 4 months. C. J. C. B.

Skin changes in sprue syndrome. W. H. Kaufman and D. C. Smith (*J. Amer. Med. Assoc.*, 1943, 121, 168—173).—A review. C. A. K.

Highly purified rats in study of nicotinic acid deficiency. P. Handler (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 263—264).—Dogs on a nicotinic acid-deficient diet not containing maize meal developed in some cases a condition resembling black-tongue, but were not anuric or dehydrated. In other cases they had no symptoms of black-tongue but developed a fatal anaemia. It is suggested that maize may be the cause of the dehydration and haemoconcn. generally present in black-tongue and pellagra. V. J. W.

Effectiveness of a mixture of arginine, glycine, and cystine in the prevention of the so-called vitamin-B₁ deficiency in the chick. G. M. Briggs, jun., T. D. Luckey, C. A. Elvehjem, and E. B. Hart (*J. Biol. Chem.*, 1943, 150, 11—15; cf. A., 1934, 226).—The addition of arginine, glycine, and cystine to a diet deficient in vitamin-B₁ promotes growth and prevents a typical paralysis. Paralysis was prevented and there was some growth with arginine or glycine alone. R. L. E.

"Vitamin-M" factor. S. Saslaw, H. E. Wilson, C. A. Doan, and J. L. Schwab (*Science*, 1943, 97, 514—515).—In two experiments, monkeys (6 and 22) fed on vitamin-B-free diets supplemented by sets of 5 members of the B-complex (introduced by means of a stomach tube) all developed nutritional cytopenia. Controls on the same basal diet, supplemented by crude liver extract (administered subcutaneously), gained wt. and showed no deficiency symptoms in 6 months. Yeast residue containing, *inter alia*, folic acid had a similar effect to liver extract. "Vitamin-M" is apparently not identical with riboflavin, thiamin, nicotinic acid, pantothenic acid, glutamine, pimelic acid, choline, Na *p*-aminobenzoate, inositol, or pyridoxine. E. R. R.

Nature and properties of the fluorescent factor F₂. V. A. Najjar, D. B. M. Scott, and L. E. Holt, jun. (*Science*, 1943, 97, 537—538).—Preps. of F₂, 100 times as potent in fluorescent units as the original pernutrit eluates, have been obtained from human urine. The waxy, yellow-brown, final product is nicotinamide-free, but has similar biological properties. It is extracted by butanol from alkaline solutions of the urine of animals to which nicotinamide is not essential; it fluoresces in acid, neutral, and especially alkaline solutions; it oxidises slowly in air, more rapidly in presence of alkali and K₂Fe(CN)₆, the blue fluorescence being replaced irreversibly by the violet. Acetone and alkali produce an intense yellow colour with green fluorescence; the change is irreversible. Sulphanilic acid produces a red colour without fluorescence. F₂ is destroyed by HNO₃, and is not identical with cozymase, dihydrocozymase, deaminocozymase, nicotinamide nucleoside, or acetylnicotinamide. A dihydronicotinmethylamide, not yet identified, has very similar reactions and physical properties. E. R. R.

Probable identity of Najjar and Holt's fluorescent substance F₂. J. W. Huff and W. A. Perlzweig (*Science*, 1943, 97, 538—539).—Animals known to methylate nicotinamide excreted large amounts of F₂ after doses of nicotinamide. In rats on nicotinamide-free diet, F₂ and trigonelline excretion were closely parallel. Rabbits, which do not convert nicotinic acid into trigonelline, excreted no F₂ after a dose of 250 mg. of nicotinamide. The properties of nicotinmethylamide and F₂ are compared. Extraction of trigonelline from urine by hydrolysis to nicotinic acid gives in fact trigonelline + F₂. The picrate of F₂ (m.p. 189.5°, uncorr.) isolated from human urine did not depress the m.p. of synthetic nicotinmethylamide picrate. E. R. R.

Role of xanthurenic acid in tryptophan metabolism of pyridoxine-deficient rats.—See A., 1943, III, 827.

Influence of biotin on susceptibility to malaria. W. Trager (*J. Exp. Med.*, 1943, 77, 557—581).—Biotin-deficient chickens and ducks developed more severe infections with *Plasmodium lophurae* than non-deficient controls. A mild degree of biotin deficiency

increased the susceptibility to infection, but even extreme pantothenic acid deficiency was without effect. Biotin deficiency also increased the susceptibility of ducks to *P. cathemerium* infection. Administration of biotin to deficient animals lessened the severity of infection with *P. lophurae* but it had no antimalarial effect in animals kept on an adequate diet. The plasma- and red cell-biotin concn. in *P. lophurae* infected animals rose during the course of the infection, reached a peak when the no. of parasites was greatest and returned to normal as the infection subsided.

A. S.

Liberation of biotin from avidin-biotin complex. P. György and C. S. Rose (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 55—57).—Biotin was not liberated from avidin combination by pepsin, trypsin, pancreatin, or papain, or by incubation with liver, kidney, muscle, or blood. 10—20% was recovered by treatment with 0.45% H_2O_2 at pH 3.

V. J. W.

Rôle of "folic acid" and biotin in utilisation of pantothenic acid by rat. L. D. Wright and A. D. Welch (*Science*, 1943, 97, 426—427).—Addition of succinylsulphathiazole to highly purified diets containing all known essential dietary factors caused symptoms of severe pantothenic acid deficiency in rats, and reduced content of pantothenic acid in the liver. These symptoms are corr. by addition to the diets of cryst. biotin and "folic acid" concentrates. The utilisation of pantothenic acid depends on the availability of biotin and folic acid which would normally be supplied in the diet and also synthesised by intestinal bacteria. An explanation of the chromotrichial action of pantothenic acid, biotin, and *p*-aminobenzoic acid is offered.

E. R. R.

Synthetic biotin. S. A. Harris, D. E. Wolf, R. Mazingo, and K. Folkers (*Science*, 1943, 97, 447—448).—The physical properties and chemical analysis of a synthetic biotin are compared with those of natural biotin. The method of synthesis is not given.

E. R. R.

Biotin content of meat and meat products. B. S. Schweigert, E. Nielsen, J. M. McIntyre, and C. A. Elvehjem (*J. Nutrition*, 1943, 26, 65—71).—Among meat products examined by the *Lactobacillus casei* method, kidney and liver were the richest and heart pancreas and chicken meat were good sources of biotin. Ox spleen, lung, brain, and tongue were comparable with pork, beef, veal, and lamb muscle. After cooking an average of 77% of the biotin remained in the meat, 1—5% appearing in the dripping.

A. G. P.

Pantothenic acid requirements of hens fed a heated diet. M. B. Gillis, F. G. Heuser, and L. C. Norris (*J. Nutrition*, 1943, 26, 285—292).—Hens fed a diet consisting of heated foodstuffs supplemented with known necessary minerals and vitamins require 1200—1700 μ g. of pantothenic acid per 100 g. of food to maintain optimum reproduction. For egg production the val. is 700 μ g. and for maintenance of wt. and "livability" it is 200 μ g. The diet used (heated cereals and alcohol-sol. liver extract) is deficient in a factor for reproduction other than pantothenic acid but this is only detected after prolonged feeding.

H. G. R.

Production of pantothenic acid deficiency in mice with pantoyltaurine. E. E. Snell, L. Chan, S. Spiridanoff, E. L. Way, and C. D. Leake (*Science*, 1943, 97, 168).—Daily oral administration of pantoyltaurine to mice receiving a normally adequate supply of pantothenic acid produces typical deficiency symptoms after 3—4 weeks.

E. R. R.

Existence of an alkali-stable derivative of pantothenic acid in biological materials. A. L. Neal and F. M. Strong (*J. Amer. Chem. Soc.*, 1943, 65, 1659—1660).—Pantothenic acid in liver, yeast, "vitab," cheese, and eggs is accompanied by a trace to more than half its equiv. of an alkali-stable substance which is utilised in place of the acid by *L. casei* or, four times as efficiently, by the chick. The new substance is destroyed by clarase and so is probably a substitution product of the acid. It is adsorbed by C at pH 1, but in completely at pH 4.5 and not at pH 9. It is stable at pH 1 and 37° but not when heated with 0.5N-HCl at 15 lb. It is slowly extracted from water by ether and is pptd. by Pb acetate.

R. S. C.

Function of pantothenate in bacterial metabolism.—See A., 1943, III, 849.

Growth effects of α -methyl homologues of pantothenic acid and β -alanine.—See A., 1943, III, 847.

Dietary requirements for fertility and lactation. XXXI. Rôle of *p*-aminobenzoic acid and inositol in lactation and growth of the albino rat. B. Sure (*J. Nutrition*, 1943, 26, 275—283).—*p*-Aminobenzoic acid has a favourable and inositol an injurious effect (counteracted by *p*-aminobenzoic acid) on lactation of the albino rat. No additional growth is produced in rats on a diet supplemented with the vitamin-B complex by the addition of *p*-aminobenzoic acid or inositol.

H. G. R.

Effect of *p*-aminobenzoic acid and calcium pantothenate on grey hair of man. H. Brandaleone, E. Main, and J. M. Steele (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 47—49).—Some restoration of colour took place in 2 out of 19 elderly grey-haired patients when they had 200 mg. of *p*-aminobenzoic acid, 100 mg. of Ca pantothenate, and 50 g. of yeast daily for 8 months.

V. J. W.

Biotin deficiency in rats fed purified diets containing succinylsulphathiazole and *p*-aminobenzoic acid.—See A., 1943, III, 830.

Detoxication of substituted phenylstibonate in rat by administration of *p*-aminobenzoic acid.—See A., 1943, III, 835.

Effect of purines on sensitivity of *Acetobacter suboxydans* assay for *p*-aminobenzoic acid.—See A., 1943, III, 847.

Anti-acrodynic potency of seed oils. D. S. Anthony F. W. Quackenbush, A. Ihde, and H. Steenbock (*J. Nutrition*, 1943, 26, 303—308).—The anti-acrodynic potency of seed oils is in direct proportion to their linoleic acid content unless they contain considerable amounts of linolenic acid, when the curative effect is greatly reduced. In the absence of linolenic acid a daily dose equiv. to 12 mg. of linoleic acid is curative. The reduction in curative effect is exhibited by lipins other than linolenic acid.

H. G. R.

Isolation of anti-anæmia factor (vitamin-*B*₆) in crystalline form from liver. J. J. Piffner, S. B. Binkley, E. S. Bloom, R. A. Brown, O. D. Bird, A. D. Emmett, A. G. Hogan, and B. L. O'Dell (*Science*, 1943, 97, 404—405).—The pure, very active substance cryst. from water as thin yellow platelets, m.p. above 360°, charring above 250°, and containing C 50.57, H 4.78, and N 19.91%. The methyl ester is much less active. Evidence is given that the substance is identical with the "eluate factor" and "folic acid."

E. R. R.

Relation of milk, cholesterol, and oestrogens to cholic acid formation [and gizzard erosion] in chicks. H. J. Almquist, E. Mecchi, and F. H. Kratzer (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 296—297).—The protective action of milk against gizzard erosion (A., 1942, III, 41) is exerted by butter-milk, whey, or protein-free milk and resists boiling at pH 4—5. It is not possessed by oestrogens or cholesterol.

V. J. W.

Dietary factor in reproduction and lactation. M. B. Richards (*Brit. Med. J.*, 1943, II, 418—419).—Milk supplement added to the basal diet of rats increased the wt. of the young at weaning, that of the does after lactation, and the no. of young born alive per litter. Ca added to the basal diet also increases the no. of live young per litter but is less beneficial than milk on the weaning wt. Addition of aneurin was of doubtful val., but addition of Ca + aneurin reduced the % of stillborn and increased the wt. of the young at weaning and of the does after lactation. Addition of Ca + yeast or milk + Ca + yeast gave the most beneficial results on the young and does, increasing the no. and the wt. of young per litter more than any other dietary supplement. Ca + yeast also reduced the deaths during the suckling period more than Ca alone, aneurin, or Ca + aneurin. Application of these results to human diets is discussed.

I. C.

Inadequacy of 8 synthetic B vitamins for the nutrition of puppies. Unknown factor (factors) in yeast and probably liver. J. P. Lambooy and E. S. Nasset (*J. Nutrition*, 1943, 26, 293—302).—Puppies receiving the synthetic vitamin-B complex containing thiamin, riboflavin, nicotinic acid, Ca *d*-pantothenate, pyridoxine, choline, inositol, and *p*-aminobenzoic acid developed varying degrees of dermatitis, loss of hair, and general unhealthy skin and coat in 75—125 days and died in 100—150 days. The deficiency does not appear if whole yeast or concentrates of yeast or liver are added.

H. G. R.

Pseudoscleroderma [cured by vitamins] R. B. McMillan (*Brit. Med. J.*, 1943, II, 229—230).—Case report; recovery on treatment with vitamin-C and nicotinic acid.

I. C.

Necrotic gingivitis [treatment; relation to vitamin-C deficiency].—See A., 1943, III, 908.

Results of feeding chloretone to bulls [increase in plasma-ascorbic acid].—See A., 1943, III, 833.

Blood-vitamin-C content of pregnant women.—See A., 1943, III, 866.

Effect of ions on catalytic autoxidation of ascorbic acid. L. Armentano (*Biochem. Z.*, 1941, 307, 270—277).—Cu⁺⁺ catalyses the autoxidation of aq. ascorbic acid, the rate of oxidation being proportional to the [Cu⁺⁺]. Low concns. of KCl, NaCl, and CaCl₂ accelerate but higher (e.g., 2M.) inhibit or prevent the autoxidation even when CuCl₂ is present. The effect is due to Cl⁻ since Na₂SO₄ and NaNO₃ have no anti-oxidative action.

W. McC.

Distribution of titratable ascorbic and dehydroascorbic acid in potatoes. W. Kröner and W. Volksen (*Biochem. Z.*, 1941, 307, 307—313).—The ascorbic acid content of potatoes (8 sorts examined) usually increases from the outer portion inwards, whilst with the dehydroascorbic acid content, the reverse is usually the case. Dehydroascorbic acid usually constitutes 15% of the combined ascorbic acid + dehydroascorbic acid val. and seldom exceeds 20%.

W. McC.

Prevalence of rickets in children between 2 and 14 years of age. R. H. Follis, jun., D. Jackson, M. M. Eliot, and E. A. Park (*Amer. J. Dis. Child.*, 1943, 66, 1—11).—46.5% of 230 children aged 2—14 years examined in consecutive autopsies showed rickets; in 23% the disease was slight, in 18.7% moderate, and in 4.8% advanced. In the white children the total prevalence was 43.6% and in the

negroes 48.5%. The prevalence of rickets among children dying of acute disease was greater than among those dying of chronic disease. The greatest prevalence of rickets was in December—February; the lowest, in September—November. (9 photomicrographs.)
C. J. C. B.

Toxicity of vitamins-D₂ and -D₃. A. Jung (*Schweiz. med. Wschr.*, 1943, 73, 17).—Highly conc. preps. of irradiated ergosterol have the same toxicity in rats as concentrates of vitamins-D₂ and -D₃. Females were more sensitive than males. The diet contained iodised NaCl; under these conditions high doses of -D had no activating effect on the thyroid. In young adrenalectomised rats, on a fat-containing diet, -D restored normal carbohydrate and PO₄ absorption from the intestine and urinary Cl⁻ excretion; normal growth occurred. -D had no effect if adrenalectomised rats were kept on a fat-free diet. Adrenalectomised rats are more sensitive to toxic doses of -D.
A. S.

Effect of cod-liver oil and rancidity on certain vitamin-E deficiency symptoms. H. Dam (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 285—287).—Symptoms denoting increased capillary permeability occur in vitamin-E-deficient chicks when their diet contains 5% of fresh or slightly rancid cod-liver oil, or lard, or fatty acids from linseed oil. They do not occur if the diet contains completely rancid cod-liver oil, or oleic acid, or no fat at all. They are therefore attributable to highly unsaturated fatty acids.
V. J. W.

Lipins of muscle and brain in rats deprived of tocopherol. M. R. Heinrich and H. A. Mattill (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 344—346).—Changes are in general similar to those reported by Morgulis *et al.* (A., 1938, III, 826) in the rabbit, but in rats, when dystrophy becomes severe, a fall in brain-lipins succeeds the earlier rise.
V. J. W.

Treatment of imminent and habitual abortion with corpus luteum hormone and vitamin-E.—See A., 1943, III, 888.

Wheat-germ oil [vitamin-E] in treatment of congenital non-obstructive hydrocephalus.—See A., 1943, III, 874.

Central nervous system in vitamin-E-deficient rats.—See A., 1943, III, 798.

Vitamin-E in lactogenesis.—See A., 1943, III, 811.

Further use of dihydrotachysterol (A.T. 10).—See A., 1943, III, 806.

Vitamin-K and prothrombin levels with special reference to the influence of age. F. W. Stamler, R. T. Tidrick, and E. D. Warner (*J. Nutrition*, 1943, 26, 95—103).—White Leghorn chicks require 1.0—2.0 µg. of 2-methyl-1:4-naphthaquinone daily to maintain normal prothrombin levels. Only $\frac{1}{2}$ of this amount is necessary for protection against hæmorrhagic manifestations. The daily -K requirement of chicks does not increase with age.
A. G. P.

Antihæmorrhagic vitamin effect of honey. A. E. Vivino, M. H. Haydak, L. S. Palmer, and M. C. Tanquary (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 9—11).—1 g. of honey has the antihæmorrhagic activity of 0.25 µg. of 2-methyl-1:4-naphthaquinone provided that they are given with food or with 2 drops of ethyl laurate to facilitate absorption. In water, and without food, both lose most of their effect.
V. J. W.

See also Section XIX, Metabolism.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Minimum base value of heat production in animals. Energy metabolism of cattle. E. B. Forbes and R. W. Swift [with J. W. Bratzler, A. Black, W. W. Wainio, L. F. Marcy, E. J. Thacker, and C. E. French] (*Pennsylvania Agric. Exp. Sta. Bull.*, 1941, No. 416, 26 pp.).—Heat production during fasting was divided between net energy for internal work and energy expenses of utilisation of the body nutrients catabolised. The expense of this transformation was measured by the increase in heat production caused by feeding the oleo oil and dried beef muscle to steers in energy equilibrium. The net energy of the body nutrients catabolised during fasting, *i.e.*, heat production less the energy expense of utilisation of fasting nutrients, is called the theoretical min. base val. of heat production. This val. was 14.4 during fasting with equal times standing and lying, and 12.6 kg.-cal. per kg. live wt. in the lying position alone.
A. A. M.

Depression of metabolic rate by hypophysis of rats treated with thyroid.—See A., 1943, III, 808.

Influence of temperature and season on oxygen consumption of sand-crab, *Emerita talpoida*, Say. G. A. Edwards and L. Irving (*J. Cell. Comp. Physiol.*, 1943, 21, 169—182).—O₂ consumption increased with temp. up to a max. of 23° in winter and slightly more in summer. Death occurred at 27° in winter and 37° in summer. O₂ consumption per g. and effect of temp. were greater in small than in large crabs. In winter O₂ consumption was greater than in summer at all temp. below 20°, and at 3° was about 4 times as great.
V. J. W.

Influence of season and temperature on oxygen consumption of beach-flea, *Talorchestia megalopthalma*. G. A. Edwards and L. Irving (*J. Cell. Comp. Physiol.*, 1943, 21, 183—189).—O₂ consumption increases with temp. up to 32° and then falls till death at 43°. It is higher per g. in small animals than in large ones, but is the same in summer as in winter at equal temp.
V. J. W.

Organ metabolism and age in rats. W. Schuler (*Helv. Physiol. Pharm. Acta*, 1943, 1, 105—112).—The ratio of O₂ uptake in glucose-free to that in glucose-containing Warburg-Ringer's solution is typical for each kind of tissue. This relationship in the rat's thyroid, testis, and seminal vesicle is reversed with increasing age.
A. S.

Alterations in biological oxidation in thyrotoxicosis; thiamin metabolism. R. H. Williams, E. Egana, P. Robinson, S. P. Asper, and C. Dutoit (*Arch. intern. Med.*, 1943, 72, 363—371).—In most of 40 unselected thyrotoxic subjects, free thiamin and diphosphothiamin were below normal in blood; pyruvic acid was elevated. In 5 or 7 of these patients, blood-lactic acid was elevated. The thiamin deficiency was attributed to loss of this substance in the stools, sweat, and urine, as well as to the excessive combustion of food. Thyrotoxic patients excrete large amounts of thiamin in the urine in spite of a blood deficiency owing partly to the diuresis. Thyrotoxic subjects may be unable to store as much thiamin as normal subjects, because of the often coexisting hepatic and muscular disease. There was no impairment of thiamin phosphorylation. For 4 hr. after intravenous injection of 50 g. of glucose or 5 g. of Na pyruvate, blood-pyruvic and -lactic acid remained higher in thyrotoxic than in normal subjects. The response of the blood-thiamin and -diphosphothiamin varied, but these substances were generally lower in thyrotoxic subjects. Administration of thiamin hydrochloride was of val. in the treatment of thyrotoxicosis.
C. J. C. B.

Respiration of silver fox sperm.—See A., 1943, III, 890.

Determination of reaction, titration curve, and carbonic acid-binding curve of tissues. F. Leuthardt (*Biochem. Z.*, 1940, 306, 399—421).—Post mortem changes in reaction (production of acid) are prevented by rapid denaturation by heat and account is taken of changes in water content. Liver and sarcoma are more acid than blood or erythrocytes at the same CO₂ tension and the ratio of the HCO₃⁻ concn. in tissue to that in serum is less in liver than in erythrocytes and probably still less in sarcoma. Curves showing the relationship between the amount of base bound by protein of isolated tissue, CO₂ tension, and pH are given but these curves give no indication of the actual distribution of HCO₃⁻ between blood and tissues. The active metabolism of tissues, production in them of much CO₂ and acid, and the impossibility of inhibiting metabolism without upsetting conditions necessary for establishment of equilibrium render accurate measurement of reaction difficult. The CO₂ concn. is not uniform throughout the cell, being higher in the nucleus than in the intracellular fluid. Necrosis of tissues is preceded by autolysis which leads to localised over-acidification and hence to irreversible changes. In tissues (*e.g.*, tumour) where circulation is poor, over-acidification readily occurs and favours or initiates necrosis. The necrosis of liver resulting from protein-free diet is possibly due to the following series of changes: decrease in protein content of cells → increase in water content → decreased buffering and lowering of pH → localised over-acidification → autolysis → necrosis. Localised over-acidification also occurs physiologically in tissues (*e.g.*, in working muscle) and to a smaller extent in blood. (See also C., 1944, Part 1.)
W. McC.

Pyruvic acid metabolism in brain. P. E. Simola and H. Alapeus (*Z. physiol. Chem.*, 1943, 278, 57—91).—In brain pulp (ox) consumption of added Na pyruvate is greater in presence than in absence of O₂. Of the pyruvate consumed 23% is converted into lactic acid aerobically and 42% anaerobically. Under both conditions, α-ketoglutaric acid equiv. to approx. 17% of the pyruvate consumed is obtained. Possibly a small proportion of succinic acid is also produced but little or no fumaric, formic, malic, or oxaloacetic acid. Citric acid is produced in small proportion aerobically but not anaerobically. Volatile acid (calc. as acetic acid) produced accounts for 17% anaerobically and 6% aerobically of the pyruvate consumed, the anaerobic val. not being increased by addition of methylene-blue. Alanine, like α-ketoglutaric acid, presumably derived from the glutamic acid present to the extent of 40—60 mg.-%, is also produced, the aerobic and anaerobic vals. being 16 and 18% respectively of the pyruvate consumed. Possibly, in the animal organism, pyruvate is directly converted into dicarboxylic acid in some way other than those so far suggested. The salicylaldehyde method of determining pyruvate is superior to the bisulphite method and yields higher results.
W. McC.

Effect of oxygen tension on metabolism of cerebral cortex, medulla, and spinal cord.—See A., 1943, III, 796.

Experimental alcaptonuria in white rats. F. Lanyar (*Z. physiol. Chem.*, 1943, 278, 155—164; cf. A., 1943, III, 260).—*l*-Tyrosine (daily dose not less than 0.4 g. per 100 g.) and *l*-phenylalanine administered orally or (less effectively) subcutaneously produce alcaptonuria intra a period which depends on the dose and the

individual rat. *d*-Phenylalanine produces no alcaptonuria and *dl*-tyrosine produces it only when the dose is high. When administration of amino-acid ceases, excretion of homogentisic acid also ceases. The urinary concn. of the acid reaches 0.5%. W. McC.

Defect in metabolism of tyrosine and phenylalanine in premature infants. III. Demonstration of irreversible conversion of phenylalanine into tyrosine in human organism. S. Z. Levine, M. Dann, and E. Marples (*J. clin. Invest.*, 1943, 22, 551—562).—10 healthy male infants, 8 premature and 2 full-term, were observed while on high-protein, vitamin-C-free diets, containing 0.5 g. of tyrosine + phenylalanine per kg. of body wt. Various dosages of extra *l*-tyrosine and *dl*-phenylalanine were administered in pure form and the urine was quantitatively collected and analysed for these aromatic amino-acids and their derivatives. In both premature and full-term infants, repeated ingestion of *dl*-phenylalanine also resulted in the appearance in the urine of *l*-tyrosine and its derivatives, *p*-hydroxyphenyl-pyruvic acid and *-lactic acid*, in large amounts. When the daily dosage of phenylalanine was 1.0 g. per kg., the excretion of tyrosine exceeded its solubility in the urine so that gross crystals were voided. The sum of the aromatic amino-acids and their derivatives recovered in the urine, above the amounts present in control periods, represented 44—73% of the extra phenylalanine ingested. This reaction is irreversible, as shown by absence of excretion of phenylalanine and phenylpyruvic acid after equiv. *l*-tyrosine ingestion though tyrosine and its keto- and hydroxy-derivatives accounted for 40—80% of the ingested amino-acid. In man (as in lower animals) *l*-tyrosine in the diet cannot replace *dl*-phenylalanine which, in animals, is essential. No phenylalanine was lost in the faeces, but 18—22% of ingested tyrosine was so excreted. Even with large repeated dosage of the amino-acids, babies (unlike guinea-pigs and rats) did not excrete homogentisic acid. *l*-Ascorbic acid, previously shown to diminish or abolish the excretion of aromatic metabolites after single dosage of either amino-acid, was, except in 1 infant, ineffective when jointly given with tyrosine or phenylalanine. The usual vitamin effect reappeared promptly on cessation of amino-acid ingestion, as evidenced by rapid disappearance of the derivatives from the urine. C. J. C. B.

Oxidative decomposition of histidine by fresh rat liver extracts. S. Edlbacher and H. Grauer (*Helv. Physiol. Pharm. Acta*, 1943, 1, C41—42).—Liver extracts can be inactivated by dialysis for 5 hr.; they can be reactivated by liver and boiled yeast juice. Oxidative histidine decomp. is not due to the Krebs-Warburg *d*-amino-acid oxidase or the Lang *l*-phenylalanine oxidase but to an unknown histidine oxidase; its co-enzyme may be an adenine nucleotide. This view is supported by experiments with *l*- and *d*-histidine, the strong inhibition by HCN, and the moderate acceleration of oxidation by As₂O₃. A. S.

Clinical use of amino-acids to maintain nitrogen equilibrium. S. S. Altshuler, M. Sahyun, H. Schneider, and D. Satriano (*J. Amer. Med. Assoc.*, 1943, 121, 163—167).—Solutions of amino-acids were given as the only source of N to patients before and after operations. They stimulate the healing of refractory wounds and, during the period of administration, diminish the symptoms of muscular dystrophies. Oral, intravenous, or intrasternal administration was equally effective. C. A. K.

Metabolism of amino-acids and carbohydrate during hæmorrhagic shock in rats. See A., 1943, III, 791.

Mode of excretion of creatine and creatine metabolism in thyroid disease. N. A. Tierney and J. P. Peters (*J. clin. Invest.*, 1943, 22, 595—602).—In males, serum-creatinine rose little after administration of creatine, and creatinuria was min. In women, even if post-absorptive serum-creatinine was low and creatinuria lacking, administration of creatine induced a greater rise of serum-creatinine and more creatinuria than it did in males. In hyperthyroidism, postabsorptive serum-creatinine was usually high and attended by creatinuria. Alimentary creatinæmia and creatinuria were exaggerated. I therapy restored these reactions to normal. Creatine is completely reabsorbed by the renal tubules when its serum concn. is less than 0.5 mg.-%. Above this, the clearance of creatine rises as its concn. in the serum increases. C. J. C. B.

Formation of phospholipin by the hepatectomised dog as measured with radioactive phosphorus. I. Site of formation of plasma-phospholipins. M. C. Fishler, C. Entenman, M. L. Montgomery, and I. L. Chaikoff (*J. Biol. Chem.*, 1943, 150, 47—55).—Inorg. ³²P was injected into normal and hepatectomised dogs, and its distribution in the phospholipins observed after 6—98 hr. New phospholipin appearing in plasma is greatly reduced by hepatectomy, but that in kidney and small intestine remains normal. Phospholipin is synthesised in these organs, but only that formed in the liver is available to the plasma. R. L. E.

Formation of oleic acid in organism compared with formation of saturated fatty acids. F. Bullet and K. Bernhard (*Helv. Physiol. Pharm. Acta*, 1943, 1, C39—41).—Rats were kept on fat-free bread and water containing 5% of D. D₂O was also injected subcutaneously. Saturated and unsaturated fatty acids were obtained from liver, kidneys, and intestines after 3—21 days. Linoleic and

linolenic acids and oleic acid, the last named as amide of *p*-aminoazobenzene, were obtained. The D content of oleic acid was in all cases only 40% of that of palmitic and stearic acid. A. S.

Metabolic studies in patients with gastro-intestinal cancer. Fat metabolism, a method of study.—See A., 1943, III, 814.

Hand-Schüller-Christian disease (idiopathic xanthomatosis). J. Tucker (*Cleveland Clin. Quart.*, 1943, 10, 55—60).—Report of a case in a girl of 2½ years. X-Ray therapy caused extensive healing of the bony defects. The diabetes insipidus is controlled by 2 weekly injections of 1 c.c. of pitressin tannate. A. S.

Amyloidosis in chronic atrophic arthritis. W. M. Solomon (*Ann. int. Med.*, 1943, 18, 846—850).—Amyloidosis of the spleen, liver, kidneys, and adrenal glands was found in a case of atrophic arthritis. A. S.

Effect of vitamin-D on glucose-tolerance curve in man. L. Laszt (*Helv. Physiol. Pharm. Acta*, 1943, 1, C44—45).—The blood-sugar curve in normal subjects after ingestion of 60 g. of glucose reaches its max. and returns to normal more rapidly following administration of vitamin-D, owing to accelerated sugar absorption from the intestines. A. S.

Comparison of metabolic effects of isocaloric meals of varying compositions, with special reference to prevention of postprandial hypoglycæmic symptoms. G. W. Thorn, J. T. Quinby, and M. Clinton, jun. (*Ann. int. Med.*, 1943, 18, 913—919).—Ingestion of a breakfast high in carbohydrates and low in proteins and fats in a normal subject was followed by hypoglycæmic symptoms in 1—2 hr. The onset of hypoglycæmic symptoms was delayed by an isocaloric breakfast high in fat and low in carbohydrate and protein. No hypoglycæmia occurred after a meal high in protein and low in fat and carbohydrate. The high-protein breakfast was followed by a sustained increase in metabolic rate. There was a transient rise followed by a fall of metabolic rate below the basal level after the high-carbohydrate breakfast; the high-fat meal did not produce significant changes in metabolic level. A. S.

Sugar alcohols. XXIV. Metabolism of sorbitol in diabetes. F. W. Ellis and J. C. Krantz, jun. (*Ann. int. Med.*, 1943, 18, 792—796).—Oral administration of 50 g. of sorbitol did not affect the blood-sugar level or the R.Q. in 13 cases of mild or moderately severe diabetes mellitus. A. S.

Metabolic changes in patient with Addison's disease following onset of diabetes mellitus.—See A., 1943, III, 885.

Carbohydrate metabolism and acid formation in fertilisation of sea-urchin ova.—See A., 1943, III, 887.

Excretion of keto-acids and hydroxyphenyl compounds in pernicious anæmia.—See A., 1943, III, 786.

Seasonal and annual changes in calcium metabolism of man. R. A. McCance and E. M. Widdowson (*J. Physiol.*, 1943, 102, 42—49).—Three out of 6 persons absorbed Ca better during July and August than in February and March. Two showed no change and one was doubtful. Five were observed in successive years, and all absorbed better in 1940 than in 1941; continuation of the experiment in two suggests better absorption in 1942 than in 1941. All changes in absorption were accompanied by corresponding changes in urinary excretion. Mg absorption and excretion remained const., thus excluding non-sp. changes in the gut. The seasonal drop in Ca absorption was not corr. by vitamin-D, and a variable sensitivity of the body to this substance is postulated. W. H. N.

Potassium metabolism. G. Schönholzer (*Schweiz. med. Wschr.*, 1942, 72, 1295—1298).—A lecture; with special emphasis on the relationship of K and carbohydrate metabolism. A. S.

Potassium and other ions in phosphorylation of the adenylic system.—See A., 1943, III, 916.

Detoxication of terpenes by sheep. J. M. Harvey (*Univ. Queensland Papers, Dept. Chem.*, 1942, 1, No. 23, 10 pp.; cf. Fromm and Hildebrandt, A., 1902, ii, 159).—After administration of 5 ml. of *p*-cymene, the urine yields cumic acid. Similarly, phellandric acid, *p*-cymene, carvotanacetone, and, possibly, phellandrene are found in the urine after administration of 10 ml. of *α*-phellandrene, and thymol is found after that of 10 ml. of piperitone. In each case, none of the unchanged substance is found in the faeces. *α*-Pinene causes gross albuminuria and has toxic action on liver and kidneys. W. McC.

Comparison of metabolism of tumours of liver and skin with that of tissue of origin.—See A., 1943, III, 818.

Metabolism of Yale carcinoma. Metabolic studies in patients with cancer of the gastrointestinal tract. XVII. Conjugation of phenols. See A., 1943, III, 897.

Effect of administration of thyroid, 2 : 4-dinitrophenol, and insulin on ascorbic acid metabolism.—See A., 1943, III, 902.

Influence of low concentrations of cocaine on metabolism of phenol.—See A., 1943, III, 909.

Metabolism of 3 : 4-benzpyrene in mice and rats.—See A., 1943, III, 896.

Metabolic effects produced by certain aromatic diamidines.—See A., 1943, III, 908.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Penicillin: a review. O. E. Hepler and A. Snow (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, 17, 218—228). A. S.

Microbiological aspects of penicillin. I. Methods of assay.—See C., 1944, Part I.

Excretion of penicillin in man. C. H. Rammelkamp and S. E. Bradley (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 30—32).—Renal excretion of penicillin is delayed and blood-concn. increased by simultaneous injection of diodrast. Total excreted is reduced from 57.2 to 32% of dose. V. J. W.

Development of resistance to penicillin by pneumococci. L. H. Schmidt and C. L. Sesler (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 353—357).—Two resistant strains were developed by serial passage through penicillin-treated mice. Resistance differed in the 2 strains, and in one of them it was not impaired by 30 serial passages through normal mice. It was accompanied by resistance *in vitro* but not by any change in reaction to sulphonamides. V. J. W.

Penicillin in treatment of experimental *Cl. welchii* infection. L. R. Hac and A. C. Hubert (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 61—62).—A simultaneous injection of 50 units of penicillin protects 98% of mice against lethal doses of *Cl. welchii*. Delay up to 3 hr. has very little effect and repeated small doses are as good as one large one. V. J. W.

Sulphonamides in treatment of *Cl. welchii* infection. L. R. Hac and A. C. Hubert (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 58—60).—Subcutaneous injection of a suspension of sulphathiazole or sulphadiazine in honey, immediately following inoculation, protected 50% of mice against lethal doses of *Cl. welchii*. 1 mg. was as effective as 50 mg. and any delay greatly reduced therapeutic efficiency. Sulphanilamide gave very little protection. V. J. W.

Ultra-violet irradiation product of thiazole: fluorochrome. W. H. Schopfer (*Helv. Physiol. Pharm. Acta*, 1943, 1, C49—50).—Fluorochrome (4-methyl-5- β -hydroxyethylthiazole), obtained by exposure of 1% thiazole solutions to ultra-violet radiation, is rapidly absorbed by the cells of *Allium*, *Triticum vulgare*, and *Zea mays*. The cytoplasm is intensely fluorescent. A. S.

Mechanism of sulphanilamide action and its interaction with *p*-aminobenzoic acid. H. C. Eyster (*J. Cell. Comp. Physiol.*, 1943, 21, 191—198).—Sulphanilamide decreases the adsorptive capacity of charcoal for methylene-blue (A., 1943, III, 273) and acts on bacteria by decreasing their capacity to adsorb nutrients. *p*-Aminobenzoic acid also hinders adsorption but antagonises anti-adsorptive action of sulphanilamide, the extent varying with concns. of the two drugs. 0.1% sulphanilamide is neutralised by 0.0275% of *p*-aminobenzoic acid. Larger amounts of the latter increase the activity of the sulphanilamide. V. J. W.

Excretion of sulphanilamide and sulphapyridine in human bile. W. W. Spink, G. S. Bergh, and J. Jermsta (*Surgery*, 1941, 9, 853—862).—The concn. of sulphanilamide and sulphapyridine was determined in the bile of patients several months after cholecystectomy and choledochostomy. Administration of an initial dose of 4 g., followed by 1 g. every 4 hr., showed total concns. in the bile half that in the blood in the case of sulphanilamide, but concn. of sulphapyridine in bile was sometimes higher than in the blood. In both cases the proportion of acetylated compound was lower in the bile. Acetylsulphanilamide given to patients resulted in lower concns. of the conjugated compound in the bile than in the blood; free sulphanilamide was present in both blood and bile. P. C. W.

Excretion of sulphanilamides in breast milk. G. Rieben and J. Drucey (*Schweiz. med. Wschr.*, 1942, 72, 1376—1379).—The milk concn. of free sulphathiazole was 0.5—1.5 mg.-% at a daily intake of 3 g. of the drug, and 1—2 mg.-% with 6 g. per day. The blood concn. was 2—3 times that of the milk. The infants received in the milk up to 4 mg. of the drug per day. The mothers received the drug for 5 days; in that period, no untoward effects on the infants were observed. A. S.

Hæmolytic streptococcus meningitis in infants under 3 months of age (treatment with sulphanilamide). H. Gibel and A. M. Litvak (*Amer. J. Dis. Child.*, 1943, 66, 43—48).—A review, and report of a case with recovery after sulphanilamide. C. J. C. B.

Chemotherapy in childhood infections. A. Kanof, I. Leber, and B. Kramer (*J. Amer. Med. Assoc.*, 1943, 121, 11—17).—A review of the use of sulphonamides in various infections. C. A. K.

Prophylactic use of sulphanilamide in children with rheumatic heart disease. C. R. Messeloff and M. H. Robbins (*J. Lab. clin. Med.*, 1943, 28, 1323—1327).—Sulphanilamide in daily doses of 1.2 g. administered to 25 ambulatory rheumatic children aged 6—14 years did not prevent rheumatic recrudescences. C. J. C. B.

Pneumonia treated with sulphamethazine. B. A. Peters and M. L. Easby (*Brit. Med. J.*, 1943, II, 230—231).—A series of 77 cases of pneumonia treated with sulphamethazine is reported, with a death rate of just over 4%. The drug is well tolerated at all ages, and has few toxic effects, especially in middle-aged and elderly patients. I. C.

Treatment of pneumonia by chemotherapy. E. L. Bortz (*J. Amer. Med. Assoc.*, 1943, 121, 107—113).—A review of mortality statistics of pneumonia and the influence of sulphonamides. C. A. K.

Sulphonamides in pneumonia. H. F. Flippin, L. Schwartz, and A. H. Domm (*J. Amer. Med. Assoc.*, 1943, 121, 230—237).—1695 cases of pneumococcal pneumonia were treated with sulphapyridine, sulphathiazole, or sulphadiazine, and the respective mortality rates were 9.7, 12.1, and 10.3% as compared with 40.1% in 1904 cases seen before sulphonamides were used. Dosage, adequate fluid intake, and administration of alkalis are discussed. Sulphadiazine is the drug of choice. C. A. K.

Sulphadiazine administered alone and with antipneumococcus serum in treatment of pneumococcal pneumonia. N. H. Shackman and J. G. M. Bullowa (*Arch. intern. Med.*, 1943, 72, 329—345).—232 patients with pneumococcal pneumonia were treated with sulphadiazine; 70 received type-sp. rabbit antipneumococcus serum in addition. The gross mortality was 13.4% in the former group and 14.3% in the latter. Patients over 40 years of age treated late in the course of their illness were most numerous in both groups and had the highest mortality. 58% of the drug-treated patients and 43% of those in the other group had normal temp. within 48 hr. after the institution of therapy. C. J. C. B.

Status of sulphonamide therapy in malaria. C. E. Johnson, jun. (*Amer. J. med. Sci.*, 1943, 206, 327—336).—The literature is reviewed, 13 cases were treated by sulphadiazine. This drug was considered an effective anti-malarial agent. The relapse rate was 23% but the relapse was controlled in each case by further treatment. C. J. C. B.

Modern treatment of gonorrhœa. T. E. Osmond (*Brit. Med. J.*, 1943, II, 72—74).—A review. I. C.

Fever therapy. G. B. Tayloe (*Ann. int. Med.*, 1943, 18, 968—973).—Complete cure of chemotherapy-resistant gonorrhœa was obtained in 47 out of 51 cases with a combined sulphathiazole-hyperpyrexia (Kettering hypertherm) treatment. Complete success was obtained in several cases of gonorrhœal arthritis and ophthalmia. 4 patients suffering from neurosyphilis showed marked clinical improvement following hyperpyrexial treatment. A. S.

Sulphonamides in chancroidal infection. E. Greenwald (*J. Amer. Med. Assoc.*, 1943, 121, 9—11).—Sulphathiazole was safe and effective in 76 cases of chancroidal infection. C. A. K.

Treatment of acute appendicitis with sulphathiazole. J. L. Burckhardt (*Schweiz. med. Wschr.*, 1942, 72, 1277—1280).—6 cases are reported in children of acute appendicitis which cleared up following intramuscular injections of sulphathiazole. A. S.

Sulphathiazole treatment of acute otitis media. A. M. Hild (*Schweiz. med. Wschr.*, 1942, 72, 1410—1414).—Sulphathiazole treatment of acute otitis media was successful in 168 of 180 cases. The duration of the disease was shortened by $\frac{1}{3}$ and surgery was required $\frac{1}{4}$ as often as in controls. The average dose was 16 g. in adults, 9 g. in children under 12, and 6 g. under 2 years. There were no untoward effects. Chemotherapy was most successful when commenced within 5 days of the onset of the disease. A. S.

Sulphanilamide therapy in pulmonary actinomycosis. G. R. Constam (*Schweiz. med. Wschr.*, 1943, 73, 9—10).—A severe case of pulmonary and pleural actinomycosis was cured after administration of a total dose of 45 g. of sulphanilamide. X-Ray, I, Au, vaccine, and sulphapyridine treatments had been unsuccessful. A. S.

Cure of pulmonary actinomycosis with fistula by sulphonamides. G. Fanconi (*Schweiz. med. Wschr.*, 1943, 73, 175—178).—The total dose given to a boy of 12 was 125 g. of sulphanilamide and 183 g. of sulphathiazole. A. S.

Actinomycosis of the tongue successfully treated by sulphonamides. A. McCloy (*Brit. Med. J.*, 1943, II, 106).—Case report. I. C.

Sodium sulphonamides given by hypodermoclysis. G. V. Taplin, E. A. Custer, and L. E. Young (*J. Amer. Med. Assoc.*, 1943, 121, 313—315).—The Na salts of sulphapyridine, sulphathiazole, and sulphadiazine were given subcutaneously in 0.4—0.8% solution to 160 patients with no local reactions. Blood concns. varied widely. Na sulphadiazine was the most convenient and 5 g. in 1000 c.c. gave adequate blood levels for about 20 hr. C. A. K.

Calcium salts of sulphadiazine and sulphathiazole, with particular reference to their subcutaneous administration. C. T. Nelson and W. W. Spink (*Amer. J. med. Sci.*, 1943, 206, 315—322).—Aq. solutions of Ca sulphadiazine may be administered subcutaneously or intravenously in concns. up to 4% with no ill-effects. The pattern of absorption and excretion of the drug as measured by the rise and fall of blood concn. does not differ from that following parenteral

administration of Na sulphadiazine. Ca sulphadiazine administered subcutaneously establishes and maintains adequate blood levels of drug in patients requiring parenteral chemotherapy. Aq. solutions of Ca sulphathiazole administered subcutaneously produce local inflammation. C. J. C. B.

Chemotherapy of infantile diarrhoea: comparison of sulphadiazine and sulphapyrazine. R. B. Tudor (*J. Pediat.*, 1943, 22, 652—654).—Sulphadiazine and sulphapyrazine were equally effective in the treatment of clinical bacillary dysentery and parenteral diarrhoea (*i.e.*, due to non-intestinal causes). Sulphapyrazine gave no toxic reactions in this series of 22 patients. C. J. C. B.

Chemotherapy of intestinal infections treated with sulphonamide compounds. A. C. Clay (*Brit. Med. J.*, 1943, II, 35—36).—In cases of bacillary dysentery, the stay in hospital and the no. of days during which the stools remained positive were reduced by half in the sulphaguanidine-treated cases as compared with those receiving no chemotherapy, except in the case of convalescent Sonne carriers. In the sulphanilamide-treated cases both the stay in hospital and the no. of days during which the stools remained positive were increased. 4 cases of gastroenteritis and 8 cases of paratyphoid-B were treated with sulphaguanidine without improvement. I. C.

Successful treatment of chronic parathyroid carrier with sulphaguanidine. H. Loewenthal and W. F. Corfield (*Brit. Med. J.*, 1943, II, 105—106).—Case report. I. C.

Absorption of sulphanilamide from burned surfaces. D. H. Hooker and C. R. Lam (*Surgery*, 1941, 9, 534—537).—Sulphanilamide (30—60 g.) was rapidly absorbed from burned surfaces and the blood-sulphanilamide concn. may rise to 7—35 mg.-%. P. C. W.

Value of local implantation of crystalline sulphanilamide about gastrointestinal anastomoses in dogs. R. L. Varco, L. J. Hay, and B. Stevens (*Surgery*, 1941, 9, 863—870).—Dusting gastrointestinal suture lines in dogs with cryst. sulphanilamide promoted healing by local bacteriostasis and inhibition of fibrinolysis. P. C. W.

Local oral medication with sulphanilamide in lozenge form. P. Garson (*Brit. Med. J.*, 1943, II, 452—454).—Sulphanilamide, incorporated into lozenges, was beneficial in the treatment and prophylaxis of tonsillitis and influenza. I. C.

Use of sulphathiazole gauze. W. Stähli (*Schweiz. med. Wschr.*, 1942, 72, 1436—1438).—Good results in the treatment of wounds were obtained with a gauze containing 10% of sulphathiazole. A. S.

Prophylaxis of post-operative cystitis. C. Brunner (*Schweiz. med. Wschr.*, 1943, 73, 173—175).—Cystitis in patients with permanent catheter (up to 1 week), following severe gynaecological or intra-abdominal operations, was prevented by prophylactic administration of sulphathiazole. A. S.

Sulphonamides and wound infection. P. H. Long (*J. Amer. Med. Assoc.*, 1943, 121, 303—307).—A review. C. A. K.

Intestinal flora of rats on purified diets containing sulphonamides. O. K. Gant, B. Ransone, E. McCoy, and C. A. Elvehjem (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 276—279).—Addition to diet of weaned rats of 0.5% of sulphaguanidine or succinylsulphathiazole caused faecal *E. coli* to be largely replaced by enterococci for 10 days; counts returned to normal after 5 weeks. Growth was inhibited unless the diet contained liver or folic acid. V. J. W.

Comparative effect of certain sulphonamides on nicotinamide-stimulated metabolism. S. Berkman and S. A. Koser (*J. infect. Dis.*, 1943, 73, 57—64).—The Na salts of sulphadiazine, sulphapyrazine, sulphaguanidine, and sulphacetamide produced little inhibition of the nicotinamide-stimulated metabolism of *Bact. paratyphoid*. These results were similar to those obtained previously with sulphanilamide and in contrast to the marked inhibition obtained with sulphapyridine and sulphathiazole (Dortman and Koser, *A.*, 1943, III, 338). In anaerobic fermentation sulphapyridine and sulphathiazole caused more inhibition than the other drugs. The results were in harmony with the concept that the structure of the radical attached to the sulphonamide is important in determining the ability of the drug to interfere with certain metabolic reactions in addition to those inhibited by sulphanilamide. F. S.

Death from sulphonamides. W. D. Sutliff, M. Helpert, G. Griffin, and H. Brown (*J. Amer. Med. Assoc.*, 1943, 121, 307—313).—28 fatalities after sulphonamide administration are discussed. The causes of death included agranulocytosis, renal complications, and exfoliative dermatitis. The incidence for 1 year in New York was 1 fatal sulphonamide case in every 2500 deaths. C. A. K.

Severe injury to kidneys and brain following sulphathiazole administration: high serum-sodium and -chloride levels and persistent cerebral damage. J. A. Luetscher, jun., and S. S. Blackman, jun. (*Ann. int. Med.*, 1943, 18, 741—756).—3 patients developed severe intoxication after administration of therapeutic doses of sulphathiazole, 2 after sulphonamide. All cases showed marked increases in serum-Na and -Cl concn. which developed while oliguria and non-protein-N retention diminished. 2 patients died; there were

thrombi in the interlobular renal veins in both, and in the arteries as well in 1 case. The tubules were ruptured and tubular epithelium had proliferated; both patients showed moderate arterial hypertension. There was clinical evidence of cerebral damage. Œdema and gliosis were found, together with small hæmorrhages in 1 case. A. S.

Acute nephritis and effect of sulphanilamides on kidneys. F. D. Murphy and W. D. Wood (*Ann. int. Med.*, 1943, 18, 999—1005).—Treatment with sulphanilamide was beneficial in 3 cases of acute glomerulonephritis. The nephrotoxic action of sulphathiazole is described in 1 case; there was swelling and necrosis in the convoluted tubules, lymphocytic infiltration in the medulla and cortex, and sulphathiazole crystals were found in the mucosa of both renal pelvis. In 50 subjects with normal renal function, administration of sulphadiazine did not produce drug crystals in the urine when urine-pH was kept well on the alkaline side. A. S.

Effect of sulphanilamides on cerebral and neuromuscular actions. D. I. Macht (*Exp. Med. and Surg.*, 1943, 1, 260—272).—Rats were subjected to a modification of Watson's maze test, to tight-rope walking, and to climbing a vertical fixed rope, with food at the end of the journeys; sulphanilamide, sulphapyridine, sulphathiazole, and sulphadiazine were intraperitoneally injected in doses of 5—200 mg. Sulphanilamide had no effect on the behaviour of the animals. Sulphapyridine and sulphathiazole in doses of 50 mg. and more markedly depressed, sulphadiazine (even in massive doses) stimulated, muscular performance. All the rats recovered in a few days, even after large doses of the drugs. A. S.

Two cases of anuria due to sulphapyridine calculi successfully treated by ureteric catheterisation. H. Burt-White and A. G. Johnson (*Brit. Med. J.*, 1943, II, 508—509).—Case report. I. C.

Cutaneous hypersensitivity to sulphonamides. R. G. Park (*Brit. Med. J.*, 1943, II, 69—72).—A report on 12 cases of cutaneous hypersensitivity to sulphonamides, probably caused by previous local application of the drug. Intradermal and patch tests are of little val. in the diagnosis. The hypersensitivity affords a strong argument against the indiscriminate use of sulphonamides as applications for skin infections or as dressings. I. C.

Agranulocytosis following use of novaldin. W. Moloney and M. Vidoli (*Amer. J. clin. Path.*, 1943, 13, 317—321).—Report of a fatal case after 105 grains. C. J. C. B.

Prospect in therapeutics. H. Dale (*Brit. Med. J.*, 1943, II, 411—416).—A lecture on development and recent advances of chemotherapy. I. C.

Local chemotherapy in chronic (non-rheumatoid) rheumatism. G. Loughton Scott (*Brit. Med. J.*, 1943, II, 510—511).—96 cases of rheumatism were treated with injections of large doses of a 10% solution of benzyl salicylate in oil (20 c.c. for fibrositis and 0.1—0.2 c.c. for joints). 76 patients improved markedly, 14 improved, and 6 did not. I. C.

Intramuscular injection of mepacrine (atebrin): histological effect. F. Hawking (*Brit. Med. J.*, 1943, II, 198—199).—Mepacrine methanesulphonate, intramuscularly and subcutaneously injected into rabbits and rats, causes necrosis at the site of injection. The damage is less extensive than that produced by a therapeutic injection of quinine. I. C.

Direct plasmodocidal effect of quinine, atabrine, and plasmochin on *Plasmodium lophura*. R. I. Hewitt and A. P. Richardson (*J. Infect. Dis.*, 1943, 73, 1—11).—Similar degenerative changes were produced in the parasites by the 3 drugs *in vitro* and in treated ducks, suggesting that the unaltered drugs are plasmodocidal. The parasites were not irreparably affected since they produced delayed infection in ducks after the injection of washed blood from treated ducks. There was no evidence that phagocytosis or other immunity mechanism was stimulated by the drugs. A total dose of 80 mg. per kg. of atabrine at the peak of parasitæmia did not reduce the viability of the parasites within 24 hr. as much as 100 mg. per kg. of quinine, and was far inferior to 4 mg. per kg. of plasmochin. The rapidity with which the 3 drugs affected the different stages of the life cycle of the parasite varied but there was no sp. effect on any one stage. F. S.

Evaluation of antiseptics. A. C. Hunter (*J. Amer. Med. Assoc.*, 1943, 121, 25—27).—A review. C. A. K.

Use of thioglycollate media for testing disinfectants. W. J. Nungester, M. N. Hood, and M. K. Warren (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 287—289).—Bacteriostatic effects of mercurial disinfectants *in vitro* were neutralised by 0.1% Na thioglycollate. Other antiseptics were not affected. V. J. W.

Production and activity of streptothricin. S. A. Waksman (*J. Bact.*, 1943, 46, 299—310).—Strains of *Actinomyces lavendulae* varied in their ability to produce the antibiotic substance streptothricin. Its production was favoured when a protein digest, glutamic acid, glycine, or asparagine was used as source of N. When glucose was used as a source of C, 0.25% glucose favoured the growth of the organism and gave the max. production of streptothricin. When starch was used, no agar was required. The starch was consumed

rapidly, but no reducing sugar was detected. Additions of yeast extract and similar materials lowered production. Aëration was essential. Incubation at 20—23° for 7—10 days was optimal for production in stationary cultures, and 28° for 2—4 days for shaken cultures. Variations of pH between 5.0 and 7.5 had little effect on production. F. S.

Antispasmodics. Basic esters of polynuclear carboxylic acids.—See A., 1944, II, 14, 15.

Pharmacology of crab heart. D. Davenport (*Biol. Bull.*, 1942, 82, 255—260).—Effects of acetylcholine, atropine, nicotine, curare, muscarine, carbamylcholine, and acetyl- β -methylcholine on the perfused heart of *Cancer magister* are described. G. P. W.

Sensitivity to paredrine-sulphathiazole suspension. R. H. Feldt (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, 17, 217).—Severe signs of intoxication were observed in a woman after nasal instillation of a few drops of a paredrine-sulphathiazole suspension. A. S.

Preparation of and cardiovascular response to neosynephrine in oil. A. M. Lands and C. W. Geiter (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 52—54).—This substance (*l*-3-hydroxy- β -methylamino- α -hydroxyethylbenzene) is sol. in ground-nut oil containing 10% of oleic acid. Such solutions, containing 0.82% of base, are equiv. in concn. to 1% aq. solutions of the hydrochloride, and cause on subcutaneous or intramuscular injection in dogs a rise of blood pressure lasting about 50% longer than the aq. solution and are 28% less toxic. V. J. W.

Effect of sympatholytic and other agents on toxicity of digitalis in cats. G. A. Emerson (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 12—14).—Piperidinomethylidioxan, diethylaminomethylbenzidioxan, and procaine, which protect against fibrillation by electric stimulation or coronary occlusion, do not prevent fibrillation caused by toxic doses of digitalis. V. J. W.

Comparative value of digitalis and ouabain in treatment of heart failure. I. Chavez (*Arch. intern. Med.*, 1943, 72, 168—175).—The comparative actions of digitalis and ouabain are outlined and the results of 20 years' experience with ouabain given. Digitalis exerts a more pronounced effect on sinus excitation and auriculoventricular conduction, which it depresses; ouabain acts primarily on contractility and toxicity, which it increases. Digitalis is most useful in congestive heart failure with tachycardia, and specially in auricular fibrillation, fibrillation even in the absence of heart failure, and long-sustained treatment of slightly decompensated cardiac disease. The best fields for ouabain are acute left ventricular failure and chronic left-sided failure in patients with coronary arteriosclerosis, hypertension, and syphilitic aortitis. The best technique for the use of ouabain is 1 intravenous injection daily of 0.25 mg. in a series of 6 doses and more according to the tolerance of the individual patient and the clinical improvement obtained. C. J. C. B.

Do ingredients of Carter's Little Liver Pills cause the gall bladder to contract and stimulate flow of bile by liver? A. C. Ivy, R. A. Roback, and I. F. Stein, jun. (*Quart. Bull. Northwest. Univ. Med. Sch.*, 1943, 16, 298—301).—The prep. contains 0.25 grain of aloe and 0.062 grain of podophyllum. Intraduodenal or intravenous administration of the contents of 2—6 pills in dogs did not exert any cholecystokinetic or choleric effect. A. S.

Action of cathartic salts on motility of Thiry-Vella jejunal loops. E. W. Ligon, jun. (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 282—284).—Intra-intestinal pressure and flow were recorded by the optical method of Brody *et al.* (A., 1941, III, 877) in unanæsthetised dogs. Isotonic Na₂SO₄ caused slight stimulation. Isotonic MgSO₄ caused slight stimulation followed by depression. Hypertonic NaCl, Na₂SO₄, or MgSO₄ caused depression and nausea, with slow recovery after MgSO₄, and rapid recovery in the other cases. Under const. pressure, flow was inversely proportional to motility. V. J. W.

Case of phenothiazine poisoning in Sydney. L. I. H. Grant (*Med. J. Austral.*, 1943, II, 27—29).—A severe hæmolytic anæmia followed the oral administration of 2 g. per day for 7 days in a female of 7 years. F. S.

Effective method for anaesthetising small animals. H. M. Kaplan (*J. Lab. clin. Med.*, 1943, 28, 1357—1358).—The heat formed by passing electricity through a CuSO₄ solution is used for the controlled evaporation of ether. C. J. C. B.

Vinethene as anaesthetic agent. O. S. Orth, H. C. Slocum, J. W. Stutzman, and W. J. Meek (*Anesthesiology*, 1940, 1, 246—260).—Dogs were anaesthetised with vinethene (97% divinyl ether + 3% ethanol), a concn. of 10—12% being required. Such doses do not affect cardiac rhythmicity as compared with corresponding pressor doses of adrenaline, cobefrine, or neosynephrine, and anoxæmia was not produced. Aberrant twitches or running movements were always produced due to stimulation of the central nervous system below the level of the corpora quadrigemina; these symptoms were prevented by pre-medication with morphine-scopolamine. Vinethene increased gastric tone and decreased intestinal pain, while propulsive and other movements of the jejunum were inhibited. A progressive decrease in kidney function as measured by urea

clearance was produced. Vinethene produced central zonal necrosis of the liver, in which respect it is more toxic than CHCl₃.

P. C. W.

Studies with cyclopropyl methyl ether (cyprome ether) in man. C. Black, G. E. Shannon, and J. C. Krantz (*Anesthesiology*, 1940, 1, 274—279).—25 cases are reported. Symptoms of both cyclopropane and ether anaesthesia are produced. Cyprome ether is less volatile and more potent than ethyl ether. P. C. W.

Fate of anaesthetic drugs in body. J. Adriani (*Anesthesiology*, 1940, 1, 312—322).—A review. P. C. W.

Anæsthetic potency of new piperidine derivatives. W. H. Hunt and R. J. Fosbinder (*Anesthesiology*, 1940, 1, 305—311).—5 piperidine derivatives were tested for surface, intraspinal, intradermal, and infiltration anaesthetic potencies, capacity to produce nerve block, and toxicity in rabbits, guinea-pigs, and mice. Effects on blood pressure or respiration were studied in anaesthetised cats. β -2-Piperidylethyl *o*-aminobenzoate in 2% solution of its hydrochloride produced corneal anaesthesia for twice as long as cocaine and was less likely to produce corneal damage. The *m*- and *p*-forms of this compound had greater margins of safety and acted longer than did metycaine or procaine as spinal anaesthetics. None of the new compounds was as safe or efficient as procaine for infiltration anaesthesia. P. C. W.

Elective painless rapid childbirth anticipating labour [by procaine spinal anaesthesia]. H. Koster and L. Perrotta (*Exp. Med. and Surg.*, 1943, 1, 143—147).—Spinal anaesthesia with 150 mg. of procaine hydrochloride was induced in 39 women at the end of term, and in 23 cases where labour had already begun with a dilatation of the cervix of less than 3 fingers. Manual dilatation of the cervix was carried out in all cases; 20 women of the 1st group were delivered by low forceps, 8 by mid forceps, 9 by version and extraction. There was no post-partum infection or morbidity. Oxytocic substances were not required. There was no uterine hæmorrhage. Prophylactic perineotomy was carried out in all cases. A. S.

Continuous caudal analgesia in obstetrics. R. A. Hingson and W. B. Edwards (*J. Amer. Med. Assoc.*, 1943, 121, 225—229).—Local anaesthetic solution (metycaine) was injected epidurally in the sacral canal in 589 cases during labour, with effective analgesia lasting on the average for 6½ hr. Injections were required every 30—40 min. to maintain analgesia. Delivery was facilitated and there were no depressant effects on the child. The solution must not be injected into the c.s.f. C. A. K.

Continuous caudal anaesthesia in obstetrics. T. G. Greedy and H. C. Hesseltine (*J. Amer. Med. Assoc.*, 1943, 121, 229—230).—Continuous caudal anaesthesia was produced in 20 patients during labour by epidural injection of metycaine. Advantages and disadvantages are discussed. C. A. K.

Low spinal anaesthesia during labour in cases of cardiac failures. H. Burton (*Brit. Med. J.*, 1943, II, 389—390).—Low spinal anaesthesia interrupts the bearing-down reflex on the afferent side, thus relieving the strain on the circulation and the heart, without causing the blood pressure to fall. Two cases are reported. I. C.

Circulatory adjustments in high spinal anaesthesia. E. M. Papper, S. E. Bradley, and E. A. Rovenstine (*J. Amer. Med. Assoc.*, 1943, 121, 27—32).—A review. C. A. K.

Local anaesthetic activity of new monohydrochlorides of dialkylaminomethylphenyl *p*-aminobenzoates. E. J. Fellows (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 7—9).—9 new compounds are described which cause insensitivity to faradic stimulation in the skin of guinea-pigs, but all cause tissue injury and are unstable in aq. solution. V. J. W.

Explosion hazards of combustible anaesthetics. G. W. Jones, R. E. Kennedy, and G. J. Thomas (*U.S. Bur. Mines*, 1943, *Tech. Paper* 653, 47 pp.).—Factors contributing to explosion hazards in anaesthesia are discussed and investigations on the inflammability of mixtures of cyclopropane, ether, and ethylene with O₂ and N₂O, and on the effect of N₂ and He as diluents, are described. Inflammability diagrams for all the mixtures are reproduced. The practical employment of non-inflammable mixtures through control of [O₂] is limited. Low [He] has little effect in reducing inflammability of ethylene-O₂ mixtures, and increase of [He] to that necessary for this purpose dilutes ethylene concn. below that necessary for anaesthesia. Similar results were obtained with N₂. More successful was the addition of He to other mixtures, especially to cyclopropane-O₂ and cyclopropane-ether-O₂ mixtures. Clinical investigations on the more suitable mixtures are described and methods of administering, sampling, and examining anaesthetic mixtures are discussed. C. R. H.

Mental disturbances following nitrous oxide anaesthesia. C. T. Batten and C. B. Courville (*Anesthesiology*, 1940, 1, 261—273).—10 cases are reported and discussed together with 11 cases collected from the literature. P. C. W.

Circulatory effects from pentothal sodium administered soon after hæmorrhage. C. S. Burstein and S. G. Hershey (*Proc. Soc. Exp.*

Biol. Med., 1943, 53, 80—81).—Effects in cats and dogs varied, but in 14 out of 19 experiments they were harmful. V. J. W.

New hypnotic, cycloheptenylethylbarbituric acid. F. Grote (*Schweiz. med. Wschr.*, 1942, 72, 1333—1335).—"Medomin" is closely related to "phanodorm." Satisfactory results were obtained on prolonged administration. A. S.

Chemical decomposition of "medomin" in body. R. Pulver (*Schweiz. med. Wschr.*, 1943, 73, 124—125).—Unchanged cycloheptenylethylbarbituric acid (medomin) was not found in the urine. 1% of the administered drug was found in urine as cycloheptenylethylbarbituric acid which is 20 times less toxic to mice than medomin; it has no hypnotic effects. A. S.

Clinical effectiveness and safety of new synthetic analgesic drug, demerol. R. C. Batterman (*Arch. intern. Med.*, 1943, 71, 345—356).—Demerol (ethyl 4-phenyl-1-methylpiperidine-4-carboxylate hydrochloride) was potent, effective, and safe for the relief of pain in 1119 patients with various medical and surgical conditions and could replace opiates. Hospitalised patients are relatively free of serious side effects, but because of the high incidence of dizziness and the possibility of syncope the drug should be used with caution on ambulatory patients. C. J. C. B.

Effect of opiates on pain threshold in post-addicts. H. L. Andrews (*J. clin. Invest.*, 1943, 22, 511—515).—When the pain-threshold-raising effect of morphine and its derivatives is tested in post-addicts, a variable but greatly reduced response is found, which is explained by a retained ability to destroy opiates rapidly. The measurements of pain threshold have little connexion with the clinical relief of pain, for this is accomplished in the post-addict with little or no increase in the morphine dosage. C. J. C. B.

Application of theory of absolute reaction rates to action of narcotics. W. D. McElroy (*J. Cell. Comp. Physiol.*, 1943, 21, 95—116).—From the intensity-temp. curve for *Achromobacter fischeri* in presence of various narcotics, it is calc. that the heat of reaction of denaturation of luciferase is 60,000 g.-cal., the energy of denaturation is 198.7 entropy units, and the energy of combination of luciferin with luciferase is 24,000 g.-cal. Monoacetin, benzamide, and salicylamide combine with either native or denatured enzyme, as do all compounds having partition coeff. which decreases with increased temp. Barbitone and chloral combine only with denatured enzyme. They have a high heat of reaction with large entropy changes, and their partition coeff. increases with the temp. V. J. W.

Treatment of mild sleeplessness. F. Georgi (*Schweiz. med. Wschr.*, 1942, 72, 1440—1442).—Good results in mild insomnia were obtained with 0.15—0.30 g. of "Persedon" (Roche) (2:4-dihydroxy-3:3-diethyltetrahydropyridine). A. S.

Effect of thymoxyethyl-diethylamine on various pain thresholds with special reference to referred pain. S. R. Rosenthal, D. Minard, and E. Lambert (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 317—320; cf. A., 1940, III, 392).—Threshold coil distance required to cause pupil dilatation on stimulation of various regions was determined in unanaesthetised dogs. Administration by any route of 30—50 mg. per kg. of the drug raises this threshold for stimulation of intestinal peritonum or mesenteric nerve but does not affect it in the case of the saphenous nerve. V. J. W.

Effect of glutamic acid on central action of ammonium ion. M. R. Sapirstein (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 334—335).—Intravenous injection of 50 c.c. of 5% l(+)-glutamic acid in rabbits inhibits the convulsions normally produced by injection of 15—25 c.c. of 2.5% NH₄Cl. Similar doses of l-aspartic acid had no protective effect. V. J. W.

Effects of "CTAB" (trimethylcetylammmonium bromide) on cells in vitro. F. Jacoby (*J. Physiol.*, 1943, 102, 4P).—The deleterious action of CTAB on macrophages and fibroblasts in tissue culture in concns. of 10⁻⁵ and over seems linked up with its protein-pptg. and "fixing" properties. W. H. N.

Diastase content of blood and urine in acute alcoholism. H. Siegel and B. Krautman (*Amer. J. clin. Path.*, 1943, 13, 302—307).—In the acute alcoholic state of the chronic alcoholic urinary diastase is often increased and serum-diastase decreased. C. J. C. B.

Influence of congeners of distilled spirits on physiological action of alcohol. H. W. Haggard, L. A. Greenberg, and L. H. Cohen (*Quart. J. Stud. Alcohol*, 1943, 4, 3—56).—The effects of 64 types of distilled spirits were compared in rats. The blood-alcohol concn. necessary to produce respiratory failure was the same with all types though the amounts administered to produce this concn. were different. The length of time needed for the alcohol to disappear from the blood was longest with the most toxic types of spirit; the differences in rates of disappearance were due to differences in rate of alcohol metabolism and not of elimination. The rate at which the most toxic spirits were metabolised was increased when they were chemically treated as so to remove or alter the small amounts of congener present in the spirits which causes the slowing of alcohol metabolism. The rate of metabolism was also increased by glutathione. P. C. W.

Effect of alcohol concentration on rate of absorption and shape of blood-alcohol curve. G. Lolli and M. Rubin (*Quart. J. Stud. Alcohol*, 1943, 4, 57—63).—In human subjects 55 ml. of abs. alcohol given in 30% solution were more rapidly absorbed than in 15% or 45% solution. There was little difference in the rate of absorption of 27.5 ml. given in concns. of 5—45%. The differences in the shape of the curve of blood-alcohol concn. are described. P. C. W.

Alcohol and emptying time of the stomach. G. Lolli and M. Rubin (*Quart. J. Stud. Alcohol*, 1943, 4, 64—67).—The disappearance of administered glucose (2.5 g. per kg. in 25% solution) from the rat's stomach was delayed when given 2 hr. after the oral administration of 3 g. of alcohol per kg. given as a 25% solution. P. C. W.

Chronic alcoholism in veterans. T. Barrett (*Quart. J. Stud. Alcohol*, 1943, 4, 68—78).—Analysis of 100 cases of alcoholism among veterans of the 1914—18 war. P. C. W.

Effect of strychnine on intensity discrimination in human eye.—See A., 1943, III, 878.

Experimental and clinical experiences with basergin after parturition. H. Winzeler (*Schweiz. med. Wschr.*, 1943, 73, 70—73).—The effects of basergin (an ergot prep.) and orasthin (a pitocin prep.) on the uterus after parturition were examined using a Guggisberg hysterotonograph. Both preps. promoted powerful uterine contractions on intravenous injection (basergin > orasthin); they were ineffective by other routes of administration. A. S.

Effect on uterus of extracts of gorse (*Ulex gallii*). W. Smith and A. Wilson (*Brit. Med. J.*, 1943, II, 322—324).—Extracts of gorse (*Ulex gallii*) have a sp. action on uterine muscle. Only relatively pure extracts have so far been obtained. The dominant action is one of uterine contraction, demonstrable on the isolated uterus of the guinea-pig, pregnant human, cow, and rabbit uteri, and on cat uterus *in situ*. In uteri of non-pregnant women initial contraction is followed by abolition of tone and relaxation. Uterine reactivity to gorse is enhanced by stilbestrol in the guinea-pig. The hormonal balance may determine reactivity of the uterus to gorse extracts. In virgin cats the intravenous administration of gorse extracts causes a rise of blood pressure which coincides with the uterine contraction. I. C.

Prolongation of action of subcutaneously injected medicines [hormones] in man. F. F. Földes (*J. clin. Invest.*, 1943, 22, 499—509).—Zn in a concn. of 0.06—0.1% was effective in man in prolonging the anti-diuretic effect of posterior pituitary extract and the hyperglycæmic effect of adrenaline, and also diminished their unwanted side effects. Posterior pituitary extract + Zn was successfully employed in the treatment of 3 diabetes insipidus patients. The same Zn concn. delayed and diminished the urinary excretion of thiamin after subcutaneous administration. C. J. C. B.

Therapeutic and prophylactic detoxication; chemotherapeutic metallic compounds. G. J. Martin and M. R. Thompson (*Exp. Med. and Surg.*, 1943, 1, 38—50).—The detoxicating effects of a no. of compounds were tested by their oral administration together with the lethal dose of the toxic agent in mice. Ascorbic acid and cysteine are the most effective agents in the detoxication of arsphenamine; ascorbic acid and cysteine were less effective against acetarsone; cystine increased the toxic action of acetarsone by reducing it to a tervalent compound. Cystine was the most effective detoxicant of Bi and K tartrate; glycine, Ca glyconate, and ascorbic acid were ineffective. Methionine, to a smaller degree cystine and cysteine, reduced the toxicity of Na 4-amino-2-aurothiophenylcarboxylate; glycine, Ca glyconate, and ascorbic acid were ineffective. Oral doses of tragacanth, cystine, cysteine, glycine, Ca glyconate, ascorbic acid, and glucose did not reduce the toxic effects of subcutaneously injected Hg acetate. A. S.

Misuse of intravenous N.A.B. for Vincent's infection. E. C. O. Jewesbury (*Brit. Med. J.*, 1943, II, 360—362).—Report of two cases in which Vincent's angina developed during treatment with arsenicals. The use of intravenous arsenicals is unsound on theoretical and clinical grounds. I. C.

New approach to treatment of early syphilis by intensive therapy. T. R. L. Jones and F. G. Maitland (*Brit. Med. J.*, 1943, II, 448—451).—The quant. Kolmer-Wassermann test performed daily on 100 cases of syphilis has allowed the classification of the patients into three groups: early, middle, and late primary syphilis. The test provides a reliable index of the intensity of the infection, and a guide for intensive therapy. The duration of the intensive therapy would be 15, 20, and 30 days respectively for the three groups with doses of mapharside of 600—900 mg., 900—1200 mg., and 1200—1800 mg., the dosage varying in each group according to the body wt. 3% of cases relapsed and 3% were reinfected. I. C.

Effect of arsenates on storage of lead. L. T. Fairhill, J. W. Miller, and F. L. Weaver (*U.S. Publ. Health Repts.*, 1943, 58, 955—959).—A sol. arsenate, such as Na arsenate, when fed to rats receiving PbCO₃, produced effects similar to those of Pb arsenate alone. The administration of Na arsenate + PbCO₃, diminished Pb concn. in the kidneys, while the As concn. amounted to only half that of the

Na arsenate group. Arsenates in general diminish the storage of Pb in bone tissue.
C. G. W.

Positive scotoma in lead poisoning.—See A., 1943, III, 879.

Lead absorption and excretion and their relation to diagnosis and treatment of lead poisoning. R. A. Kehoe, J. Cholak, C. M. Hubbard, K. Bambach, and R. R. McNary (*J. Ind. Hyg.*, 1943, 25, 71—79).—Two human subjects given 2 mg. and 1 mg. of sol. Pb per day, respectively, showed a gradual increase in blood-Pb and in urinary excretion of Pb over a period of 23 months of administration, and, on stopping the Pb, a gradual fall in both these vals., which had not reached the original levels after 16 months. There were no other symptoms of plumbism. Approx. 8% of the ingested Pb was retained; the Pb accumulation was regular, bearing an approx. linear relationship to time. There was no definite evidence of excretion into the alimentary tract. Elimination was unaffected by artificial means, but absorption was increased by reduced alimentary activity, e.g., constipation.
E. M. K.

Effect of lead on blood-calcium. W. V. Jenrette and L. T. Fairhall (*U.S. Publ. Health Repts.*, 1943, 58, 1001—1006).—Investigation of serum-Ca of animals ingesting large amounts of Pb, as well as animals receiving smaller doses over a longer period, at different levels of Ca intake indicates that Pb absorption does not affect blood-Ca.
C. G. W.

Fate of stibophen in the body. L. G. Goodwin and J. E. Page (*Biochem. J.*, 1943, 37, 482—483).—Pyrocatechol excretion in normal subjects treated with stibophen is complete in about 6 hr., i.e., in the same time as after an equiv. dose of Na pyrocatecholdisulphonate. Excretion of Sb is much slower and follows a different course. (See also C., 1944, Part 1.)
P. G. M.

Idiosyncrasy to metallic mercury (amalgam fillings in the teeth). M. H. Bass (*J. Pediat.*, 1943, 23, 215—218).—3 cases of idiosyncrasy to metallic Hg are described. All occurred in children and showed skin symptoms. In 2 instances metallic Hg applied to the skin was the active agent. In 2, amalgam fillings were the ætiological factor. In 1 of these, symptoms of severe urticaria continued until the removal of the fillings.
C. J. C. B.

Mercury content of human body. Ö. Szép (*Biochem. Z.*, 1940, 307, 79—81).—The vals. reported by Bodnár *et al.* (A., 1940, III, 139) are much higher than those given by Stock *et al.* (A., 1934, 1257; 1943, III, 658) and other workers. Analyses of Hg in blood, urine, and food fail to explain the difference and it is concluded that the cause lies in the pathological condition of the cadavers examined by Bodnár *et al.*
F. O. H.

Illness caused by cadmium. J. J. Schiftner and H. Mahler (*Amer. J. Publ. Health*, 1943, 33, 1224—1226).—7 cases of acute gastritis followed drinks contaminated by ice cubes exposed to the drippings and scalings from Cd-plated evaporators of refrigerators.
C. J. C. B.

Intravenous injections of soluble tin compounds. J. Seifter and E. S. Rambousek (*J. Lab. clin. Med.*, 1943, 28, 1344—1349).—The organs tolerate relatively high concns. of Sn, which is excreted rapidly following intravenous injection. (See also C., 1944, Part 1.)
C. J. C. B.

Acute toxicity for rats of β -ethylhexanol and β -ethylhexyl phthalate. H. C. Hodge (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 20—23).—L.D. 50 of β -ethylhexanol for rats is 3.2 g. per kg. orally and 0.65 g. per kg. intraperitoneally. It caused paresis and narcosis. β -Ethylhexyl phthalate is practically non-toxic.
V. J. W.

Effects of mononitroparaffins and related compounds on blood pressure and respiration of rabbits. W. Machle and E. W. Scott (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 42—43).—No fall of blood pressure was produced in rabbits or cats by these substances.
V. J. W.

Bromide intoxication. H. K. Detweiler (*Canad. Med. Assoc. J.*, 1943, 48, 309—311).—A review of 5 cases.
C. J. C. B.

Toxicity of intravenous paraldehyde. C. L. Burstein (*J. Amer. Med. Assoc.*, 1943, 121, 187—190).—2 fatalities following paraldehyde administration are described. Autopsy showed dilatation of the right side of the heart, with pulmonary hæmorrhages and œdema. Similar changes were seen in experiments on cats, dogs, and rabbits, in which intravenous paraldehyde produced cardiac dilatation and a sharp fall of blood pressure.
C. A. K.

Accidental amphetamine sulphate poisoning. A. J. Hertzog, A. E. Karlstrom, and M. J. Bechtel (*J. Amer. Med. Assoc.*, 1943, 121, 256—257).—A girl of 12 months died in coma shortly after taking 40 mg. of amphetamine sulphate accidentally by mouth (+ some 0.2-g. tablets of FeSO₄). Autopsy showed hæmorrhages in the gastric mucosa and in the adrenal glands.
C. A. K.

Croton oil shock. B. Kisch and H. Koster (*Exp. Med. and Surg.*, 1943, 1—229—247).—The min. lethal dose for an adult dog of 12—30 lb., on intraperitoneal injection of croton oil, is 1 c.c. of a 2.5% solution; death occurs within 24 hr. There is an initial rise in blood pressure followed by a gradual fall; this is followed by a stage of latent shock where the blood pressure level is maintained

but hæmoconcn. occurs; finally, the blood pressure falls, there is further hæmoconcn., acidosis, and collapse of peripheral veins. There was marked congestion of the intestines, mesentery, and omentum, free fluid in the abdominal cavity, and hyperæmia of the liver and kidneys. On intramuscular injection of croton oil, fluid loss into the injected leg of dogs amounted to 6% of total body wt.; during the stage of latent shock, transitory hæmodilution was sometimes noted. Intravenous injection of croton oil emulsion in 50% alcohol and Ringer's solution was better tolerated. Some dogs recovered after days of illness. Acute bilateral pulmonary œdema, or massive interstitial pneumonitis, was found in animals which died. Shock by intramuscular or intraperitoneal injection is therefore not due to systemic intoxication, since more than the min. lethal dose, if given by intravenous injection, fails to produce shock. Rabbits are less sensitive to croton oil than dogs. Croton oil shock can be easily produced in rats.
A. S.

Shock produced by intra-arterial croton oil injection. B. Kisch (*Exp. Med. and Surg.*, 1943, 1, 248—249).—Intra-arterial injection into dogs of 1 c.c. of 2% croton oil emulsion produces marked swelling of the leg, hæmoconcn., and death from shock.
A. S.

Emaciation due to mustard gas. A. Telbisz and J. Kuchárik (*Biochem. Z.*, 1940, 307, 82—96).—Mustard gas, applied in the liquid state to the shaven skin, causes loss of wt. in rabbits and rats, the effect increasing with increase in dose. The lethal action of the gas is independent of the loss in wt. and of the local effect, although death and loss in wt. may be due to the same basal cause, perhaps associated with the central nervous system. Loss of appetite and increased O₂ consumption are also observed. Dichlorodiethyl sulphone, which produces an equal or even greater œdema, causes neither death nor loss in wt.; hence emaciation is not due to absorption from the œdematous tissues.
F. O. H.

Contramine for herpes. E. S. Hawkes (*Brit. Med. J.*, 1943, II, 391—392).—Intramuscular injection of contramine (0.125 g.) proved beneficial in cases of herpes and chicken-pox.
I. C.

Treatment of herpes zoster with ergotamine tartrate. A. Stokly (*Schweiz. med. Wschr.*, 1942, 72, 1305—1306).—Good results in the treatment of 12 cases of herpes zoster were obtained with subcutaneous injections of "gynergen" (an ergotamine tartrate prep.) 4.5—6 c.c. in 6—12 days.
A. S.

Treatment of frostbite with nicotinamide. H. Birkhäuser (*Schweiz. med. Wschr.*, 1942, 72, 1280—1281).—Injections of nicotinamide were beneficial in cases of frost-bite. Oral administration of coramin was ineffective.
A. S.

Principles of percutaneous absorption. S. Rothman (*J. Lab. clin. Med.*, 1943, 28, 1305—1321).—A review.
C. J. C. B.

Treatment of burns by closed-plaster method. W. W. L. Glenn, H. H. Gilbert, and C. K. Drinker (*J. clin. Invest.*, 1943, 22, 609—625).—The feet of dogs were burned for varying periods by immersion in hot water. They were then enclosed in plaster, first, by casting the burned foot which was held deep in liquid plaster until setting occurred, and second, by the use of roller-plaster bandages. The blood flow through the burned feet treated by these methods remained excellent and healing occurred more rapidly and with less deformity than could be obtained if capillary leakage was unrestrained, as is the case in the absence of a rigid enclosure of the part.
C. J. C. B.

Histamine in treatment of Ménière's syndrome.—See A., 1943, III, 880.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Psychological factors and physical exercise. H. F. Tecoz (*Schweiz. med. Wschr.*, 1943, 73, 102—104).—A review.
A. S.

Disparity between oral and rectal temperatures after exercise. J. Brennemann (*Amer. J. Dis. Child.*, 1943, 66, 16—20).—In 10 healthy children and 3 adults the rectal temp. rose after exercise by 1—4° F. while the oral temp. varied slightly. Temp. returned to normal in 30—60 min.
C. J. C. B.

Hyperglycæmia following muscular exercise. R. M. Du Pan (*Schweiz. med. Wschr.*, 1942, 72, 1383—1386).—The hyperglycæmia curves depend on the severity and duration of the exercise. After prolonged and severe muscular activity a hypoglycæmic phase may occur, attributed to exhaustion of glycogen reserves.
A. S.

Silicosis and workmen's compensation in Switzerland. F. Lang (*Schweiz. med. Wschr.*, 1943, 73, 65—70).
A. S.

Industrial manganese poisoning. L. T. Fairhall and P. A. Neal (*U.S. Nat. Inst. Health, Bull.* 182, 1943, 24 pp.).—Industrial Mn poisoning occurs through the absorption of vapour, fumes, or dust through the respiratory system, following inhalation of dust of Mn ore or the fumes from the fusing of Mn in steel manufacture. The symptoms, diagnosis, and pathology of chronic poisoning are re-

viewed. Max. permissible concn. of Mn in air has been tentatively accepted by the American Standards Assoc. as 6 mg. per cu. m.

C. G. W.

XXII.—RADIATIONS.

Physical therapy applied at home for arthritis. J. V. Treusch and F. H. Krusen (*Arch. intern. Med.* 1943, 72, 231—238). C. J. C. B.

Deep X-ray treatment of gas gangrene: recovery. A. M. Davidson (*Med. J. Austral.*, 1943, 1, 557).—Description of a case of *Cl. welchii* infection in which X-ray treatment was supplemented by antitoxin (100,000 units) and oral sulphathiazole (46.5 g.). F. S.

Effects of X-rays on acetylcholine solutions showing the dilution and protection phenomena found for enzymes. W. M. Dale (*J. Physiol.*, 1943, 102, 50—54).—Acetylcholine is inactivated by X-rays in 2.5×10^{-6} M. solution. This type of inactivation is therefore not due to the enzymic nature of the substances on which it was first demonstrated. As with enzymes, so with acetylcholine, X-rays have less effect on conc. solutions and on those containing other substances. It is suggested that X-rays form an intermediate product from the water which reacts with the solutes. W. H. N.

Relation between xylem thickening in primary roots of *Vicia faba* seedlings and elongation as shown by soft X-ray irradiation. G. F. Smith and H. Kersten (*Bull. Torrey Bot. Club*, 1942, 69, 221—234).—Roots of *V. faba* seedlings grown from seeds irradiated with soft X-rays show a decreased total elongation. When the decline in growth occurs only pitted vessels are formed and this is apparently related to the lowered rate of elongation of the cells adjacent to the vessels. L. G. G. W.

Pituitary changes following X-irradiation of adult rat's testis.—See A., 1943, III, 812.

Effect of ionisation distribution on chromosome breakage by X-rays.—See A., 1943, III, 860.

Iodine-containing X-ray contrast substances. I—III.—See A., 1944, II, 15, 23, 24.

Absorption of infra-roentgen (Bucky) rays of various qualities by the anterior portions of the eyeball.—See A., 1943, III, 876.

Therapeutic value of ultra-violet radiation. Council on Physical Therapy (*J. Amer. Med. Assoc.*, 1943, 121, 126—129).—A review. C. A. K.

Inactivation of trypsin by ultra-violet radiation.—See A., 1943, III, 843.

Effect of ultra-violet and X-rays on phosphatase.—See A., 1943, III, 844.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Physiological application of measurements of foam time. F. Schütz (*Quart. J. Exp. Physiol.*, 1943, 32, 107—112).—The foam stability of solutions of alcohol in water increases with increasing concns. of alcohol up to a certain concn. when further addition of alcohol diminishes the foam stability. The concn. when foam stability is max. ("crit. foam-time concn.") is a characteristic for many liquids. Concns. of alcohols in water with highest biological activity (e.g., toxic, germicidal) are similar to their crit. foam-time concn. The staining property of Sudan IV in alcohol solutions changes at the crit. foam-time concn. A. S.

Activation of oxygen by solid surfaces. K. Yamafuji, M. Mukae, and R. Rynshi (*Biochem. Z.*, 1941, 307, 314—319).—O₂ and, in some cases, air passed over solid surfaces (ZnO, blood or bone C, talc, quartz sand, dried powdered frog muscle, and especially hæmoglobin) are activated so that they acquire increased power to oxidise substances such as quinol (to benzoquinone) and fructose. The activating power of the surfaces decreases with time and no restoration occurs when H₂ or CO₂ is passed over them. One of the physiological functions of interfaces is to activate O₂. W. McC.

Polarographic study of optimum reaction for precipitation of serum-globulin. H. W. Schmidt (*Biochem. Z.*, 1940, 306, 422—429).—The optimum pH for pptn. of globulin by 0.5% acetic acid is 6.1. Polarographic examination of the solution obtained by dissolving the pptd. globulin in hexamine-CoCl₂ buffer shows that, although the globulin content increases in disease, no correlation exists between height of curve and type of disease. Increase in globulin content usually accompanies increase in total protein content. The results obtained by this polarographic method have diagnostic val. when used in conjunction with those obtained by the procedure of Waldschmidt-Leitz (A., 1938, III, 740). W. McC.

Polarographic investigation of relationship between effect of ultra-violet irradiation and concentration of protein solutions.—See A., 1943, III, 838.

Complex formation between synthetic detergents and proteins.—See A., 1944, II, 28.

X-Ray diffraction data on ferritin and apoferritin.—See A., 1944, I, 5.

Long X-ray diffraction spacings of the keratins.—See A., 1944, I, 5.

XXIV.—ENZYMES.

Enzymes in ripening peas.—See A., 1943, III, 854.

Enzyme systems containing active thiol groups. Rôle of glutathione. E. S. G. Barron and T. P. Singer (*Science*, 1943, 97, 356—358).—Inhibition by iodoacetamide, chloromercuribenzoic acid, and org. arsenicals, and reactivation by glutathione additions, were measured for pyruvate oxidase, native myosin, *D*-amino-acid oxidase, *l*-glutamic acid oxidase, monoamine oxidase, transaminase, yeast-alcohol oxidase, stearate oxidase (liver and bacteria), oleate oxidase (bacteria), pancreatic lipase, β -hydroxybutyrate oxidase (heart), acetylcholine-esterase, human serum-esterase, hog liver-esterase, and pancreatic esterase. In all these cases it appears that the proteins contain thiol groups, which are kept in the reduced condition by the glutathione; in some cases, the reactivation is only partial. Polyphenol oxidase, arginase, citric oxidase, uricase, catalase, lactic oxidase, liver-alcohol oxidase, histaminase, potato phosphorylase, carbonic anhydrase, acid phosphatase, peanut fat oxidase, pepsin, cytochrome oxidase, and flavoproteins were not affected by thiol reagents; the proteins contain no thiol groups essential for enzymic activity. E. R. R.

D-Amino-acid oxidase in liver extracts from adult, tumour-bearing, and young rats. U. Westphal (*Z. physiol. Chem.*, 1943, 278, 213—221).—The *D*-amino-acid oxidase content of the livers of rats 2—8 weeks old and of rats having Walker tumours is only half that of the livers of healthy adult rats. Dog's liver has a higher and guinea-pig's liver a lower content. If fresh organs are cooled in solid CO₂ for several days before quick thawing and extracting, the loss of the oxidase which otherwise rapidly occurs is prevented. (See also C., 1944, Part 1.) W. McC.

Biological oxidation of oxalic acid. II. W. Franke, F. Schumann, and B. Banerjee (*Z. physiol. Chem.*, 1943, 278, 24—42; cf. A., 1938, III, 81).—Oxalaldehydehydrogenase is readily extracted from moss (e.g., *Hylocomium triquetrum*) with water and may be conc. 200-fold by pptn. with (NH₄)₂SO₄ and dialysis. The optimum pH for its action and substrate concn. are 3.2 and 0.005M. The enzyme is stable at pH 3—8; it is not inactivated by heat below approx. 90° and retains its activity for several days at 0°. In the dehydrogenation of oxalate by the enzyme acceptors do not replace O₂. The action is not inhibited by HCN, H₂S, and NaN₃. The enzyme of sorrel and related species is similar to oxalaldehydehydrogenase but is not readily dissolved, has optimum activity at pH 4.5—7.0, has less affinity for the substrate, and is inactivated by heat above approx. 61°. Probably the two enzymes contain the same prosthetic group but different protein carriers. *B. extorquens* (Bassalik, *Jahrb. Bot.*, 1913, 53, 255) also contains an oxalaldehydehydrogenase. W. McC.

Aconitase. C. Martius and H. Leonhardt (*Z. physiol. Chem.*, 1943, 278, 208—212).—New determinations with aconitase of ox liver extract show that the equilibrium mixture of citric, isocitric, and (by difference) *cis*-aconitic acid contains 89.2, 7.7, and 3.1% respectively of these. Since aconitase of beans acts in the same way as liver extract, there is no evidence for the existence of two forms of aconitase (cf. Jacobsohn, A., 1940, III, 608). W. McC.

Catalase in vine shoots. E. A. Makarevskaja and K. M. Iluridze-Moltschan (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 614—616).—Grape vines with a high content of chlorophyll frequently show only low catalase activity, whilst very active catalases are often present with low chlorophyll content. Some varieties when stored at -3° have the highest content of chlorophyll with least catalase activity, whilst storage at 8° frequently produces highly active catalase and the lowest content of chlorophyll. Shoots which have recently emerged from the ground exhibit greater catalase activity than do 1-year-old shoots. If the catalase activity at the end of the growing season is known, the ripeness of the shoot probably can be determined. A knowledge of this is very important in grafting. J. N. A.

Effect of pyridoxine deficiency in the rat on catalase activity of its tissues.—See A., 1943, III, 825.

Composition, splitting, and resynthesis of carboxylase. F. Kubowitz and W. Lüttgens (*Biochem. Z.*, 1941, 307, 170—172).—Carboxylase is a conjugated protein consisting of the three components, protein, aneurin diphosphate, and Mg. The most active preps. contain 1 g.-atom of Mg, 1 g.-mol. of aneurin diphosphate, and 75 kg. of protein. At pH 5—6 the enzyme can be dialysed at 0° for 24 hr. without decomp. or loss of activity, but it is split by treatment for ½ hr. with PO₄^{'''} buffer at pH 8.1 and 0°, although the protein is not denatured. The protein is pptd. by (NH₄)₂SO₄ from alkaline phosphate solution, re-dissolved in 0.02M-PO₄^{'''} at pH 6.2, and dialysed at 0° against 0.02M-P₂O₇^{'''} solution of pH 6.2 for 36 hr. It then has no action on pyruvic acid but, by treatment with excess of aneurin diphosphate and Mg salts, 85% of the

original activity is regenerated. The findings explain why, after splitting in alkaline solution, the activity is not regenerated on acidification.
P. G. M.

Thermal decomposition of aneurin and cocarboxylase at varying hydrogen-ion concentration.—See A., 1943, III, 901.

Action of potential and enzyme activity in electric organ of *Electrophorus electricus* (Linn.). I. Choline-esterase and respiration. Localisation of respiratory enzymes in nerves.—See A., 1943, III, 793.

Choline-esterase in primitive nervous systems.—See A., 1943, III, 798.

Esterase content of livers of mice and its excretion in strains susceptible or insusceptible to mammary cancer.—See A., 1943, III, 819.

Activity of blood-serum esterase under different conditions of vitamin-C nutrition.—See A., 1943, III, 902.

Procaine-esterase. B. Kisch, H. Koster, and E. Strauss (*Exp. Med. and Surg.*, 1943, 1, 51—65).—Human plasma and serum decompose procaine *in vitro*, with the formation of *p*-aminobenzoic acid, by means of an enzyme (procaine-esterase). The procaine-esterase index is the % of procaine hydrolysed (0.03 mg. per c.c. added) if incubated with a 5% serum or plasma solution at 37°. Plasma hydrolyses 1.3 times as much procaine as whole blood, serum 1.4 times as much as plasma, red cells only negligible amounts. Rabbit liver has twice as much procaine-esterase activity as the animal's blood; lung and duodenal mucosa have high activity, heart, kidney, brain, stomach, and adrenals very little. Human liver and lung also showed high activity. There was no enzyme in human urine, saliva, or aq. humour; c.s.f. had 1/100—1/170 of the hydrolysing power of serum. There was some activity in the white of chick eggs. The % of enzymic procaine hydrolysis increases with temp. up to 50° and then diminishes; it increases with pH from 6 to 8.6 and then decreases. The degree of hydrolysis does not alter with procaine concns. of 0.01—0.06 mg. per c.c., nor after addition of 0.01 mg. per c.c. of *p*-aminobenzoic acid. The activity of serum increases up to 30% within 48 hr. of blood storage, remains const. for a few days, and then diminishes. The procaine-esterase activity of various bloods was: man > rabbit > turtle = cat > guinea-pig > rat > pig > cattle = sheep = dog > turkey = chicken, the activity of the 2 last species being negligible. The procaine-esterase is different from lipase, choline-esterase, and tropine-esterase.
A. S.

Procaine-esterase activity in human blood serum; new test for toxic goitre. H. Koster and B. Kisch (*Exp. Med. and Surg.*, 1943, 1, 71—83).—The normal range of procaine-esterase index of human serum, as determined in 391 cases, is 40—80 (mean val. 59.5). The index is not related to meals, sex, leucocytosis, or lymphocytosis. The mean vals. in 35 newborn infants were 58.4 and for their mothers 50.4. The mean val. in 22 cases of malignancy was 43.6; particularly low vals. were found in gastric carcinoma and in patients after gastrectomy for pyloric ulcer. A patient suffering from pernicious anaemia had an index of 28. The mean val. in 19 patients with untreated toxic goitre was 100.8 (range 90—128); the extirpation of a toxic goitre was followed by a return of the index to normal. In most cases, administration of I reduced the index even when the basal metabolic rate was still elevated. Goitrous thyroids had very low procaine indexes, when the blood index was high. Prosthigmine had no effect on the index and basal metabolic rate in cases of toxic goitre.
A. S.

Influence of prostigmine and related compounds on procaine-esterase activity. B. Kisch (*Exp. Med. and Surg.*, 1943, 1, 84—93).—Prosthigmine inhibits the activity of procaine-esterase in concns. as low as 0.01 µg. per c.c. Methylene-blue is less effective. The enzyme was not affected by adrenaline, caffeine, diethylaminoethanol, methyl-red, pilocarpine, or strophanthin. Low inhibitory power was shown by creatinine, hordenine, methyl-orange, morphine, and *p*-methylaminophenol, moderate inhibition by methyl-green, methylrosaniline, and neutral-red, strong inhibitory action by eserine sulphate, prostigmine methosulphate, and methylene-blue. Pre-incubation at 37° of serum with prostigmine or eserine enhances their inhibitory action on the procaine-esterase.
A. S.

Specificity of procaine-esterase. B. Kisch (*Exp. Med. and Surg.*, 1943, 1, 278—281).—A lecture.
A. S.

Inhalant sensitisation and shock in guinea-pigs under controlled atmospheric conditions. Histamine, histaminase, and acetylcholine as possible preventives. Histaminase in treatment of allergy in children.—See A., 1943, III, 926.

Serine dehydrase and cysteine desulphurase. F. Binkley (*J. Biol. Chem.*, 1943, 150, 261—262; cf. Chargaff and Sprinson, A., 1943, III, 602).—Baker's and brewer's yeast, treated by the method of Wiggert *et al.* (A., 1940, III, 768), yield solutions containing cysteine desulphurase. The activity of this enzyme (80—90% of the S in 4 mg. of cysteine converted into H₂S in 24 hr. by extract of 10 mg. of *Escherichia coli* or brewer's yeast) decreases when the solutions are dialysed against water but it is restored by addition of Zn⁺⁺, Mg⁺⁺, or Mn⁺⁺ (concn. 0.001M.). Inactivation of crude or dialysed

reactivated extracts results from addition of 20 mg. of serine, from which NH₃ is produced, or phosphoglyceric acid, which is converted into phosphopyruvic acid. Glucose inactivates crude but not dialysed reactivated extracts. The inhibition disappears during prolonged digestion and its extent is proportional to the amount of inhibitor in the digest. Probably the inhibition is competitive. The serine dehydrase of the extracts is inactivated by dialysis and reactivated by inorg. ions in the same way as is cysteine desulphurase. After dialysis and reactivation, the action of both enzymes is inhibited by 0.001M-F⁻ and, if re-activation is brought about by Zn⁺⁺, by 0.001M-CN⁻. If it is brought about by Mg⁺⁺ or Mn⁺⁺ only the desulphurase action is inhibited. Degradation of 4 mg. of phosphoglyceric acid by dialysed reactivated extract is prevented by 20 mg. of cysteine or serine. Such extract produces pyruvic acid from serine and cysteine. The cysteine desulphurase and serine dehydrase of mammalian tissue (*e.g.*, mouse liver) are similar to those of yeast.
W. McC.

Peptidase activity in *Avena coleoptile* phytohormone test object. G. S. Avery, jun., and K. Linderstrom-Lang (*Bot. Gaz.*, 1940, 102, 50—63).—In coleoptiles of length exceeding 4 mm., the peptidase content per unit wt. of tissue or per cell is max. at the tip. Associations between morphological structure and gradients of auxin and peptidase in the coleoptile are recorded.
A. G. P.

***d*-Peptidases. IV. Amino-nitrogen determination (Van Slyke) for detection in serum.** H. Bayerle and G. Borger (*Biochem. Z.*, 1941, 307, 159—169).—*d*-Peptidase activity is not sp. to the sera of carcinomatous patients. Normal serum and spleen also split *d*-leucyl-glycylglycine, but not *d*-leucylglycine, as evidenced by increase in NH₂-N (Van Slyke). Previous findings regarding the non-splitting of *d*-dipeptides by *d*-peptidase are confirmed.
P. G. M.

Hydrolysis of *d*-dipeptides by carboxypeptidase. A. Schmitz and R. Merten (*Z. physiol. Chem.*, 1943, 278, 43—56; cf. A., 1943, I, 142).—*d*-Leucyl- and *d*-alanyl-glycine and glycyl-*d*-leucine are hydrolysed by glycerol extracts of organs (*e.g.*, liver) but carbobenzyloxyglycyl-*d*-leucine is hydrolysed (optimum at pH 7.2—7.4) only by pancreas extract and (less powerfully) trypsin solution. The hydrolysis of the carbobenzyloxy-compound is not affected by Mg⁺⁺ but is strongly activated by Co⁺⁺ (optimum concn. 0.01M.). Mn⁺⁺, Zn⁺⁺, and Fe⁺⁺ inhibit the action, the effect of Fe⁺⁺ being reversed and slight activation produced by cysteine. The results show that *d*-leucyl- and *d*-alanyl-glycine are not hydrolysed by carboxypeptidase and that the theory of Bergmann *et al.* is tenable only if the extracts contain *d*-peptidases. (See also C., 1944, Part I.)
W. McC.

Peptidases. I. Dipeptidase from aminopolypeptidase. F. Schneider and E. Graef (*Biochem. Z.*, 1941, 307, 249—256; cf. Grassmann *et al.*, A., 1938, III, 952).—Aminopolypeptidase solution from yeast acquires dipeptidase power when boiled aq. yeast extract or electrolyte (*e.g.*, 0.01—0.02N-Cl⁻, -Br⁻, -I⁻, or -NO₃⁻) is added, the magnitude of the effect increasing with the concn. of substance added. The effect of electrolyte + yeast extract is greater than the sum of the separate effects of the two substances. Aminopolypeptidase, treated with Cl⁻, does not attack glycylglycine appreciably; it hydrolyses leucyl- more rapidly than it does alanyl-glycine, although the reverse holds for dipeptidase from yeast or animal organs. The action of dipeptidase and the dipeptidase action of aminopolypeptidase + Cl⁻ are inhibited, although not always to the same extent, by H₂S and cysteine. The results support the view that dipeptidase consists of a heat-labile apodipeptidase of high mol. wt. (present, *e.g.*, in yeast and aminopolypeptidase solution) and a dialysable, heat-stable co-dipeptidase of low mol. wt. (present, *e.g.*, in boiled yeast extract) and that there exist dipeptidases having different degrees of affinity for the substrate.
W. McC.

Destruction of pitocin by aminopeptidase in brewers' yeast and by hypertensinase extracts of kidney.—See A., 1943, III, 809.

Effect of azosulphonamides on lysozyme.—See A., 1943, III, 830.

Bacterial proteases. XVI. Aminopolypeptidases of anaerobic bacteria. E. Maschmann (*Biochem. Z.*, 1940, 307, 1—34; cf. A., 1940, III, 347).—Data are given for the proteinase (gelatin, clupein, or casein as substrate) and peptidase activity (glycyl-, alanyl-, and leucyl-glycine as dipeptide, and the corresponding glycyl derivatives as tripeptide, substrates) of preps. from cultures of various types of *B. botulinus*, after activation by cysteine-Fe⁺⁺ or -Mn⁺⁺. Cultures of *B. histolyticus* and *B. botulinus*, type D, yield, on fractionation and purification by dialysis and pptn. by (NH₄)₂SO₄ or methyl alcohol, two aminopolypeptidases free from proteinase and dipeptidase, one of which hydrolyses (optimal pH 8.2) leucyl- and alanyl- but not glycyl-glycylglycine, whilst the other hydrolyses (optimal pH 8.5) only glycylglycylglycine. Activation by cysteine-Fe requires a period of incubation that is dependent on the source of the enzyme. Pretreatment of the enzymes with cysteine, thiolacetic acid, or H₂S destroys the activity, despite addition of Fe or Mn during the subsequent hydrolysis. Fe is more effective than is Mn as catalyst; Ni, Co, Zn, and Mg are without effect, although Mg appears to enhance the effect of Fe on some of the enzyme systems. For the Fe-cysteine catalyst, effective concns. are $m./\bar{5} \times 10^4$ of Fe

and $m/5 \times 10^2$ of cysteine. HCN inactivates the Fe-enzyme systems, approx. 6 mols. of HCN being required for each mol. of Fe; addition of excess of Fe reactivates the system. The peptidases activated by cysteine-Mn are unaffected by HCN. Carbonyl-group reagents (e.g., N_2H_4 , semicarbazide) have no effect on any of the activated peptidase systems, although treatment with phenylhydrazine prior to activation by, e.g., Fe-cysteine destroys the enzyme, probably by oxidation. The above group of "anaerobiopeptidases" appear to be substrate-sp. enzymes with a common co-enzyme but characteristic apoenzymes. F. O. H.

Effect of concentration of protease on rate of hydrolysis of muscle-protein. I. A. Smorodincev and V. P. Shigalov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 604—606).—When the concn. of a pancreatin-erepsin mixture is decreased by 50% the rate of hydrolysis of muscle-protein, as determined by liberation of amino-N, is decreased by 20—30%. With pancreatin alone, a 50% decrease in the vol. of the liquid has practically no effect on the amount of amino-N liberated, whilst with the pancreatin-erepsin mixture there is 8% increase in the amount of amino-N. When the amount of enzyme used is calc. on the wt. of substrate and not on the vol. of the liquid the amount of protein hydrolysed is independent of the liquid coeff. between the ratios 1:10 and 1:3. Muscle-protein is more readily hydrolysed under these conditions than is gluten. J. N. A.

Gelatin viscosity reduction method of measuring proteolytic activity. F. G. Lennox (*J. Coun. Sci. Ind. Res. Australia*, 1943, 18, 155—166).—The gelatinase activities of trypsin, papain, euphorbain, and a mould protease were measured at widely different concns. No const. relation was found between time for a given change in η and concn., the curves for different enzymes and for different samples of the same enzyme diverging at high concns. Chemical splitting was detected within 1—2 min. In highly active enzyme solutions maintained at 40°, η is reduced to almost the min. val. in 8 min., when approx. 3 peptide bonds per 10,000 g. of gelatin have been split. It is calc. (assuming a mol. wt. of 35,000 for gelatin) that at this stage hydrolysis has produced chains of approx. 28 amino-acid residues. R. H. H.

Amino-acid content and proteolytic activity of the rice kernel.—See A., 1943, III, 927.

Emulsin. XLIII. Fermentative fission of diglucosides of proto-catechualdehyde.—See A., 1944, II, 7.

Chemical and enzymic studies of the duodenal contents of infants. Determination of amylase, proteinase, and lipase in duodenal contents.—See A., 1943, III, 892.

Action of amylase on oxidised starch. B. Örtenblad and K. Myrbäck (*Biochem. Z.*, 1941, 307, 129—131).—Ordinary starch paste utilises small amounts of I by oxidation of aldehyde groups, which is complete when the blue colour develops. Owing to the poisoning effect of I (in amount sufficient to produce a blue colour) on the amylase, no splitting of starch occurs in the absence of $Na_2S_2O_3$, but in its presence the degree of splitting is identical with that of unoxidised starch. P. G. M.

Fate in the rabbit of intravenously injected amylase. V. Ritama (*Z. physiol. Chem.*, 1943, 278, 17—23).—Intravenous injection of amylase very greatly increases the amylase content of the blood, urine, and bile, but the increased level does not persist, normal contents being restored within several hr. Increases occur also in kidney, liver, spleen, and other organs. Rapid inactivation, which occurs spontaneously *in vitro*, probably occurs also *in vivo*. W. McC.

Blood-amylase [determination]. Effect of injury to pancreas or liver on amylase and lipidase content of blood. Determination of lipolytic enzymes of serum.—See A., 1943, III, 866.

Limit dextrins and starch. IX, X, XI. Splitting of starch by dextrinogen-amylase of malt. B. Örtenblad and K. Myrbäck (*Biochem. Z.*, 1941, 307, 123—128, 132—139, 140—158).—IX. 74.15% of potato starch can be recovered as dextrins by treatment with malt dextrinogen-amylase at 50°, 7.7% is transformed into fermentable sugars, and approx. 20% is sol. in 50% alcohol. 27% of the dextrin has mol. wt. 4100, 15% approx. 2900, 6% approx. 1900, and 52% approx. 1000.

X. Dextrinogen-amylase produces dextrins initially from approx. 6 glucose residues of the main chain of the starch mol. and eventually also from the side-chains. The enzyme produces hexasaccharides from the main starch chain rather than the side-chains, whereas these contain approx. 20 hexose residues. When β -dextrins are digested with dextrinogen-amylase until they no longer give a colour with I, two thirds of the resulting products consist of dextrins with 6 and one third with approx. 8 glucose residues. Amylases, other than yeast maltase, split hexasaccharides, which are obtained from starch in a yield of more than 50%, to 3 mols. of maltose.

XI. Dextrinogen-amylase differs from yeast maltase in the following respects. It does not split maltose. It splits the starch mol. to dextrins of mol. wt. 1000—5000 and then produces sugars from

these, leaving residual lower dextrans. The part of the starch mol. responsible for production of hexasaccharides is discussed.

P. G. M.
Cellobiase in barley and malt. C. Enders and T. Saji (*Biochem. Z.*, 1940, 306, 430—433).—The presence of an enzyme in barley and malt which breaks down cellobiose with production of reducing sugar is confirmed. The optimum pH is 4.0—4.5. The amount in barley increases during germination and reaches a max. in 7—8 days. Destruction occurs in kilning, so that malt contains considerably less than germinated barley. E. C. W.

Rôle of invertase in synthesis of starch in plant cells.—See A. 1943, III, 853.

Enzymic fission of the nucleic acid from tobacco mosaic virus.—See A., 1943, III, 914.

Kinetics of enzyme inactivation. A. S. Householder and G. Gomori (*Bull. Math. Biophysics*, 1943, 5, 83—90).—Data for the hydrolysis of β -glycerophosphate by various phosphatase preps. at pH 9.1 and 37°, in presence and absence of Mg and with and without prior incubation of the enzyme system, are mathematically examined. There appear to be two distinct and independently acting enzymic principles, one of which acts more rapidly and is more rapidly inactivated than the other. There is evidence that (a) an enzyme has a limited hydrolytic capacity, i.e., an enzyme mol. decomposes a definite no. of substrate mols. and thereafter remains entirely passive, (b) the less active principle in absence of Mg becomes the more active in presence of Mg, and (c) there are present two factors of unknown type that influence, and are influenced by, the inactivation of the enzyme. F. O. H.

Distribution of phosphatase in the spinal cord of chick embryos of one to eight days' incubation.—See A., 1943, III, 783.

Influence of ingested bile on increase in blood-phosphatase produced by biliary obstruction.—See A., 1943, III, 815.

Serum-phosphatase values in children showing retardation in osseous development and low metabolic rates.—See A., 1943, III, 866.

Serum-phosphatase activity in hyperparathyroidism.—See A., 1943, III, 882.

Glycerophosphatases of rat liver cancer produced by feeding p-dimethylaminoazobenzene.—See A., 1943, III, 897.

Phosphatase reaction as aid to identification of micro-organisms using phenolphthalein phosphate as substrate.—See A., 1943, III, 917.

Preparation of phenolphthalein phosphate [as substrate for phosphatase]. E. J. King (*J. Path. Bact.*, 1943, 55, 311—314).—Phthalins were made to react with $POCl_3$ in mol. proportions in an excess of pyridine. As the reaction goes quickly to completion there is no residue of unesterified material left and no separation is necessary. C. J. C. B.

XXV.—FUNGI. MICRO-ORGANISMS. IMMUNOLOGY. ALLERGY.

Action of X-rays on yeast and yeast constituents.—See A., 1943, III, 838.

Phosphatides and fats in brewers' and vinegar yeast.—See B., 1943, III, 294.

Zeolite in metabolism experiments with micro-organisms. M. Steiner (*Biochem. Z.*, 1941, 307, 330—332).—The N and fat contents of *Endomyces vernalis* grown on quartz sand moistened with culture medium (N source: NH_4 tartrate, urea, or asparagine) are changed from 5.36 to 3.75 and 12.0 to 26.9% respectively by replacing the sand by zeolite (Na-permutite). The wt. of mould produced remains almost unchanged. The NH_4 -N content (0.21%) of the medium (N source: asparagine) increases when sand is used but remains very low (0.03—0.08%) with zeolite. W. McC.

Chemistry and enzyme chemistry of acid production by moulds. XII. Transformation of acetates by submerged cultures of *Aspergillus niger*. H. Knobloch (*Biochem. Z.*, 1941, 307, 278—284).—*A. niger* grows readily in submerged cultures containing Ca, Na, K, or Mg acetate as sole C source, 90% being usually consumed within 21 days. Small proportions (up to the equiv. of 22% of the acetate consumed) of succinic, citric, glycollic, and glyoxylic acid are produced, together with 2—80% (usually 20%) of oxalic acid and CO_2 . Various strains of the mould differ considerably in their power to produce oxalic acid. No advantage is gained by adding sucrose but Ca formate, which is not attacked when it is sole C source, then yields $CaCO_3$ and oxalate (10%). Oxalate is further metabolised when sucrose is present. W. McC.

Production of *d*-gluconic, *d*-mannonic, and *d*-galactonic acid by *Aspergillus niger* in shaken cultures. H. Knobloch and H. Mayer (*Biochem. Z.*, 1941, 307, 285—292).—Glucose (8% solution) shaken with *A. niger* and $CaCO_3$ is usually converted, to the extent of 70—90% in 6 days, into gluconic acid. Some strains give smaller yields. Maltose, sucrose, and starch also yield gluconic acid whilst

lactose and raffinose yield gluconic and galactonic acids, and mannose and galactose yield mannonic (65–70%) and galactonic acids respectively. *l*-Xylose, *l*-rhamnose, and *d*-arabinose are scarcely or not at all converted into the corresponding monocarboxylic acids but raffinose yields, in addition to gluconic acid, galactose and galactonic acid, inulin yields fructose, and *d*-fructose yields citric acid. The changes are not appreciably affected by adding $MgCl_2$. Other moulds (e.g., *Penicillium luteum*, *P. citrinum*) also produce large proportions of gluconic acid from glucose. W. McC.

Production of acid from sugar by *Aspergillus niger*. IX. Spore formation and acid production. X. Effect of purity of sugar on production of citric acid. K. Bernhauer, A. Iglauer, and H. Knobloch (*Biochem. Z.*, 1941, 307, 293–297, 298–306).—IX. The acid-producing power of *A. niger* is not affected by drying and storing but power to germinate is unfavourably affected. Spores which are preserved after separation from the mycelium retain for 2 years all their acid-producing power and all or almost all of their power to germinate. Ripe conidial spores are best preserved thus.

X. The amount and rate of production of citric acid depend on the strain of *A. niger* and on the degree of purity of the (beet) sugar used. High concn. of sugar (not above 2.5%), addition of sufficient mineral acid (HCl) to give a concn. of 0.01–0.02N, and presence in the medium of mineral salts (e.g., NH_4Cl or NH_4NO_3 as N source) usually favour citric acid production. Crude glucose and molasses have unfavourable effects. The factor in raw sugar which favours citric acid production is probably inorg. W. McC.

Destructive changes in protoplasm during lysis in *Fusarium*. V. F. Altergot, K. S. Lavigina, and O. P. Kuvschinova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 286–289).—Both lytic and non-lytic strains of this fungus were grown on various media at 27–28°, and the condition of cell nuclei and nature of lipins were examined. In 17-day-old colonies cell nuclei had almost disappeared with lytic strains, whilst a 33-day-old colony of a non-lytic strain still exhibited normal fluffy mycelium with distinct cell nuclei which stained normally. As lysis proceeded with increasing age of a colony inclusions of lipin, staining red with Meyer's stain, became more numerous. P. G. M.

Strain-specificity and production of antibiotic substances. II. *Aspergillus flavus-oryza* group. S. A. Waksman and E. Bugie (*Proc. Nat. Acad. Sci.*, 1943, 29, 282–288).—Five strains of *A. oryza* had little or no antibacterial activity. The antibacterial activity of 6 strains of *A. flavus* depended on the strain, the composition of the medium, and the conditions of growth, especially aeration and agitation. The activity of *A. flavus* was due to two factors, aspergillic acid, which is active against Gram-positive and Gram-negative bacteria, and flavicin, which is comparable with penicillin in being active largely against Gram-positive bacteria. One culture of *A. flavus* produced under submerged conditions enough flavicin to compare favourably with the production of penicillin by the best strains of *Penicillium notatum*. (Cf. A., 1943, III, 600.) F. S.

Growth of *Penicillium notatum* on various media, and development of antibacterial substance. H. G. Taylor (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 299–301).—Best growth was obtained on heart broth or on Amigen, a digest of casein and pig pancreas, at pH 4.5. Antibacterial potency was increased by addition of 5% lactose. A small and variable amount of antibacterial substance could be extracted from the mould with alcohol, but it was not correlated with the potency of the medium. V. J. W.

Auxithals synthesised by some filamentous fungi. L. H. Leonian and V. G. Lilly (*Plant Physiol.*, 1940, 15, 515–525).—*Rhizopus sinuatus* and *Fusarium nivium* grown on glucose-amino-acid-inorg. salt media synthesise biotin and thiamin. *Phytophthora erythroseptica* requires external supplies of thiamin but can synthesise biotin. *Phycomyces blakesleeanus* produces thiamin if supplied with pyrimidine and thiazole. *Mucor ramannianus* synthesises pyrimidine and thence thiamin if supplied with thiazole. The three last-named organisms synthesise biotin. Thiamin is stored mainly in the mycelium and very little appears in the nutrient media; appreciable amounts of pyrimidine and thiazole together with somewhat larger proportions of biotin pass from the mycelium into the media. A. G. P.

Pigment production of *Actinomyces calicolor* and *A. violaceus-ruber*. J. E. Conn (*J. Bact.*, 1943, 46, 133–149).—The chemical and spectrophotometric properties of the pigments produced by these organisms are described. F. S.

Production of bacteriostatic substances by fungi. II. Examination of a second 100 fungal species. W. H. Wilkins and G. C. M. Harris (*Brit. J. exp. Path.*, 1943, 24, 141–143; cf. A., 1942, III, 937).—None of the *Phycomyces*, *Ascomycetes*, or *Fungi imperfecti* tested produced an appreciable amount of bacteriostatic substance except some of the *Aspergilli* and *Penicillia*. F. S.

Nitrogen requirements and vitamin deficiencies of *Phytophthora phaseoli*, Thaxter. R. K. Saksena and K. S. Bhargava (*Proc. Indian Acad. Sci.*, 1943, 18, 45–51).—This fungus grew in a medium con-

taining mineral salts, glucose, and inorg. N only when it was supplemented with *d*-alanine and thiamin. Other suitable N sources were peptone, hydrolysed peptone, casein, buttermilk, lentil extract, yeast extract, and lima bean infusion. *d*-Alanine could not be replaced by a no. of other amino-acids. NH_4^+ was toxic for the growth of the fungus. F. S.

Pimelic acid, biotin, and certain fungi. W. J. Robbins and R. Ma (*Science*, 1942, 96, 406–407).—13 organisms failed to grow in an otherwise complete medium in which biotin was replaced by pimelic acid alone or together with *l*-cystine, glutathione, or methionine. E. R. R.

Infectivity of fluorescent hairs in scalp ring worm. D. E. H. Cleveland (*Canad. Med. Assoc. J.*, 1943, 49, 280–281).—Hairs which fluoresce characteristically under Wood light are infected with living fungus, as shown by positive cultures even when clinically negative. C. J. C. B.

Relation between oxidation and assimilation of simple substances by yeast. M. J. Pickett and C. E. Clifton (*J. Cell. Comp. Physiol.*, 1943, 21, 77–94).—Yeast cells were suspended in 0.02M-glucose for 2–5 hr. Synthesis of carbohydrate was demonstrated by an increase in reducing sugar content of the cells following acid hydrolysis, and this increase corresponded with the increase in dry wt. and combustible C of the cells. Such non-proliferating suspensions do not completely oxidise glucose. $\frac{1}{2}$ is taken up by the cell, $\frac{1}{4}$ becomes CO_2 , and $\frac{1}{4}$ remains in the medium as glycerol, hexose diphosphate, lipin, alcohol, succinic and acetic acids, with a no. of unidentified other products. V. J. W.

Effects of cyanide, azide, and carbon monoxide on respiration of bakers' yeast. R. J. Winzler (*J. Cell. Comp. Physiol.*, 1943, 21, 229–252).—Dissociation consists of various inhibiting complexes are calc., and it follows that although CO inhibits mainly by combining with the reduced form of the O-activating enzyme, yet at over 25° it causes an inhibition which does not depend on O_2 tension. CN^- , besides combining with the oxidised enzyme, also increases apparent $K_{0.5}$ of the reduced enzyme and combines with the enzyme system which limits max. rate of respiration in absence of inhibitor. NaN_3 acts only in the first of these three ways. V. J. W.

Survey of protozoan infection of the staff of a large general hospital. M. M. Rothman and M. Laskey (*Amer. J. med. Sci.*, 1943, 206, 369–371).—Intestinal protozoan infection of 306 hospital staff members in Pittsburgh was found as follows: total identified protozoa, 37.2%; *E. coli*, 17.3%; *E. nana*, 12.7%; *Giardia*, 10%; *E. histolytica*, 3.6%; *Dientamoeba*, 2.3%; *Iodamoeba*, 0.7%; *Chilomastix*, 0.7%; *Enteromonas*, 0.3%. C. J. C. B.

***Endamoeba histolytica*. II. Encystation, maturation, and excystation of *E. histolytica*, and longevity of culture-induced cysts in various fluids and at different temperatures.** S. L. Chang (*J. infect. Dis.*, 1943, 72, 232–241). F. S.

Spirochaetal survival in frozen plasma. M. M. Rautch and J. W. Chambers (*Johns Hopkins Hosp. Bull.*, 1942, 71, 299–303).—In an attempt to determine whether blood from syphilitic donors might be used in the prep. of blood plasma stores it was found that human and rabbit plasma heavily inoculated with *Treponema pallidum* and kept frozen at -20° for 24 hr. is infectious for normal rabbits; after 48 hr. freezing infectivity is lost. T. F. D.

Viability of *Treponema pallidum* in stored plasma. F. R. Selbie (*Brit. J. exp. Path.*, 1943, 24, 150–152).—Rabbit plasma infected with a rabbit strain of *Tr. pallidum* and stored at 5° remained infective for 6 days. Reasons are given for suggesting that the risk of the transmission of syphilis by transfusion with stored blood or blood products is small. F. S.

Protective action of normal sheep serum against infections of *Trypanosoma duttoni* in mice. W. H. Taliaferro and Y. P. Olsen (*J. infect. Dis.*, 1943, 72, 213–221). F. S.

Course of serologic tests during therapeutic malaria in patient with syphilis. B. I. Kaplan and I. J. Brightman (*Amer. J. Publ. Health*, 1943, 33, 1073–1082).—During induced malarial infection, there was a uniform fall in the New York State complement fixation titre and a preliminary rise and later fall in the Kahn and New York State pptn. titres. C. J. C. B.

Malarial cryptozoites. C. G. Huff, F. Coulston, and W. Cantrell (*Science*, 1943, 97, 286).—The term "cryptozoite" is proposed for the exoerythrocytic stages of the material parasite which develops from sporozoites. E. R. R.

Lambliosis. P. H. Rossier and M. Dressler (*Schweiz. med. Wschr.*, 1943, 73, 209–221).—A review, with a discussion of 20 own cases. A. S.

Digestion of fat by protozoa. Culture of, and cellulose digestion by, a ciliate ciliate.—See A., 1943, III, 893.

Control of infectious diseases. R. Cruickshank (*Brit. Med. J.*, 1943, II, 159–163).—A review from the preventive and social point of view. I. C.

Pasteurisation of milk and infant mortality rates in Toronto, Vancouver, and Victoria. A. Brown (*Brit. Med. J.*, 1943, II, 133—134).—Statistics of the mortality rates in Toronto (where all milk is pasteurised) and Vancouver and Victoria (where 79 and 50% of the milk is pasteurised) show that the differences in mortality rates are not due to particular incidence of diseases to which pasteurisation would primarily be related, nor to differences in climate. I. C.

Hypothermia in experimental infections. I. Tolerance of guinea-pigs and rabbits to induced hypothermia. J. D. Hardy, D. R. Duerschner, and C. Muschenheim. II. Effect of hypothermia on tuberculin-sensitivity in guinea-pigs. D. R. Duerschner, C. Muschenheim, and J. D. Hardy. III. Effect of hypothermia on resistance to experimental pneumococcus infection. C. Muschenheim, D. R. Duerschner, J. D. Hardy, and A. M. Stoll (*J. infect. Dis.*, 1943, 72, 179—182, 183—186, 187—196).—I. Rabbits and guinea-pigs were subjected to prolonged hypothermia at 31—33° by intermittent exposure to 12° in a refrigerator after the administration of 10 mg. of Na phenobarbital per 100 g. of body wt. Rabbits tolerated hypothermia for 96 hr. but guinea-pigs tolerated it for only 24 hr.

II. Biweekly hypothermia for 24 hr. over a period of 6 weeks had no effect on the course of experimental tuberculosis in guinea-pigs, but delayed the appearance of skin-sensitivity to tuberculin.

III. Rabbits were subjected to hypothermia after experimental dermal pneumococcus infection. With a highly virulent type I strain the only effect of hypothermia was a decrease in the local reaction. With a relatively avirulent type III strain, non-lethal in ordinary conditions, hypothermia usually caused overwhelming bacteraemia and death as well as inhibition of the dermal reaction. F. S.

Lethal effect of triethylene glycol vapour on air-borne bacteria and influenza virus. O. O. Robertson, T. T. Puck, H. F. Lemon, and C. G. Loosli (*Science*, 1943, 97, 142—144).—Concns. of 1 g. in 10⁶ to 2 × 10⁸ c.c. of air rapidly killed air-borne pneumococci and hæmolytic streptococci. 1 g. in 2 × 10⁸ c.c. of air completely protected 40 mice previously exposed to influenza virus. Of 40 controls, 37 died and the remainder showed extensive pulmonary lesions. E. R. R.

Quantitative test to evaluate methods of hand sterilisation. H. Sears, W. E. Smick, G. C. Schaufier, and R. C. Shoemaker (*West. J. Surg. Obstet. Gynec.*, 1941, 49, 458—464). P. C. W.

Germicidal action of aliphatic alcohols.—See A., 1943, III, 832.

Micro-organisms surviving water-chlorination.—See B., 1943, III, 307.

Antibacterial action of lactic acid and volatile fatty acids of sweat.—See A., 1943, III, 895.

α -Naphthol modification of the Voges-Proskauer test with reference to the creatine modification. M. W. Barritt (*J. Hygiene*, 1943, 43, 214—216).—Minor variations of the α -naphthol modification of this test are considered with reference to their sensitivity. Sensitiveness and optimum incubation periods vary with the brand of peptone used. D. D.

New method for demonstration of acid-fast organisms in tissue sections.—See A., 1943, III, 860.

Use of "Pyrex" brand fritted filters in bacteriological work. H. E. Morton (*J. Bact.*, 1943, 46, 312).—Pyrex glass filters of a maximum pore diameter of 1.3—1.9 μ . with a 35 mm. filtering area filtered 50 ml. of a suspension of *Serratia marcescens* in 7—35 min. under a pressure of 660—690 mm. of Hg. The filtrates were sterile. F. S.

Use of fibrous sodium pectate as a substitute for agar in bacteriological gels. R. M. McCready, H. S. Owens, and W. D. Maclary (*Science*, 1943, 97, 428). E. R. R.

Selective action of tetrathionate in bacteriological media: Report to the Medical Research Council. R. Knox, P. G. H. Gell, and M. R. Pollock (*J. Hygiene*, 1943, 43, 147—158).—Media containing thio-sulphate, tetrathionate, iodide, and chalk have been investigated. The selective action of tetrathionate is the most important feature in media containing all these substances. Chalk is of doubtful val. as a buffer as it inhibits the growth of *Bact. typhosum* and favours that of *Proteus*. Many bacteria of the *Salmonella* group can reduce tetrathionate quantitatively in broth cultures, and the variable results obtained with media containing tetrathionate may be explained from this fact. The delayed production of H₂S from such media is due to the fact that it cannot be evolved until all the tetrathionate has been reduced. When balanced tetrathionate is used in a solid medium, the growth characteristics are different from those in Muller's medium and have proved consistent. *Bact. typhosum* is rather sensitive to thio-sulphate and a medium containing 25% less of thio-sulphate than Muller's, though rather less selective, was more reliable. A graph shows the optimum composition of media to suit sp. needs. D. D.

Coagulation and sterilisation of culture media. A. Cantor and W. Schobert (*J. Bact.*, 1943, 46, 203—204).—To avoid disruption of the medium by gas, blood serum media sterilised at 121° at the

corresponding pressure of 15 lb. should not be allowed to cool more slowly than the steam under pressure in the autoclave. This was done by placing the racks of tubed media in a closed wooden box equal to $\frac{1}{2}$ of the capacity of the autoclave. This doubled the time required for the pressure to drop from 15 to 0 lb. after all valves were closed at the end of the sterilisation period. F. S.

Agar contamination as affecting the sterilisation of culture media. C. T. Townsend, and T. L. Zuch (*J. Bact.*, 1943, 46, 269—271).—To sterilise agar contaminated with sporing bacteria autoclaving 20 min. at 121° or 35 min. at 115.6° is required. In Roux bottles 30 min. at 121° or 45 min. at 115.6° is required. F. S.

Action of bacterial toxins on tumours. IV. Distribution of tumour-hæmorrhage agents among bacterial species.—See A., 1943, III, 897.

Study of luminous bacterial cells and cytolysates with electron microscope. F. H. Johnson, N. Zworykin, and G. Warren (*J. Bact.*, 1943, 46, 167—174).—Cells of marine species (*Achromobacter fischeri*, *A. harveyi*, *Photobacterium phosphoreum*, *P. pierantonii*, *P. sepiæ*, and *P. splendidum*) prepared from an isotonic 3% NaCl suspension were dense with no evidence of a cell wall. In distilled water suspensions there was cytolysis with exudation of cell contents and partial disintegration of the cell wall. Fresh-water species (*Vibrio albensis* and *V. phosphorescens*) were more resistant to distilled water. Fixation by AgNO₃ in isotonic sucrose revealed capsule-like structures on *P. phosphoreum*. In 95% alcohol the wall of *A. fischeri* crumpled off. Dil. phenol dissolved as well as coagulated *V. albensis* cells. (52 electron micrographs.) F. S.

Bacterial synthesis of *p*-aminobenzoic acid. M. Landy, N. W. Larkum, and E. J. Oswald (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 338—341).—A large no. of bacteria were grown in synthetic media free from *p*-aminobenzoic acid. In all cases the medium was found to contain the acid (*Acetobacter* assay) when growth had taken place. V. J. W.

Factors influencing enzymic activities of bacteria. E. F. Gale (*Bact. Rev.*, 1943, 7, 139—173). F. S.

Competition between free and combined nitrogen in nutrition of *Azobacter*. P. W. Wilson, J. F. Hull, and R. H. Burris (*Proc. Nat. Acad. Sci.*, 1943, 29, 289—294).—*A. vinelandii* was grown in the presence of normal N compounds in an atm. containing ¹⁵N-enriched mol. N₂. The ability of various N compounds to compete with the N fixation reaction was determined by isotopic analysis. NH₃ and compounds readily converted into NH₃ were used to the virtual exclusion of N₂. With NH₄ compounds, and probably urea, the change from a metabolism involving only N₂ to one based on combined N was rapid and complete. With other compounds, notably NO₃, a period of adaptation was essential, otherwise fixation was not entirely suppressed. With asparagine there was an increased but not complete inhibition of N fixation after adaptation. N compounds which the organism assimilates only with difficulty (aspartic and glutamic acids) or not at all (arginine) did not inhibit the fixation of N₂ to a marked extent. The results indicate that NH₄ is a key intermediate. F. S.

Cellulose decomposition by aerobic mesophilic bacteria from soil. I. Isolation and description of organisms. II. Biochemical studies on filter-paper and cellulose preparations. III. Effect of lignin. W. H. Fuller and A. G. Norman (*J. Bact.*, 1943, 46, 273—280, 281—289, 291—297).—I. Five new species of these organisms are described, 3 of *Pseudomonas* (*P. ephemerocyanea*, *P. lasia*, and *P. erythra*), one of *Achromobacter* (*A. picrum*), and one of *Bacillus* (*B. aporrhæus*). All except *P. erythra* are versatile organisms capable of growing well on many carbohydrates. *A. picrum* alone produces acid from cellulose and sugars.

II. The more active organisms, *P. ephemerocyanea* and *Sporocytophaga myxococcoides*, utilised about one third of the filter-paper supplied in 14 days. Cornstalk cellulose was far more extensively decomposed by all organisms in equal time. The presence of xylan in the cellulosan component of the cornstalk cellulose had a favourable influence on decomp. The xylan was utilised extensively, about 75% being more readily available than the rest. Extracted cellulose with most of the xylan removed resembled filter-paper in availability. A portion of the xylan was probably present in imperfect cellulose chains.

III. A series of preps. with decreasing lignin content was obtained from jute fibre by treatments with monoethanolamine. Decomp. by the vigorous organisms, *P. ephemerocyanea* and *S. myxococcoides*, increased as the lignin content was reduced. Less vigorous organisms, such as *A. picrum* and *B. aporrhæus*, were little affected by the lignin content. Both used the xylan component disproportionately. Because lignin and cellulose in the cell-wall form interpenetrating systems, the effects of lignin in reducing the availability of cellulose are probably mainly physical. F. S.

Infectious diseases. H. A. Reimann (*Arch. intern. Med.*, 1943, 72, 388—426).—A general review. C. J. C. B.

Infection in newborn. J. L. Henderson (*Edinb. Med. J.*, 1943, 50, 535—553).—A lecture based on an analysis of 369 deaths among

8075 infants during 2 years in a large maternity hospital. Measures designed to reduce cross-infection are discussed. H. S.

In-vitro effects of quinine, atabrin, and substituted acridine compounds on Gram-negative bacteria.—See A., 1943, III, 832.

Peritoneal vaccination, irrigation, and chemotherapy in treatment of experimental peritonitis. E. R. Schmidt, A. R. Curreri, F. G. Hidde, and E. P. Adashek (*Surgery*, 1941, 9, 871—877).—93% mortality from peritonitis results from perforation of the distal ileum in the dog. Peritoneal vaccination with coli bactragen 24—72 hr. before the operation protects the animals against subsequent peritonitis. Peritoneal irrigation has little val. Sulphanilamide administration is beneficial. P. C. W.

Strains of *A. cloacæ* causing illness in cotton workers. B. H. Caminta, R. Schneider, R. W. Kolb, and P. A. Neal (*U.S. Publ. Health Repts.*, 1943, 58, 1165—1183).—A Gram-negative, motile, mucoid, non-sporulating, rod-shaped micro-organism, which caused illness among workers, was found in large no. in low-grade, stained cotton, and also in dust from cotton mills, hemp mills, and grain elevators. Workers exposed to hemp dust or grain dust are known to suffer from an illness similar to that described in workers in low-grade cotton. C. G. W.

Effects of spermidine and other polyamines on growth inhibition of *Escherichia coli* by atabrine. M. Silverman and E. A. Evans, jun. (*J. Biol. Chem.*, 1943, 150, 265—266).—A substance or substances present in Witte's peptone and to a smaller extent in other culture media diminishes the inhibitory action of atabrine on growth of *Escherichia coli*. Spermine, spermidine, diethylenetriamine, triethylenetetramine, tetraethylenepentamine, and Ca pantothenate in concns. of 0.001M. or less act in the same way but pyridoxine, adenine, creatine, many amino-acids, and related compounds have no such effect. Possibly spermine and spermidine have vitamin-like properties. W. McC.

Sulphanilamide activity against *E. coli* under anaërobic conditions. See A., 1943, III, 830.

Influence of vitamins and coliform bacteria on sulphaguanidine tolerance by young chickens.—See A., 1943, III, 830.

Experimental *Bartonella muris* anæmia. I. Age and resistance. II. Latent infection and resistance. W. R. Kessler (*J. infect. Dis.*, 1943, 73, 65—76, 77—84). F. S.

Acute brucellosis. B. Wise (*Arch. intern. Med.*, 1943, 72, 346—352).—Clinical, bacteriological, and serological report of 3 patients. C. J. C. B.

Milk-borne epidemic of brucellosis. I. H. Borts, D. M. Harris, M. F. Joyn, J. R. Jennings, and C. F. Jordan (*J. Amer. Med. Assoc.*, 1943, 121, 319—322).—An epidemic of milk-borne brucellosis involved 77 people who showed positive clinical or agglutination reactions to the porcine strain of *Brucella* (*Br. porcis*). The diagnosis by blood culture, agglutination test, and intradermal test is discussed. C. A. K.

Growth of *Brucella* in simple chemically defined medium. N. B. McCullough and L. A. Dick (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 310—311).—7 out of 8 strains grew freely in a medium containing $(\text{NH}_4)_2\text{SO}_4$, NaCl, K_2HPO_4 , MgSO_4 , $\text{Na}_2\text{S}_2\text{O}_3$, glucose, thiamin, nicotinic acid, Ca pantothenate, and biotin. pH was 6.8—7.2. V. J. W.

Gas gangrene. G. B. Reed and J. H. Orr (*Amer. J. med. Sci.*, 1943, 206, 379—399).—A crit. review. C. J. C. B.

Use of hydrolysed wheat mash for enrichment of *Clostridium acetobutylicum*. L. S. McClung (*J. Bact.*, 1943, 46, 214—215; cf. Rubbo *et al.*, A., 1942, III, 62).—Hydrolysed wheat medium prepared from American wheat, cracked wheat, yellow corn, or white corn was not a successful enrichment medium for *Cl. acetobutylicum*. F. S.

Use of dried tissue in beef heart medium for anaërobic bacteria. L. S. McClung (*J. Bact.*, 1943, 46, 215—216).—Media prepared from dried tissue stored at room temp. for 1 month gave as satisfactory growth of a no. of anaërobic organisms as media prepared from fresh tissue. F. S.

Explosive epidemic of Sonne dysentery. C. A. Green and M. C. Macleod (*Brit. Med. J.*, 1943, II, 259—261).—An outbreak of Sonne dysentery, probably not due to infection of the milk (except in a group of cases) is recorded. *B. dysenteriae*, Sonne, was isolated from one sample of tap-water which had passed the usual bacteriological tests and contained 0.15 p.p.m. of residual Cl. I. C.

Experimental variation of nicotinamide requirement of dysentery bacilli. S. A. Koser and M. H. Wright (*J. Bact.*, 1943, 46, 239—249).—From 4 laboratory stock cultures of dysentery bacilli requiring nicotinamide for growth, variants not requiring nicotinamide were obtained by serial transfers in an amino-acid—glucose—salt medium with decreasing amounts of nicotinamide or by bulk inoculation in the deficient medium followed by subcultures without nicotinamide. The variants always grew more luxuriantly in the presence of optimum amounts of nicotinamide. Culture filtrates of the variants, after growth in medium without nicotinamide,

supported growth of an original dysentery culture and of *H. parainfluenzae*. The variants therefore apparently synthesised nicotinamide and co-enzyme or something physiologically equiv. There were no changes in sugar fermentation tests and agglutination reactions in the variant cultures. F. S.

Diphtheria in Middle East. T. A. MacGibbon (*Edinb. Med. J.*, 1943, 50, 617—625).—In a series of 71 cases (52 confirmed by bacteriological examination) the incidence of complications was 42%. Reasons for this high rate were missed cases (especially cutaneous diphtheria), insufficient antitoxin, nursing difficulties in the field, and possibly high virulence of organism. H. S.

Diphtheria amongst the Bantu. J. F. Murray (*J. Hygiene*, 1943, 43, 159—169).—Bantu school children were examined for diphtheria carrier rate and Schick immunity. 89% of the strains recovered were of the *mitis* type. The infrequency of clinical diphtheria is partly due to environment, but there is also a racial factor, which probably lies in ability to produce antitoxin quickly. J. H. B.

Ætiology of malignant diphtheria. M. Frobisher, jun. (*Amer. J. Publ. Health*, 1943, 33, 1244—1256).—A general review. C. J. C. B.

Faucial and labial diphtheria. M. Anderson (*Brit. Med. J.*, 1943, II, 104).—A case of faucial and labial diphtheria, followed a slight injury to the lip. It is suggested that slight trauma to a tissue may facilitate the introduction of Klebs-Löffler bacilli. I. C.

Cutaneous and conjunctival diphtheria. H. C. M. Williams (*Brit. Med. J.*, 1943, II, 416—417).—Report of 19 cases of skin and eye lesions due to *C. diphtheriae*, from which virulent or avirulent organisms were isolated. I. C.

Two agar-less media for rapid isolation of *Corynebacterium* and *Neisseria*. M. Levin (*J. Bact.*, 1943, 46, 233—237).—Agar is replaced by 75% hog serum and the medium is inspissated by autoclaving at 15 lb. pressure for 20—25 min. For *N. intracellularis* the medium is enriched with casamino acids, Difco (Mueller and Johnson, *J. Immunol.*, 1941, 40, 33). K tellurite is incorporated in the diphtheria medium. F. S.

Variation in diphtheria antitoxin titres of human serum. M. M. Schmeckebier (*Amer. J. Dis. Child.*, 1943, 66, 25—36).—The diphtheria antitoxin titre of serum may fluctuate considerably. In 1 subject it increased 17-fold in 4 months, in another it varied from 0.6 to 1 unit per c.c. within 4 days. There is a direct relationship between thyroid function and serum antitoxin concn., but not with the menstrual cycle. Vitamins-B₁, -B₂, and -C for several weeks did not alter in antitoxin titre. Of 7 persons given -A and -D the titres increased in 4 after several weeks. C. J. C. B.

Effect of germicides on viability and on respiratory enzyme activity of gonococcus. M. A. Bucca (*J. Bact.*, 1943, 46, 151—166).—Of merthiolate, AgNO₃, protargol, KMnO₄, neositol (colloidal AgI-protein compound), Ag nucleate, argyrol, and sulphanilamide, the first four were most lethal in 20 min. on suspensions of gonococci in 0.15M-Na acetate in distilled water adjusted to pH 6.6 with acetic acid. Death of cells occurred before enzyme inhibition except with AgNO₃ and KMnO₄ which inhibited 65% of dehydrogenase activity at lethal concn. AgNO₃, KMnO₄, and protargol were the most effective enzyme inhibitors. Glyceric and lactic dehydrogenases were generally inhibited in lower concn. than catalase, peroxidase, and indophenol oxidase. Sulphanilamide in a concn. of 1:17 had no effect on viability in 20 min. but killed at 24 hr. and of the enzymes tested inhibited only indophenol oxidase and lactic dehydrogenase by 55 and 26% respectively. F. S.

Antigenic relationship between *H. influenzae B* and pneumococcus VI. E. Neter (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 289—292).—Some anti-influenza horse serum reacts with pneumococcal sp. sol. polysaccharide, but this does not react with the antibodies to influenza polysaccharide, which, however, when added to serum removes both its own antibodies and the precipitins against pneumococcal polysaccharide. It is suggested that the serum contains two antibodies, one reacting with *H. influenzae* and the other with pneumococcus. V. J. W.

Antigenic relation of type B *H. influenzae* to type 29 and type 6 pneumococci. H. D. Zepp and H. L. Hodcs (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 315—317).—Serum of rabbits immunised with any one of 4 strains of type 6 or 4 strains of type 29 pneumococcus caused capsular swelling in 7 strains of *H. influenzae B*. V. J. W.

Hæmophilus influenzae type B laryngitis with bacteræmia. P. G. du Bois and C. A. Aldrich (*J. Pediat.*, 1943, 23, 184—188). C. J. C. B.

Meningococccæmia. N. Silverthorne (*J. Pediat.*, 1943, 23, 155—157).—In the 3 cases reported, none of the children received any chemotherapeutic or serum; all recovered. Bactericidal power developed in the blood of each patient to the infecting strain of meningococcus during the course of the illness. C. J. C. B.

Friedlander's bacillus septicæmia and meningitis. J. C. Ransmeier and J. W. Major (*Arch. intern. Med.*, 1943, 72, 319—328).—Report

of a case and autopsy, with an analysis of 29 cases collected from the literature.

C. J. C. B.

Relation of carrier to epidemic meningitis. J. H. Mueller (*Ann. int. Med.*, 1943, 18, 974—977).—60—70% of several hundred people, living in relatively close contact during a serious type I meningococcus epidemic, were type I carriers. 200 of these carriers were given sulphadiazine for 3 days. None of these people carried meningococci when tested 3 days following cessation of the drug. 3 weeks later, 18 out of 116 subjects again carried type I meningococci. A. S.

Typing of paratyphoid B bacilli by means of Vi bacteriophage. A. Felix and B. R. Callow (*Brit. Med. J.*, 1943, II, 127—130).—Anti-Vi bacteriophages that act specifically on *Bact. paratyphosum B* are described. Anti-O bacteriophages on the contrary attack strains belonging to many *Salmonella* species. Anti-Vi phages of *Bact. paratyphosum B* can be adapted to develop a high degree of specificity for particular strains. Four separate and distinct types of Vi-phages and *Bact. paratyphosum B* have been identified so far and a method for typing strains of paratyphoid B bacilli has been developed. Of all the strains isolated from patients and carriers in Great Britain, only 7% could not be typed by means of the available four Vi-type phages. I. C.

Nutrition and metabolism of *Pasteurella pestis*. M. Doudoroff (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 73—75). V. J. W.

Influence of febrile conditions on whooping cough. I. Fleissig (*Schweiz. med. Wschr.*, 1943, 73, 149—152).—The course of whooping cough is shortened by additional febrile conditions of other origin (e.g., infection of upper respiratory tract) (281 cases). 91% of all cases cured or improved by sp. vaccines developed fever. Cure or improvement without fever after vaccination was seen in only 7% of the treated cases. A. S.

Treatment of pertussis with vaccines and adrenal cortex extract. L. Jacobs (*Arch. Pediat.*, 1943, 60, 313—324).—195 patients treated with injections of pertussis antigen, pertussis vaccine, and a mixture of equal parts of both, all improved, but so did 20 patients given injections of triple typhoid vaccine. The results are thus due to non-sp. protein injection. Injections of adrenal cortex extract in 15 patients markedly reduced the severity and duration of whooping cough. C. J. C. B.

Occurrence of sulphonamide-resistant pneumococci in clinical practice. M. Hamburger, L. H. Schmidt, C. L. Sesler, J. M. Rueggesser, and E. S. Grupen (*J. infect. Dis.*, 1943, 73, 12—30).—Sulphonamide sensitivity was tested in beef heart infusion broth, pH 7—8, prepared from Difco dehydrated beef heart with 2% neopeptone and 0.5% NaCl. In only 2 of 168 cases of pneumococcal infection was the pneumococcus highly resistant to sulphonamide. Moderately resistant organisms were also infrequent and their presence did not necessarily interfere with the prompt recovery of the patient. Several pneumococci acquired sulphonamide-resistance especially when treatment was prolonged. F. S.

Effect of various substances on oxidation of certain sugars and pyruvic acid by a type I avirulent pneumococcus. F. Bernheim and M. L. C. Bernheim (*J. Bact.*, 1943, 46, 225—232).—The higher fatty acids, which are not themselves oxidised, inhibited the oxidation of glucose, fructose, and mannose by the pneumococcus. Methylene-blue inhibited the oxidation of fructose but slightly accelerated that of glucose and mannose. All the sugars were oxidised more slowly at pH 6.7 than at pH 7.8. Pyruvic acid was oxidised more rapidly at pH 6.7 than at pH 7.8. Addition of certain amino-acids, which were not themselves oxidised, or of certain proteins, peptones, or peptides greatly increased the oxidation of pyruvic acid. F. S.

Bacterial morphology as shown by electron microscope. VI. Capsule, cell wall, and inner protoplasm of pneumococcus, type III. S. Mudd, F. Heinmets, and T. F. Anderson (*J. Bact.*, 1943, 46, 205—211).—The pneumococcal capsule is a gel of low density immediately surrounding the cell-wall. The cell-wall is distinct from the inner bacterial protoplasm with its limiting protoplasmic membrane. (8 electron micrographs.) F. S.

Inhibition of bacterial growth by glucose in media devoid of nicotinic acid. I. J. Kligler, N. Grossowicz, and S. Bergner (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 332—334).—In a synthetic amino-acid medium, free from nicotinic acid, *B. proteus*, *Sh. dysenteriae*, and *Staph. aureus* grew 5-, 1000-, and 1000-fold better respectively in absence, as compared with presence of 0.1—0.2%, of glucose. V. J. W.

Susceptibility of *Shigella paradyseriae* to sodium sulphathiazole and sulphaguanidine *in vitro*.—See A., 1943, III, 906.

Increased synthesis of *p*-aminobenzoic acid associated with the development of sulphonamide resistance in *Staphylococcus aureus*. M. Landy, N. W. Larkum, E. J. Oswald, and F. Straightoff (*Science*, 1943, 97, 295—297).—Sulphonamide- (sulphathiazole)-resistant strains of *S. aureus* produce more *p*-aminobenzoic acid than do their parent strains. The extra *p*-aminobenzoic acid produced is sufficient to account for the fastness of the strains to sulphathiazole. E. R. R.

Pigment production by sulphanilamide-resistant staphylococci in the presence of sulphanilamides. W. W. Spink and J. J. Vivino (*Science*, 1943, 98, 44—45).—Sulphanilamide-resistant strains developed an orange-brown pigment, insol. in fat solvents; it may be derived from *p*-aminobenzoic acid. E. R. R.

Induced resistance to penicillin of staphylo-, pneumo-, and streptococci. C. M. McKee and C. L. Houck (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 33—34).—Greatly increased resistance to penicillin was developed in broth cultures in all strains examined, and was accompanied by great loss of virulence. It did not occur *in vivo*. V. J. W.

Resistance of small-colony variants (G-forms) of a staphylococcus to bacteriostatic activity of penicillin. R. J. Schnitzer, L. J. Camagni, and M. Buck (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 75—78).—Small-colony forms were produced by culture in medium containing either penicillin or 0.5—2% of BaCl₂. Such forms retained their morphological character and their resistance in sub-culture, and also had some resistance to methyl-violet. They reverted to the normal form on culture in a rich medium. V. J. W.

Effect of actinomycin, clavacin, and tyrothricin on staphylococcal toxin. J. E. Blair and F. A. Hallman (*J. infect. Dis.*, 1943, 72, 246—252).—Actinomycin, clavacin, and tyrothricin did not destroy staphylococcal toxin, nor enhance its hæmolytic or lethal action, nor prevent its production under favourable *in vitro* conditions. Actinomycin and clavacin did not inhibit the neutralisation of staphylococcal hæmotoxin by antitoxin. While tyrothricin prevented the neutralisation of hæmotoxin, it did not inhibit the protective action of antitoxin against the intravenous injection in mice of a lethal dose of toxin. F. S.

Wound infection. H. L. De Waal (*Edinb. Med. J.*, 1943, 50, 577—588).—A combined clinical and bacteriological investigation is described of 708 wounds and burns examined repeatedly after admission to hospital. 18.9% contained *Staph. pyogenes* and 13.1% hæmolytic streptococci, both of which were especially frequent in wounds of the head and neck. 58 wounds contained clostridia but only 3 patients developed gas gangrene. All wounds should receive hospital treatment within 4—6 hr. since the % of infected wounds rises rapidly after 6—8 hr. Infection with hæmolytic streptococci was twice as frequent (16.6%), and with other streptococci three times as frequent (25.8%), after "first-aid cleaning" of wounds, which is therefore deprecated. 86% of all wounds and 67% of burns became infected during treatment, 21% with hæmolytic streptococci and 33% with *Staph. pyogenes*. In 301 burns acriflavine (0.1%) was the most efficient application in reducing infection although the rate of healing was thereby slightly prolonged. It is therefore recommended that this be replaced by some other antiseptic after 4—5 days, by which time it has exerted its max. effect. H. S.

***Streptococcus allantoicus* and fermentation of allantoin.** H. A. Barker (*J. Bact.*, 1943, 46, 251—259).—This new species of streptococcus carries out a modified homofermentative lactic acid fermentation of sugar and can also develop anaerobically with allantoin as a C and energy source. The fermentation of allantoin results in the formation of NH₃, urea, CO₂, formic, acetic, lactic, and oxamic acids, and possibly glycollic acid. (1 photomicrograph.) F. S.

New growth factor for *Streptococcus lactis*. J. C. Keresztesy, E. J. Rickes, and J. L. Stokes (*Science*, 1943, 97, 465).—Liver extracts and preps. were compared with a standard "folic acid" concentrate, and some were more active for *Streptococcus lactis* R than for *Lactobacillus casei*; spinach extract had the same effect on both organisms. A new growth factor was isolated, 1 µg. of which has the same potency for *S. lactis* as 56 µg. of the (7.7%) folic acid standard, but is less active than 0.0004 µg. of the latter for *L. casei*. E. R. R.

Serological grouping of *Streptococcus lactis* (group N) and its relationship to *Streptococcus faecalis*. P. M. F. Shattock and A. T. R. Mattick (*J. Hygiene*, 1943, 43, 173—188).—*Str. faecalis*, of which *Str. liquefaciens* in a variety, falls into Lancefield's group D. *Str. lactis* has been clearly differentiated from *Str. faecalis* and other members of group D, and is assigned with *Str. cremoris* to a new serological group "N." J. H. B.

Reproduction of bacteria from large bodies of *Streptobacillus moniliformis*. L. Dienes (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 84—86).—After 48 hr. growth colonies consisted mainly of large vacuolated flat bodies up to 20 µ. in diameter. When agar blocks bearing these bodies were incubated on coverslips for later examination, many of the large forms were found to be tightly filled with bacteria which later formed round dense colonies. V. J. W.

Absorption spectra of carotenoids in the red and brown forms of a photosynthetic bacterium. C. S. French (*Bot. Gaz.*, 1940, 102, 406—409).—The absorption spectra of extracts of *Streptococcus varians* show the characteristic bands of bacteriochlorophyll and carotenoids. The red form shows an additional band at 5800 Å. A. G. P.

Streptococci present in faeces of patients with non-specific ulcerative colitis; effect of oral administration of sulphonamides. E. C. Rodaniche, W. L. Palmer, and J. B. Kirsner (*J. infect. Dis.*, 1943, **72**, 222—227).—*Streptococcus faecalis* was the predominant streptococcal species in the faeces of 10 cases. Oral administration of sulphonamide compounds did not cause any alteration in the types of streptococci present in the faeces. F. S.

Comparison of value of agglutination and precipitin reactions in serological typing of group A streptococci. E. Krumwiede (*J. Bact.*, 1943, **46**, 117—131).—There was a high degree of correlation between the results obtained in typing 382 strains by slide agglutination (Griffith) and type-sp. *M* precipitin reactions. F. S.

Type relationships amongst group A streptococci. S. D. Elliott (*Brit. J. exp. Path.*, 1943, **24**, 159—170).—Group A streptococci of types 24, 14, and 1 possess, in addition to general non-sp. antigens, both the *M* and *T* antigens described by Lancefield (A., 1940, III, 771). Strains possessing these two antigens may show a diphasic variation, either antigen being dominant when the other is recessive; both antigens may appear together. The *M* phase is favoured by growth at 37°, the *T* phase by growth at 22° or in 0.2% glucose. *M* is resistant to 100° and is digested by trypsin whereas *T* is inactivated by 100° and resists trypsin. F. S.

Streptococcal sore throat. A. L. Bloomfield and L. A. Rantz (*J. Amer. Med. Assoc.*, 1943, **121**, 315—319).—An outbreak of septic sore throat in an army camp was due to infection with hæmolytic streptococcus Griffith type 15 and was probably not transmitted by milk. The mild course of the disease may have been due to sulphonamide administration. C. A. K.

Food-borne streptococcus outbreak. V. A. Getting, S. M. Wheeler, and G. E. Foley (*Amer. J. Publ. Health*, 1943, **33**, 1217—1223).—A ham-borne outbreak involved 24 cases of scarlet fever, 56 cases of septic sore throat, 7 of diarrhoea, and 4 of vomiting. One of the hams had been cooked by a woman who was in the pre-eruptive stage of scarlet fever. C. J. C. B.

Bantu immunity to scarlet fever toxin. J. F. Murray (*J. Hygiene*, 1943, **43**, 170—172).—743 Bantu children showed 5% of positive reactors to the Dick test. 19% of urban children were carriers of Lancefield's group A *Strep. hæmolyticus*. The basis of Bantu immunity to scarlet fever is discussed. J. H. B.

Rheumatic fever. O. Goldkamp (*Arch. Pediat.*, 1943, **60**, 325—344).—A review. C. J. C. B.

Fermentation of maltose by *Salmonella pullorum*. W. R. Hinshaw, A. S. Browrie, and T. J. Taylor (*J. infect. Dis.*, 1943, **72**, 197—201).—Some strains of *S. pullorum* ferment maltose and some originally non-fermenting strains may gain this characteristic. F. S.

Action of bacterial toxins on tumours. III. Properties of purified *Salmonella typhimurium* endotoxin.—See A., 1943, III, 819.

Factors affecting genetic resistance of mice to mouse typhoid. J. W. Gowen and M. L. Calhoun (*J. infect. Dis.*, 1943, **73**, 40—56).—In 6 inbred strains of mice high, moderate, and low resistance to mouse typhoid (*Bact. typhimurium*) was associated with high, moderate, and low nos. of leucocytes in the blood respectively. F. S.

Typhoid-paratyphoid vaccine and poliomyelitis. J. A. Toomey and L. A. Tischer (*Amer. J. Dis. Child.*, 1943, **66**, 12—15).—3 non-rachitic but typhoid-paratyphoid-immunised *Macaca mulatta* monkeys contracted poliomyelitis more quickly than did 3 non-rachitic and non-immunised controls when the virus was injected subserosally. C. J. C. B.

Typhoid carriers and Vi agglutinins. A. Pijper and C. G. Crocker (*J. Hygiene*, 1943, **43**, 201—206).—Vi agglutinin tests on 2526 inhabitants of the Transvaal showed 5.3% of positives. Typhoid bacilli were detected in the excreta of only a small % of these positive reactors. J. H. B.

Preventing wartime spread of tuberculosis. H. E. Hilleboe (*U.S. Publ. Health Repts.*, 1943, **58**, 1094—1101).—Surveys made in 77 war industries with mass radiography units are reviewed. C. G. W.

Childhood infection and its relation to adolescent and adult pulmonary tuberculosis. A. M. C. MacPherson (*Brit. Med. J.*, 1943, II, 98—101).—A summary of the work done at Brompton Hospital Research Dept. during the past 14 years, and already published elsewhere. I. C.

Relation of physico-chemical properties of fluid culture media to tuberculin activity in tubercle bacillus cultures. II. R. Schwartz and R. Velo de Ipola (*Rev. Soc. argent. Biol.*, 1942, **18**, 358—361).—Ten strains of tubercle bacilli were grown in broth and tuberculin activity was determined at varying intervals. After heating, turbidity decreased temporarily owing to an increase in acidity. This coincided at the 4th to 6th week of culture with greater tuberculin activity. Turbidity of tuberculin is always less than that of the original broth and has no relation to its activity. J. T. L.

Antigenicity of T.A.B.C. vaccine after admixture with tetanus toxoid, for various periods. F. G. Hitch, L. S. Ashcroft, and C. A. Green (*J. Hygiene*, 1943, **43**, 207—213).—The antigenicity of T.A.B.C. vaccine after mixture with tetanus toxoid and kept at 18—25° was tested at 6—7 weeks, 12—13, and 16 months. The older batches were not greatly reduced in potency. J. H. B.

Human infection with *Bact. cholerae-suis*. H. Schwabacher, J. Taylor, and M. H. G. White (*Brit. Med. J.*, 1943, II, 358—359).—Two fatal cases of generalised infection with *Bact. cholerae-suis* are described with the cultural characteristics and antigenic analysis of the strains isolated from blood cultures, urine, and post-mortem material. The clinical and pathological features of this type of infection are also recorded. I. C.

Comparative *in-vitro* effect of various sulphonamides on *V. cholerae*.—See A., 1943, III, 906.

Value of phage typing in investigation of outbreak of paratyphoid B fever. J. R. Hutchinson (*Brit. Med. J.*, 1943, II, 130).—The application of the typing method led to the discovery of the source of infection during a small paratyphoid B epidemic. I. C.

Biological changes in Theiler's virus of spontaneous mouse encephalomyelitis. C. W. Jungeblut (*Amer. J. Publ. Health*, 1943, **33**, 1227—1243).—This virus when passaged in cotton rats showed a marked increase in peripheral invasiveness for albino mice and cotton rats and was able to induce various lesions of the central nervous system in guinea-pigs and rhesus monkeys. C. J. C. B.

Venezuelan equine encephalomyelitis in man. J. Casals, E. C. Curnen, and L. Thomas (*J. Exp. Med.*, 1943, **77**, 521—530).—A filterable agent, identified as a strain of Venezuelan equine encephalomyelitis, was isolated from the blood and washings of the upper respiratory passages of a laboratory worker during an acute febrile illness. Sp. complement fixation and neutralising antibodies were demonstrated in serum during the convalescence; these were not demonstrable during the acute phase of the illness. A. S.

Post-vaccinal encephalomyelitis. S. Dunn (*Brit. Med. J.*, 1943, II, 199—200).—Case report. I. C.

Persistence of virus of St. Louis encephalitis in central nervous system of mice for over five months. H. B. Slavov (*J. Bact.*, 1943, **46**, 113—116). F. S.

Morphology of Eastern and Western strains of virus of equine encephalomyelitis. D. G. Sharp, A. R. Taylor, D. Beard, and J. W. Beard (*Arch. Path.*, 1943, **36**, 167—176).—Electron micrographs of freshly purified Eastern and Western strains of equine encephalomyelitis virus showed circular images of uniform size indicating a spherical shape. The sedimentation const. of the Eastern strain is $S_{20}^{0} = 273 \times 10^{-13}$, and the sp. vol. is 0.839. For the Western strain, the respective vals. are 265.5×10^{-13} and 0.864. From these data, the diameter of the Eastern strain particle is 50.4 m μ . and that of the Western strain 56.8. (9 photomicrographs.) C. J. C. B.

Transmission of West Nile virus by infected *Aedes albopictus*. C. B. Philip and J. E. Smadel (*Proc. Soc. Exp. Biol. Med.*, 1943, **53**, 49—50). V. J. W.

Effects of poliomyelitis virus on motor end-plates in monkey. E. J. Carey (*Proc. Soc. Exp. Biol. Med.*, 1943, **53**, 3—5).—With the onset of paralysis many end-plates disappear, and inclusion bodies, some cross-striated, can be seen in others. In certain fibres degeneration begins in the end-plate and progresses centripetally. V. J. W.

Effects of poliomyelitis virus on urinary bladder of rabbits. J. A. Toomey, J. D. Pilcher, and P. T. Rossman (*J. Pediat.*, 1943, **23**, 166—167).—Poliomyelitis virus or any combination of virus and enteric toxin did not paralyse the rabbit bladder when injected therein. C. J. C. B.

Detection of poliomyelitis virus in flies collected during poliomyelitis epidemics. I. Methods, results, and types of flies involved. J. D. Trask, J. R. Paul, J. L. Melnick, J. T. Riordan, and M. Bishop. **II. Clinical circumstances under which flies were collected.** J. D. Trask and J. R. Paul (*J. Exp. Med.*, 1943, **77**, 531—544, 545—556).—I. 4 out of 19 samples of flies collected within poliomyelitis epidemic areas contained poliomyelitis virus on the surface or within their bodies. All 19 samples contained "blow" and "green bottle" flies. The positive tests were obtained by intranasal and intra-abdominal inoculation of Java (*Cynomolgus*) monkeys.

II. The 4 samples which yielded the virus were out of a batch of 8 collected within 10 days of the onset of a local case of poliomyelitis; 8 samples collected more than 10 days from the onset of the last local case were negative. In 4 instances there was a potential source of virus (fresh human faeces) within a few yards of the site where fly collections were made; collections of flies from 3 of these sites yielded the virus. A. S.

Attempts to isolate poliomyelitis virus from urine. J. A. Toomey, L. A. Tischer, and W. S. Takacs (*J. Pediat.*, 1943, **23**, 172—174).—The sp. virus of poliomyelitis was not demonstrated in urine obtained

post mortem from the bladders of poliomyelitis patients (eastern cotton rat as test animal).
C. J. C. B.

Attempts to recover poliomyelitis virus from fruit, well water, chicken cords, and dog stools. J. Toomey, W. S. Takacs, and L. A. Tischer (*J. Pediat.*, 1943, 23, 168—171).—Attempts failed to recover poliomyelitis virus from fruit (washings), well water, stools from sick dogs, and cords from paralysed chickens found where human poliomyelitis had occurred. The eastern cotton rat or the *Macaca mulatta* monkey was used as test animal.
C. J. C. B.

Comparison of chlorine and ozone as virucidal agents of poliomyelitis virus. J. F. Kessel, D. K. Allison, F. J. Moore, and M. Kaime (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 71—73).—Similar dilutions of virus were inactivated by 0.5—1 p.p.m. of Cl_2 in 1.5—3 hr., and by 0.05—0.45 p.p.m. of O_3 in 2 min.
V. J. W.

Air-borne virus infections. III. Killing of aërial suspensions of influenza virus by hypochlorous acid. D. G. ff. Edward and O. M. Lidwell (*J. Hygiene*, 1943, 43, 196—200).—Aq. HOCl mists and HOCl gas were both effective in killing aërosols of influenza virus. 90—99% of the virus was killed by a concn. of about 1 vol. of HOCl in 2×10^6 vols. of air. HOCl in the concn. required had no effect on mice and cats, but substantially higher concns. irritated the mucous membranes. Such irritation did not render the animals more susceptible to infection on subsequent exposure to the virus aërosol (cf. A., 1943, III, 609).
D. D.

Human convalescent measles and scarlet fever sera. Council on Pharmacy and Chemistry (*J. Amer. Med. Assoc.*, 1943, 121, 49—51).—A review.
C. A. K.

Acute lymphocytic meningitis in "epidemic catarrhal jaundice." J. Waring (*Brit. Med. J.*, 1943, II, 228—229).—Case report of epidemic catarrhal jaundice followed by meningitis, described as due to a general virus infection in which the primary site of invasion was the gastro-intestinal tract.
I. C.

Immunity in mumps. J. F. Enders (*Ann. int. Med.*, 1943, 18, 1015—1019).—Experimental mumps in rhesus monkeys was produced by instilling saliva from cases of epidemic parotitis into the salivary ducts; 9 serial passages of the virus have been maintained by inoculation of an emulsion of the infected parotid removed during the acute phase of the disease. Antibodies in the sera of the monkeys were detected until 3 days following the acute stage; a high antibody level was maintained for 1 month, a low level being maintained for at least 10 months. No antibody was found in the sera of 10 out of 11 mumps patients on the 1st or 2nd day of the disease; low antibody levels were found from the 3rd to 6th day, followed by a pronounced rise. Antibodies were found in 92% of the sera of those giving a positive history of mumps; 50% of those who denied having had the disease showed antibodies. Diluted heat-inactivated suspension of infected monkey parotid was intradermally injected; in all subjects with a history of mumps, an erythematous reaction at the site of injection occurred after 24—48 hr., disappearing after 1—4 days; the group giving no history of mumps had equal nos. of positive and negative reactors.
A. S.

Complement fixation test with sera of animals immunised with rabies virus. H. Bernkopf and D. Nachtigal (*Proc. Soc. Exp. Biol. Med.*, 1943, 53, 36—38).—The method of Casals and Palacios (A., 1941, III, 1075) is simplified by using as antigen a saline extract of thoroughly dried infected brain.
V. J. W.

Spotted fevers transmitted by *Ornithodoros parkeri*. G. E. Davis (*U.S. Publ. Health Repts.*, 1943, 58, 1201—1208).—The argasid tick *O. parkeri* transmits the infectious agents of spotted fevers of the United States, Colombia, and Brazil with equal facility. Transmission was effected by larvæ, throughout the nymphal stages, and by the male and female. This tick may be a factor in the maintenance of spotted fever in nature and, occasionally, a vector to man.
C. G. W.

Outbreak of sandfly fever in two general hospitals in the Middle East. E. R. Cullinan and S. R. F. Whittaker (*Brit. Med. J.*, 1943, II, 543—545).—An epidemic lasting from July until the end of October is described.
I. C.

Sandfly fever and the rheumatic series. R. L. Ferguson (*Brit. Med. J.*, 1943, II, 545—546).—Two cases were diagnosed as sandfly fever and one of pyrexia of rheumatic origin.
I. C.

Endemic typhus fever in Diego Suarez, Madagascar. C. G. Baker, G. T. L. Archer, and G. B. Mitchell-Heggs (*Brit. Med. J.*, 1943, II, 506—508).—Ten Service cases of typhus fever developed in Madagascar. The disease did not occur in the island before.
I. C.

Non-fatal infection of mice following intracerebral inoculation of yellow fever virus. J. P. Fox (*J. Exp. Med.*, 1943, 77, 507—520).—The occurrence of non-fatal infections with strain 17D yellow fever virus is related to the virus dose and to infections with substrains (e.g., substrains "DD low" and 17D₃). Non-fatal infections occurred more frequently with strains isolated from Brazilian cases of jungle yellow fever than with MD substrains.
A. S.

Adaptation of yellow fever virus to young chickens by serial brain to brain passages. H. W. Laemmert and H. Moussatché (*J. infect. Dis.*, 1943, 72, 228—231).—The Asibi strain of monkey passage yellow fever virus could not be established in young chicks by brain passage. An Asibi strain which had undergone 19 passages in tissue culture and then 22 passages in the developing chick embryo was readily established in chicks by brain passage.
F. S.

Immunity to yellow fever encephalitis of monkeys and mice immunised by neural and extraneural routes. J. P. Fox (*J. Exp. Med.*, 1943, 77, 487—506).—Monkeys and mice surviving cerebral infection with yellow fever virus of relatively avirulent strains resist max. intracerebral doses of yellow fever virus of a highly neurotropic strain; such animals do not resist more than very small doses of intracerebrally inoculated Eastern equine encephalomyelitis virus. Animals immunised by extraneural routes are not uniformly resistant to neural infection with neurotropic yellow fever virus. The difference in the resistance of neurally and extraneurally immunised animals is not related to similar differences in levels of serum antibodies. There is a possibly significant relation between the resistance of mice to neural infection and the content of protective antibody in the brain.
A. S.

Neutralisation of plant viruses by rabbit sera. B. Kassanis (*Brit. J. exp. Path.*, 1943, 24, 152—159).—Sp. neutralisation tests between a no. of plant viruses and their antisera showed the same relationships as those indicated by precipitin tests. There was no correlation between precipitin titre and neutralising power, and removal of the precipitins did not affect neutralisation power.
F. S.

Physiology of host-parasite relations. IV. Some effects of tomato spotted wilt on growth.—See A., 1943, III, 854.

Enzymic fission of the nucleic acid from tobacco mosaic virus.—See A., 1943, III, 914.

Extent of immunisations in large cities. S. D. Collins and C. Council (*U.S. Publ. Health Repts.*, 1943, 58, 1121—1151).—Immunisations based on a canvass of 213,931 households in 28 cities of 100,000 or more population are tabulated and analysed.
C. G. W.

Effects of vaccination on serological tests for syphilis. G. O. Favorite (*Proc. Soc. Exp. Biol. Med.*, 1943, 52, 297—299).—Out of 202 individuals 24 gave false positive reactions for syphilis in Kolmer, Kahn, or Mazzini tests. The reactions persisted for 2 months after vaccination but all disappeared in 4 months.
V. J. W.

Improved serologic Kahn reaction in spinal fluid. F. Rappaport and D. Rappaport (*J. Lab. clin. Med.*, 1943, 28, 1355—1356).—Known negative serum is added to c.s.f. and the reaction then carried out.
C. J. C. B.

Antigenic analysis of isolated tissues and body fluids of roundworm, *Ascaris lumbricoides* var. *suum*. J. Oliver-González (*J. infect. Dis.*, 1943, 72, 202—212).—Sera from rabbits fed with infective eggs and of rabbits injected with powdered *A. lumbricoides* caused ppts. around the mouth, excretory pore, anus, and cuticle of ascaris larvæ *in vitro*. During infection antibodies appeared to the following tissues of the adult worm: cuticle, egg, intestine, muscle, sperm, and coelomic fluid. The anticuticle and antiegg antibodies gave the highest precipitin titres. The antiegg serum was the only anti-tissue serum that was active *in vitro* on the larvæ and the egg antigen was the only tissue antigen that absorbed the *in vitro* activity of immune sera against larvæ.
F. S.

Antigenic analysis of *Trichinella spiralis*. L. R. Melcher (*J. infect. Dis.*, 1943, 73, 31—39).—An acid-sol. protein fraction was isolated by alkaline extraction of dehydrated, defatted larvæ and purified by acid pptn. of the non-reactive substances. It consisted of 3 electrophoretic components. 20 µg. produced positive skin tests in infected rabbits and 2 µg. gave positive precipitin reactions. It was a complete antigen, producing sp. antibodies in rabbits. These antibodies did not cross-react with antigenic material from *Ascaris suum* adults. A polysaccharide was also isolated from *T. spiralis* larvæ and gave precipitin reactions in high dilutions (2 µg.) with sera of infected rabbits, but did not give a skin reaction. It induced precipitins in rabbits and may be associated with the potent acid-sol. protein antigen.
F. S.

Electrophoretic studies on antibodies to *Trichinella spiralis* in rabbit. G. G. Wright and J. Oliver-González (*J. infect. Dis.*, 1943, 72, 242—245).—Rabbits infected with *T. spiralis* showed an increase in the proportion of γ -globulin in their sera as immunity to the infection developed. Antibodies both against the larvæ and against the adults were demonstrated in the γ -globulin, but not in other electrophoretic components of these sera.
F. S.

(A) Relation between age, structure, and agent content of Rous no. 1 sarcomas. (B) Prolonged antibody production following recovery of fowls from Rous no. 1 sarcoma. J. G. Carr (*Brit. J. exp. Path.*, 1943, 24, 133—137, 138—140).—(A) The amount of active agent extracted from Rous no. 1 tumours was inversely proportional to the duration of growth in the host. After 40 days all tumours were non-filterable; before then all contained some agent.

(b) Fowls tested 1—2 years after recovery from Rous no. 1 tumours all possessed a high content of neutralising antibodies to the Rous no. 1 agent in their serum. F. S.

Reaction-producing antigens in eczema of infancy and childhood. P. W. Farmer (*Med. J. Austral.*, 1943, II, 5—7).—In 50 cases horse dander, egg white, and grass pollens were by far the commonest reaction-producing antigens. F. S.

Rh antibodies in breast milk. Anti-Rh serum from guinea-pigs. Occurrence of Rh antigen in the population.—See A., 1943, III, 864.

Native and regenerated ox albumin. II. Immunological properties.—See A., 1943, III, 838.

Inhibition of histamine contraction and of anaphylactic reaction by NH-containing substances. W. Jadassohn, H. E. Fierz, and H. Vollenweider (*Schweiz. med. Wschr.*, 1943, 73, 122—124).—The contraction of the guinea-pig's uterus by histamine is antagonised by arcaine > spermine > spermidine > arginine. Triethylenetetramine has a slight anti-histamine effect. There is no quant. relationship between the anti-histamine effect on the uterus of the NH-containing substances and their antagonising action on the anaphylactic shock contraction of the uterus; triethylenetetramine was more potent than arcaine. The effects are non-sp. for histamine as NH-containing substances also antagonise the effects of pitocin, choline, and acetylcholine on the guinea-pig's uterus. The histamine theory of anaphylactic shock is rejected. A. S.

Chemistry of allergens. VIII. Isolation and properties of an active protein-polysaccharide fraction, CB-1A, from castor beans. J. R. Spies and E. J. Coulson (*J. Amer. Chem. Soc.*, 1943, 65, 1720—1726; cf. A., 1943, III, 531).—By the method used for isolation of CS-51R from cottonseed (A., 1943, III, 70), defatted castor beans yield 1.8% of a non-toxic, allergenic protein-polysaccharide fraction, CB-1A. CB-1A contains 3.12% of carbohydrate and yields arginine 26.6, NH₂ 13.6, glutamic acid 8.6, cystine 5.0, lysine 3.2, tyrosine 1.1, histidine 1.0, tryptophan 0, humin 0.1, mono-19.3, and di-carboxylic acids 8.6%. The similarity to CS-51R is enhanced by non-pptn. by Pb acetate. Owing to presence of ricin, the aq. extract, but not CB-1A, is highly toxic. Min. shocking and sensitising doses of CB-1A are 0.33 and 8.4 µg., respectively, of N per guinea-pig. CB-1A is immunologically distinct (Schultz-Dale) from other antigens in the beans. Positive cutaneous reactions are produced by CB-1A in 1:10⁶ dilutions. Positive transfer reactions are caused by 1 × 10⁻¹⁰ g. Kapok seeds, black mustard seeds, flax seeds, croton beans, and soya beans yield 0.9, 0.7, 0.07, 0.02, and 0.02%, respectively, of CB-1A, but pecan nuts yield none. R. S. C.

XXVI.—PLANT PHYSIOLOGY.

Effect of bile salts and oleates on structural viscosity of protoplasm. R. M. Muir (*Bot. Gaz.*, 1940, 102, 357—365).—Immersion of *Spirogyra* in aq. Na taurocholate, glycocholate, oleate, or Mg oleate decreased the structural viscosity of the filaments (as shown by chloroplast displacement) as compared with that in filaments placed in water. The effect of prolonged immersion (exceeding 60—90 min.) was variable. Transfer of the cultures from the aq. solutions to water resulted in complete recovery at rates which varied with the salts used in the preliminary treatment. A. G. P.

Effect of soil moisture on growth and transpiration in *Helianthus annuus*. E. V. Martin (*Plant Physiol.*, 1940, 15, 449—466).—With sunflowers grown in large containers a lower hohard is associated with diminished growth. When water was replenished at intervals to bring the hohard approx. to field capacity the water requirement of the plants and the root/shoot ratio increased with the level of available water. When the soil was prepared with a predetermined hohard and no further addition was made neither the water requirement nor the root/shoot ratio was appreciably affected by the level of water supply. The effect of a lowered hohard on growth rate was apparent long before the effect on stomatal opening or on the transpiration rate. The latter was affected when approx. 2/3 of the available moisture had been removed from the soil; stomatal opening was similarly and simultaneously affected and at this stage signs of wilting first appeared. A. G. P.

Water requirements of Rocky Mountain conifers. J. Roeser, jun. (*J. Forestry*, 1940, 38, 24—26).—Conifer seedlings grown for 10 years in soil in water-tight containers showed differing water requirements. Org. matter production per unit of water absorbed is greatest in pinon pine, followed by Douglas fir, Englemann spruce, and ponderosa pine. L. G. G. W.

Relation of pH to growth in citrus. A. R. C. Haas (*Plant Physiol.*, 1940, 15, 377—407).—Citrus trees grown in solution cultures, while tolerating a wide range of pH, grew better in acid than in alkaline media. Effects of various sources of N and also of CuSO₄ at different ranges of pH in sand and soil cultures of oranges and lemons are recorded. A. G. P.

Responses of *Marchantia polymorpha* to nutrient supply and photo-period. P. D. Voth and K. C. Hamner (*Bot. Gaz.*, 1940, 102, 169—205).—*Marchantia* was cultured on glass wool using nutrients of const. osmotic concn. (0.285 atm.). Absence of Ca but presence of K and Mg in media resulted in the regeneration of new thalli from adventitious buds arising from the midrib region of the ventral side of the thallus. In absence of NO₃⁻ and PO₄³⁻ neutral cells acquire a red-violet coloration. The PO₄³⁻ requirement is very small. Deficiency of Mg or SO₄²⁻ produces less marked effects than that of other nutrients. Growth increased with the NO₃⁻ supply provided all other nutrients were present in adequate amounts. Long photoperiods induced greater growth, a greater no. of gamet-angioophores, but a smaller no. of gemmæ cups than did short photoperiods at all levels of nutrient supply. A. G. P.

Storage of root reserves in Rhodes grass. H. Weinmann (*Plant Physiol.*, 1940, 15, 467—484).—In well-fertilised soils the root system of *Chloris gayana* continued to increase after seed formation when aerial growth had ceased entirely. During this period sugars, hydrolysable carbohydrates, N, P, and K were lost from shoots but reappeared in roots. In addition N and mineral constituents were absorbed from the soil for periods which varied with nutritional conditions and the stage of maturity of the plants. Nutritional deficiency or abnormal growth interfered with this accumulation of root reserves. A. G. P.

Balance sheet of metabolites for potato discs showing the effect of salts and dissolved oxygen on metabolism at 23°. F. C. Steward, P. R. Stout, and C. Preston (*Plant Physiol.*, 1940, 15, 409—447).—The respiration and metabolism of potato discs placed in aq. salt solutions are examined. Salts from which the intake of anions exceeded that of cations caused an increase in alkalinity and [HCO₃⁻] in the solution. In aerated solutions K salts increased and Ca salts depressed the intake of water by the discs. Respiration of the discs under conditions in which the O₂ supply was not a limiting factor was controlled by the nature of the salt used. The sugar concn. in the tissue was increased by all salts used, but sugar did not control the respiratory rate. With [O₂] sufficiently low to depress the intake of KBr synthesis of protein was limited by O₂ deficiency. With adequate aeration KBr increased and CaBr₂ depressed protein synthesis. The amounts of CO₂ respired and of protein synthesised were linearly related. In aerated water 1/3 of the respiration of the discs occurred independently of N metabolism and was unaffected by salts or [O₂]. During respiration of discs in water or aq. KBr a surface film of complex material rich in uronic acids was formed at the expense of starch. Volatile C compounds (7.5% of the total respiration) were also produced. Amino-acids and sugar provided the C for the protein mol. During the utilisation of NO₃⁻ C is derived from other sources, e.g., org. acids. A. G. P.

Mineral composition of alcoholic extracts of potato leaves: relationship to crop yields. C. E. Beauchamp (*Plant Physiol.*, 1940, 15, 485—502).—Close correlation is established between the yield of potatoes and the total % of nutrients (K, P, N, Ca, Mg) present in alcoholic extracts of leaves sampled 52 days after planting. An increase in applied K fertiliser was associated with higher % of K in the extracts and with increased yields. Extracts from plants receiving N + P fertilisers contained larger proportions of K than those from plants receiving no fertiliser. The % of P in the extracts paralleled that of K and was unrelated to the amount of P fertiliser given. The % of Ca and Mg in extracts was inversely and the % of N not related to that of K. The % of total nutrients in the extracts varied directly with the amount of fertiliser applied. A. G. P.

Mineral nutrition [of plants] in relation to Bison flax. E. A. Helgeson, T. H. Hopper, and D. Taylor (*Plant Physiol.*, 1940, 15, 503—514).—The plants were grown in Shive's 3-salt mixture which was constantly renewed. The final growth and height of plants remained substantially const. over wide ranges of salt concn. in the nutrient. Maturity of the plants was accelerated by the presence of KH₂PO₄ in the nutrient and was inversely related to the proportion of N given. The oven-dry wt. of plants and the wt. of seed produced were not consistently related to the proportion of any constituent in the culture medium, except that vals. were high when large amounts of KH₂PO₄ were used. Oil yields were unaffected by wide variations in nutrient proportions; high I vals. were associated with generous feeding with KH₂PO₄. A. G. P.

Mineral composition of *Chlorella pyrenoidosa* grown in culture media containing varying concentrations of calcium, magnesium, potassium, and sodium. G. T. Scott (*J. Cell. Comp. Physiol.*, 1943, 21, 327—338).—This alga grows in absence of Ca or Na, but K, Mg, SO₄²⁻, and PO₄³⁻ are essential. The cells store K if enough is present; if it is not, equiv. Na is taken up. The Ca:Mg ratio is the same in the cells as in the medium. V. J. W.

Nitrogen metabolism of the plant embryo. W. L. McRary (*Bot. Gaz.*, 1940, 102, 89—96).—The distribution of N in lupins in successive stages of germination is examined. Protein-N in the cotyledons gradually diminishes until the ninth day of germination and reappears in the axis as amino-acids and amides. This process is

accelerated by germination in darkness. Light either promotes the synthesis or inhibits the hydrolysis of protein after the ninth day. Considerable longitudinal growth proceeds with little change in the protein content (as % of total plant-N). The concn. of amino-acid- and amide-N in tissue fluids remains at substantially uniform levels during the first 15 days of germination. A. G. P.

Nitrogen content of sound and decayed coniferous woods: relation to loss in weight during decay. R. E. Hungate (*Bol. Gaz.*, 1940, 102, 382—392).—The total N content (mg. per c.c.) of the wood does not change greatly during decay. The amount of wood disappearing during decay is 500—700 times the max. amount of available N present. The N of the wood is more effectively utilised during decay than is that supplied artificially. A. G. P.

Amide metabolism in etiolated seedlings. I. Asparagine and glutamine formation in *Lupinus angustifolius*, *Vicia atropurpurea*, and *Cucurbita pepo*. H. B. Vickery and G. W. Pucher (*J. Biol. Chem.*, 1943, 150, 197—207).—Asparagine accumulates in seeds of *L. angustifolius* during sprouting in the dark, the content reaching approx. 11% of the original wt. of the seeds after 12 days. Thereafter, the content rapidly decreases, NH_3 being produced at the same time. The change is probably brought about by the exhaustion of the non-nitrogenous components essential for the synthesis of asparagine. The seedlings are a satisfactory source for the prep. of asparagine. In sprouting *V. atropurpurea* seeds max. content (5% of original wt. of seeds) of asparagine is reached in 16—19 days and maintained for 7 days longer. In both species, small proportions of glutamine are found. The glutamine content of sprouting seeds of *C. pepo* reaches 3% of the original wt. of the seeds in 21 days, the asparagine content attaining only half of this val. A modification of Schiff's method (A., 1885, 377) for converting asparagine into aspartic acid is described. W. McC.

Carbohydrate metabolism in alpine grasses, and problem of adaptation. S. O. Grebinski (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 279—281).—The adaptation of winter wheat and rye to high altitudes is manifested in a decrease of sol. and an increase of insol. carbohydrates. Their carbohydrate metabolism thus more closely resembles that of wild grasses. Data are given for a no. of cultivated and wild cereals. P. G. M.

Starch formation in tobacco plants deficient in potassium. D. Day (*Plant Physiol.*, 1940, 15, 367—375).—Leaves of tobacco seedlings (9—15 weeks) transferred to sand culture using media devoid of K showed a lowered water content and smaller capacity to store starch than did controls receiving K. A. G. P.

Interrelationship of storage temperature, concentration, and time in the effect of carbon dioxide on sugar content of potato tubers. F. E. Denny and N. C. Thornton (*Contr. Boyce Thompson Inst.*, 1942, 12, 361—373).—The rapid increase in reducing sugar content of potatoes stored at 2° was inhibited for 30 days by 5% and for 60 days by 20% of CO_2 in the storage atm. At 5° increase in reducing sugars was prevented for 30—90 days (according to variety) by 5% of CO_2 . The inhibitory effect of 20% of CO_2 was apparent for 30 days at 5° or 7° but was reversed subsequently. CO_2 increased the sucrose content of tubers stored at 5° or 7°; at 2° an initially retarding effect was apparent but this was later replaced by a rapid increase in sucrose formation. A. G. P.

Pectic content of plant materials. Z. I. Kertesz (*Plant Physiol.*, 1940, 15, 565—566).—The work of Elwell and Dehn (*ibid.*, 1939, 14, 809) is criticised. Data reported are inaccurate and val. are impossibly high. A. G. P.

Rôle of oxidising activity of vegetable tissue in synthesis of ascorbic acid. B. A. Rubin and N. S. Spiridonova (*Compt. rend. Acad. Sci., U.R.S.S.*, 1941, 31, 607—609).—The activity of ascorbinase is approx. the same during development of the wild rose and of aubergine fruits. When ripening occurs differences in activity appear and by this time the process of accumulation of ascorbic acid is almost complete. When the activity of ascorbinase in the fruit of wild rose has become so low that the enzyme appears to be absent the stage is already reached at which all life processes in the fruit have ceased. At the same period, the fruits of Cucurbitaceae show very pronounced physiological and biological activity. The pericarps of wild rose and pumpkin are unable to synthesise ascorbic acid, and it is merely stored there from the leaves. The amount of ascorbic acid in the aubergine fruit is much greater than in that of the wild rose. During winter, in the dormant state, the cabbage is unable to build up ascorbic acid from the sugars in the tissues, but in the spring, synthesis of ascorbic acid occurs. It is concluded that presence of sugar is not the only condition for synthesis of ascorbic acid in plants. The redox processes must also be sufficiently active because the sugar is converted into ascorbic acid by oxidising reactions. J. N. A.

Measurement of respiratory quotient of plant tissues in a constant gaseous environment. A. Ulrich (*Plant Physiol.*, 1940, 15, 527—536).—Appropriate apparatus is described and data obtained with excised roots are recorded. A. G. P.

Validity of equations for relative growth constants when applied to sigmoid growth curves. R. Pratt (*Bull. Torrey Bot. Club*, 1941, 68, 295—304).—A discussion of the use and limitation of the Huxley equation $y = bx^k$ (y = magnitude of one differentially growing part, x = magnitude of the rest of the plant, b is a const. that indicates the val. of y when $x = 1$, and k is a const. that denotes the ratio of the relative growth rate of the rest of the body or of the other part). L. G. G. W.

Growth of fruits in *Cattleya* and allied genera in the Orchidaceae. R. E. Duncan and J. T. Curtis (*Bull. Torrey Bot. Club*, 1943, 70, 104—119).—The amount of pollen taking part in pollination affects the size but not the shape of the fruit. Long days increase fruit size but not the % of seeds containing embryos. Self-pollination lowers the % of seeds containing embryos but intergeneric and intersp. crosses may give as good a yield as crosses within a species. L. G. G. W.

Floral initiation in Biloxi soya beans as influenced by photosynthetic activity during the induction period. M. W. Parker and H. A. Borthwick (*Bol. Gaz.*, 1940, 102, 256—268).—Flower initiation was limited by controlling photosynthesis during induction by means of the CO_2 supply or the duration of exposure to high-intensity light. Plants receiving normal atm. [CO_2] during 2—8 hr. of each photoperiod produced nos. of flower primordia proportional to the air supply. When no CO_2 was supplied no primordia were formed. Plants receiving only 1 hr. of high-intensity light during an 8-hr. photoperiod produced no flowers but those receiving 2 hr. or more formed flower primordia in proportion to the length of exposure to the light. Increase in [CO_2] in the atm. caused an increase in flower initiation. A. G. P.

Mechanism of injury and death by low temperature. B. J. Luyet and P. M. Gehechio (*Biodynamica*, 1940, 3, 33—99).—A review of the problem of low-temp. injury (to plants chiefly). L. G. G. W.

Voltage gradient measurements in forest trees. A. G. Snow, jun. (*J. Forestry*, 1942, 40, 872—876).—Voltage gradient measurements made on sheets of ash, with the electrode contacts 8 in. apart, are recorded. Addition of toxic substances to the water in which the shoots stand first reduces and then reverses the voltage gradient before the toxic substance has any externally visible effect on the shoots. L. G. G. W.

Effects of artificial defoliation on pine and larch. F. C. Craighead (*J. Forestry*, 1940, 38, 885—888).—Destruction of all old foliage and all the current year's growth early in the season killed the trees. September defoliation caused death during the winter. Early spring defoliation of new growth did not cause death but stimulated needle growth and caused a severe reduction in wood growth. Removal of all old needles early in spring caused a reduction in wood growth and the effect was greater if the defoliation was carried out after (instead of before) the bud opening in spring. L. G. G. W.

Effect of some environmental factors on floral initiation in *Xanthium*. L. K. Mann (*Bol. Gaz.*, 1940, 102, 339—356).—Flower initiation may be induced in *X. pennsylvanicum* by subjection to a single controlled photo-inductive cycle. In this cycle the initiation of flowering primordia and their rate of development increase with the length of the light period up to a max. beyond which the length of the photoperiod has no further effect. The effect of the photoperiod is intensified by increase in light intensity. Rise in temp. shortens the min. photoperiod necessary to induce flowering. A. G. P.

Effect of intensity of illumination on response of peanuts to day-length. A. I. Tscheliadinova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 276—278).—Plants of *Arachis hypogaea*, L., grown under conditions of reduced illumination flower earlier and the fruit matures more readily and has a higher fat content than controls. Shaded plants also have a higher chlorophyll content. These findings suggest that dense planting may be beneficial. P. G. M.

Asexual propagation of sugar beets. F. V. Owen (*J. Heredity*, 1941, 32, 187—193).—Clones of desirable strains of sugar beet are most readily built up by using cuttings from semi-vegetative flower stalks. The nutrition of flower stalks and the inhibition of their development along reproductive lines may be controlled by temp. and photo-period adjustments. L. G. G. W.

Inheritance of mature plant characters in sorghum. J. R. Quinby and R. E. Karper (*J. Heredity*, 1942, 33, 323—327).—Various leaf abnormalities (stripes, yellow tip, red leaf, freckling, etc.) produced in sorghum by X-radiation are inherited normally. L. G. G. W.

Environmental, breeding, and inheritance studies of hydrocyanic acid in *Sorghum vulgare*, var. *sudanense*. P. G. Hogg and H. L. Ahlgren (*J. Agric. Res.*, 1943, 67, 195—210).—Vigorous strains of Sudan grass with uniformly low content of the cyanogenic glucoside, durrin, were developed by hybridising plants low in HCN content. R. H. H.

X-Ray studies in *Phaseolus vulgaris*. C. F. Genter and H. M. Brown (*J. Heredity*, 1941, 32, 39—44).—When dormant and germin-

ated seeds of *P. vulgaris* were X-rayed with dosages of 2160—26,000 r., the proportion of seeds that failed to germinate, the no. of seedlings dying, and the retardation of growth all varied directly with the dosage. Of the different types of mutations induced 65% were chlorophyll abnormalities but plant size, branching, leaf size, shape, and texture, fertility, and earliness of maturity were all affected.

L. G. G. W.

Relation of mitotic disturbances to X-ray dosage and polyploidy.

K. Fröier, A. Gustafsson, and O. Tedin (*Hereditas*, 1942, 28, 165—170).—Mitotic disturbance in wheat and oats subjected to X-ray treatment is not directly proportional in amount to the intensity of the treatment. "Damage curves" for di-, tetra-, and hexa-ploid species all differ but in no case is the curve a straight line.

L. G. G. W.

Two extreme X-ray mutations of morphological interest. A. Gustafsson and E. Aberg (*Hereditas*, 1940, 26, 257—261).—Of a series of X-ray mutations obtained from a pure line Golden barley, one produced within each lemma two flowers, whilst another had lemma-like glumes.

L. G. G. W.

Preliminary yield experiments with ten induced mutation in barley.

A. Gustafsson (*Hereditas*, 1941, 27, 337—359).—Mutations induced in Golden barley by X-ray treatment of the seed have been tested for yield and of 10 mutations, 7 showed a lowered yield and 3 equalled or surpassed the parent.

L. G. G. W.

Colchicine-induced amphidiploids of *Triticum turgidum* × *Triticum timopheevi*.

A. R. Shebrak (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 617—619).—The seeds of *T. turgidum* var. *rubriatum* × *T. timopheevi*, *T. turgidum* var. *Herrera* × *T. timopheevi*, and *T. turgidum* var. *Dreischianum* × *T. timopheevi* after treatment with colchicine give rise to amphidiploid spike and seed plants provided that sufficient colchicine is used. The best results are obtained when colchicine is applied twice, first to the seeds, and later to the seedlings. The var. *rubriatum* is of great val. for crossing with *T. timopheevi*. The spikes of this cross contain 20—21 spikelets each containing about 3 grains. The kernel of the amphidiploid is longer than that of *T. turgidum* but somewhat shorter than that of *T. timopheevi*. The somatic cells contain 56 chromosomes. This hybrid is a spring form in which the winter habit of *T. turgidum* var. *rubriatum* is hidden as a recessive character.

J. N. A.

Colchicine-induced tetraploids in chrysanthemum.

V. V. Chvostova and S. J. Goldat (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 623—624).—After treatment of seeds of the annual plants *Chrysanthemum segetum*, *Ch. coronarium*, and *Ch. viscosum* with 0.1—0.2% colchicine 20—40% of the seeds germinate and take root, whilst seeds of the perennial plants *Ch. cinerariaefolium*, *Ch. carneum*, and *Ch. roseum* will grow only if the concn. of colchicine is not greater than 0.01—0.05%. When 0.2% colchicine is applied to the growing point of annual seedlings at the cotyledon stage good results are obtained whilst similar treatment stops growth of perennial seedlings. The three annual species give rise to tetra-, tri-, and di-ploid plants; the flowers of the tetraploids contain twice as much pyrethrin as those of the diploids. After treatment of seeds of perennial types with colchicine, plants are obtained which, judged by phenotype and size of stomata, are tetraploids.

J. N. A.

Production of tetraploids in *Ricinus communis* treated with colchicine.

B. N. Sidorov and N. N. Sokolov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 31, 264—265).—The growing point of plants of *R. communis* was treated with 0.05—0.2% solutions of colchicine for 1—4 days. A mixture of diploid and polyploid cells was produced in many cases in the leaves. 42.4% of treated plants produced 0—20% of large diploid pollen. Some tetraploid seeds were also found, but no triploids, thus indicating that crossing with the original diploids does not occur. The artificial tetraploids had 40 chromosomes.

P. G. M.

Polyploids in *Papaver somniferum*, L., induced by colchicine treatment.

E. N. Volotov (*Compt. rend. Acad. Sci. U.R.S.S.*, 31, 261—263).—Both seeds and growing points of opium and oil-bearing poppies were treated with 0.2% solutions of colchicine. Germination of opium poppy seeds was 15, 5, and 0.5% after 1, 2, and 3 days' treatment, compared with 11, 3, and 0% with oil poppy seeds. The resulting plants frequently died at the cotyledon stage, but those which survived to the flowering stage differed little from controls. Among treated plants with mixed pollen several contained diploid up to octoploid pollen. The total no. of polyploids in treated plants was only 3.2%. Growing points (5—6-leaf stage) were treated twice, at 5-day intervals, for 12 hr. with a 0.2% solution of colchicine; the mixed pollen contained a high % of polyploids (up to hexadecaploids). The fertility of tetraploids is so much reduced as to preclude cultivation of tetraploid oil poppies, but not opium poppies. The tetraploids described are sharply differentiated from the natural tetraploids of *Papaverum setigerum*, D.C.

P. G. M.

Polyploid cottons obtained through use of colchicine. I. Cytology of octoploid *Gossypium hirsutum*.

A. J. T. Mendes (*Bot. Gaz.*, 1940, 102, 287—294).—Treatment of seeds of *G. hirsutum* and *G. herbaceum*

with colchicine resulted in the formation of tetra- and octo-ploid plants, *G. herbaceum* responding the more uniformly to the treatment. Microsporogenesis in octoploid plants is described. The plants were largely sterile.

A. G. P.

Colchicine-induced tetraploidy in *Lilium*.

S. L. Emsweller and P. Brierley (*J. Heredity*, 1940, 31, 223—230).—Tetraploid *L. formosanum* plants produced by colchicine treatment of stem apices were in some cases fertile and produced flowers about 25% longer than diploid flowers.

L. G. G. W.

Present status of plant hormones.

P. W. Zimmerman (*Ind. Eng. Chem.*, 1943, 35, 596—601).—The physiological activity of phenoxy-fatty acids and substituted derivatives is discussed. Horticultural uses of these substances are indicated.

A. G. P.

Chemical and histological responses of bean plants grown at different levels of nutrition to indolylacetic acid.

O. Smith, L. B. Nash, and G. E. Davis (*Bot. Gaz.*, 1940, 102, 206—216).—Bean seedlings were grown under conditions producing (i) high N—low carbohydrate, and (ii) low N—high carbohydrate contents in the tissues. Treatment with indolylacetic acid accelerated root production in low-N—high-carbohydrate plants but produced a much slower response in the others. The general effect of indolylacetic acid was to stimulate transport of N from upper to lower sections of the seedling (more marked in high-N—low-carbohydrate plants), to depress the total sugar content of all parts of the seedlings, and to diminish the normal rise in alcohol-insol., acid-hydrolysable contents especially in the hypocotyl.

A. G. P.

Auxin action.

H. C. Eyster (*Science*, 1943, 97, 358—359).—The growth-promoting action of auxin and similarly acting compounds consists in liberating diastase and other enzymes adsorbed on proteins. Experiments with indolylpropionic acid, sol. starch, diastase, and activated C indicate that the acid inhibits the action of diastase more slowly than it liberates diastase adsorbed on C. Natural light binds the enzyme more strongly to the colloid, so that phototropism does not involve the shift of auxin to the dark side, nor its destruction by light. Artificial light has a much smaller effect.

E. R. R.

Effect of indolylacetic acid on thin sections and detached segments of the second internode of the bean.

J. M. Beal (*Bot. Gaz.*, 1940, 102, 366—372).—Detached segments (2—15 mm.) and thin sections (0.5 mm.) of the second internode of bean plants, when smeared apically with indolylacetic acid in lanoline and placed with basal ends in a complete nutrient, responded in the same way as do whole stems (apical swelling and root formation). Basal treatment followed by placing the apical ends in the nutrient caused enlargement only of the basal ends. Apical treatment and apical exposure to nutrients caused apical enlargement only. When the nutrient lacked sugar or N no enlargement followed the treatment. With a complete nutrient there ensued starch digestion, absorption of nutrients (mobilised in the region of application), rapid growth, and proliferation. Untreated segments placed in nutrients containing indolylacetic acid showed enlargement only at the end in contact with the nutrient. Movement of indolylacetic acid (or a derivative) in plants occurs almost entirely in a basipetal direction.

A. G. P.

Starch hydrolysis in bean leaves following spraying with α -naphthylacetic acid emulsion.

J. W. Mitchell, E. J. Kraus, and M. R. Whitehead (*Bot. Gaz.*, 1940, 102, 97—104).—In light of low intensity or in darkness the spraying of bean leaves with 1% α -naphthylacetic acid in lanoline accelerated the decrease in starch and dextrin and increase in sugar content, the effect first becoming appreciable several days after treatment. The % of sugar in treated leaves, after reaching a max., decreased as the reserve of starch was depleted. Leaves depleted of starch, dextrin, and sugars by placing in darkness and subsequently sprayed with naphthylacetic acid and exposed to daylight accumulated these carbohydrates less rapidly than did untreated controls.

A. G. P.

Starch hydrolysis in bean leaves as affected by application of growth-regulating substances.

J. W. Mitchell and M. K. Whitehead (*Bot. Gaz.*, 1940, 102, 393—399; cf. A., 1942, II, 424).—The spraying of young leaves of bean with lanoline emulsions of growth-substances (indolyl-acetic, -propionic, and -butyric acids) accelerated starch digestion in plants placed in darkness at 74—76° but not at 62—64° or 90—92°. Phenylacetic acid had only a slight and naphthylacetamide no effect. Old or mature leaves gave a slightly negative or no response to this treatment. The sugar content of the leaves increased appreciably for a period following treatment.

A. G. P.

Parthenocarpic and normal fruits compared as to percentage of setting and size.

F. G. Gustafson (*Bot. Gaz.*, 1940, 102, 280—286).—In tomato the no. of flowers setting after application of growth-promoting substances was substantially the same as that obtained by natural pollination. The parthenocarpic fruits were somewhat smaller than those from pollinated flowers.

A. G. P.

Effect of growth-substances on the absciss layer in leaves of *Coleus*.

R. M. Myers (*Bot. Gaz.*, 1940, 102, 323—338).—Heteroauxin applied

to leaves delays the formation of the abscission layer and also the final stage of abscission. Removal of the entire blade from the petiole accelerates abscission. The blade influences abscission in a manner similar to that of heteroauxin. Indolyl-propionic and -butyric acids have a similar delaying action. A. G. P.

Substituted phenoxy- and benzoic acid growth-substances; relation of structural to physiological activity. P. W. Zimmerman and A. E. Hitchcock (*Contr. Boyce Thompson Inst.*, 1942, 12, 321—343).—2:4-Dichlorophenoxyacetic acid in very small concns. stimulated cell elongation in tomato. The activity of *p*-chlorophenoxyacetic acid was smaller and that of the *o*-chloro-acid still less. Substitution of Br for Cl in the *p*-position lowered the growth-promoting activity of the substance. All active chlorophenoxy-compounds caused modification in the size, shape, pattern, and venation of newly-produced plant organs. 2-Bromo-3-nitro- and 2-chloro-5-nitro-benzoic acids also induced formative effects although the latter did not influence cell elongation. Of the compounds examined *p*-chloro- and 2:4-dichloro-phenoxyacetic acids and amides used as sprays were the most effective in inducing adventitious rooting and parthenocarpy. A. G. P.

Histological response of bean plants to tetrahydrofurfuryl butyrate. W. R. Mullison (*Bot. Gaz.*, 1940, 102, 373—381).—Tetrahydrofurfuryl butyrate applied to decapitated bean seedlings caused enlargement of the tip but produced no root primordia. Associated changes in cellular structure and activity are described. A. G. P.

Effects of vitamin-B₁ on development of some flowering plants. C. L. Hamner (*Bot. Gaz.*, 1940, 102, 156—168).—Addition of vitamin-B₁ (0.01 mg. per l. of nutrient 1—3 times weekly) to several species of sand-cultured plants had no significant effect on the fresh or dry wt. or time of flowering of the plants or on the size, no., or colour of the flowers produced. Neither the length of the photoperiod nor the level of N nutrition affected the results of -B₁ treatment. A. G. P.

Response of excised tomato roots to β-(4-methylthiazolyl-5)-alanine. W. J. Robbins (*Plant Physiol.*, 1940, 15, 547—552).—The vitamin-B₁ requirement of tomato roots is met by a supply of β-(4-methylthiazolyl-5)-alanine although this acid is less effective than is the thiamin-thiazole. *Phycomyces* is able to utilise this acid if supplied in sufficient amount, i.e., approx. 1000 times the necessary proportion of thiamin. A. G. P.

Specificity of nicotinic acid as growth factor for isolated pea roots. J. Bonner (*Plant Physiol.*, 1940, 15, 553—557).—Of 23 related substances examined only those which yielded nicotinic acid by simple hydrolysis effectively replaced this acid as a growth factor for isolated pea roots. A. G. P.

Induced formation of a β-glucoside in radish. L. P. Miller (*Contr. Boyce Thompson Inst.*, 1942, 12, 359—360).—Cut roots of radish when placed in aq. chloral hydrate produced β-β'-trichloroethyl-D-glucoside [*tetra-acetate*, m.p. 144.5—145.5° (corr.), $[\alpha]_D^{20}$ -29.6° in CHCl₃]. A. G. P.

Differential inhibition between normal and tumour (crown gall) tissue in beet roots. M. Michaelis, I. Levi, and H. Hibbert (*Science*, 1943, 98, 89—90).—0.0166M-Resorcinol produced 10—14% inhibition in O₂ uptake in normal beet tissue, and 20—23% in tumour tissue. 0.0166M-CN' produces 84—86% and 79—80% inhibition in normal and tumour tissue respectively. If resorcinol and CN' were added, a 6—8% increase in inhibition was observed. It is suggested that both tumours and healthy beets may have CN', resorcinol, and CN' + resorcinol-insensitive systems; that the inhibitions caused by CN' and resorcinol function, to some degree, independently; and that different active-centres of the same enzyme are attacked by both inhibitors, but to a different degree. E. R. R.

Effects of defoliation by the pine butterfly on ponderosa pine. J. C. Evenden (*J. Forestry*, 1940, 38, 949—955).—Defoliation of ponderosa pines caused many deaths. The surviving trees showed reduced growth and the reduction persists for several years. L. G. G. W.

Influence of temperature on the infection of wheat by the powdery mildew *Erisiphe graminis tritici*. R. Pratt (*Bull. Torrey Bot. Club*, 1943, 70, 378—385).—The optimum temp. for germination of spores and growth of the germ tubes of *E. graminis tritici* is 20°; germination occurs between -2° and 30° but not above this temp. and this explains the failure of wheat plants to become infected at high temp. L. G. G. W.

Relative resistance of morphologically different orange peel cells to various injury factors. J. Levitt and R. C. Nelson (*Biodynamica*, 1942, 4, 57—64).—Epidermal cells and sub-epidermal cells, gland cells, and cortical cells from Valencia orange peel fall into the same order of resistance to high temp., frost, plasmolysis, and drought; the gland cells are the most and the cortical cells least resistant. L. G. G. W.

Effect of lime and potassium on spotted wilt virus disease of tomato.—See B., 1943, III, 289.

Method for covering emasculated flowers in plant-breeding. J. R. King (*Bot. Gaz.*, 1940, 102, 217—220).—Flowers or branches may be covered with a fine web of rubber produced *in situ* by spinning a rubber cement with the mechanical device described. A. G. P.

XXVII.—PLANT CONSTITUENTS.

Diagnosis of mineral deficiency. I. Distribution of certain cations in apple foliage in early autumn. D. W. Goodall (*J. Pomology*, 1943, 20, 136—143).—Various types of leaves were taken from apple trees receiving eight different manurial treatments and were analysed for Ca, Fe, Mg, Mn, and K. The K content was highest in leaves from the middle and apex of the long shoots, whilst that of the other elements was highest in the basal leaves of the non-bearing spurs. The basal leaf of the non-fruitlet spur was the most promising type for assessment of the nutritional level of the tree. R. H. H.

Effects of variety and environment on the starch content of wheat and barley. A. G. McCalla and W. G. Corns (*Canad. J. Res.*, 1943, 21, C, 307—321).—The starch content of wheat and barley is greatly influenced by variety and environment. Correlation between starch and protein content gave very high negative coeffs. Although the starch content of barley is less than that of wheat, the yield of starch per acre is more than 16% greater for barley. G. H.

Yeast growth-substances in wood. C. Enders and M. Hegendörfer (*Biochem. Z.*, 1941, 307, 120—122).—Samples of wood are freed from tar by ether-extraction, boiled for 2 hr. with 20 parts of 0.1N-NaOH, and filtered; the filtrate is pptd. with Ca(OH)₂ and filtered, saturated with CO₂ at 70°, filtered again, and conc. After treatment with kieselguhr the extract is further conc. so that 1 c.c. ≡ 0.25 g. of wood. Alternatively interfering substances are pptd. from the first extract by 2 vols. of 96% alcohol, the alcohol is removed, and the remaining extract is conc. as above. Yeast growth-substances are present in all extracts except those from Bavarian beechwood. Tannins, which inhibit the growth-substances, are not completely removed by the alcohol treatment of extracts of woods with a high tannin content. P. G. M.

Protein-ascorbic acid complex in carrots. Vitamin-C content of Italian tomatoes and tomato produce.—See A., 1943, III, 903.

Vitamin-P content of Chinese red and green peppers.—See A., 1943, III, 904.

Biochemistry of anthocyanins. W. D. Bancroft (*Science*, 1943, 98, 98—100). E. R. R.

Calibration of photo-electric colorimeter for determination of chlorophyll.—See A., 1943, III, 856.

Lupulin.—See B., 1943, III, 293.

Isolation of berberine and berbamine from *Mahonia swaseyi*. G. A. Greathouse and N. E. Rigler (*Plant Physiol.*, 1940, 15, 563—564).—Berberine occurs in the root tissue of the plant. A. G. P.

Curare alkaloids from *Chondrodendron tomentosum*. O. Wintersteiner and J. D. Dutcher (*Science*, 1943, 97, 467—470).—Cryst. *d*-tubocurarine was isolated in good yield from the single plant species *Ch. tomentosum*. Two new *tert.* alkaloids, *d*-chondrocurine, and a *lævorotatory* alkaloid, were also isolated. Methylation of the phenolic groups in the quaternary bases increases the physiological potency 3—9-fold. E. R. R.

Senecio alkaloids. I. Rosmarinine.—See A., 1944, II, 26.

Derivatives of lonchocarpic acid.—See A., 1944, II, 28.

Scandenin from roots of *Derris scandens*.—See A., 1944, II, 28.

XXVIII.—NEW BOOKS.

Abstracts on penicillin and other antibiotic substances. M. E. Whalley (National Research Council of Canada, Ottawa, 1943, 71 pp. 4to).—This collection of 185 abstracts was taken from *Chemical Abstracts* (1917—Sept. 10, 1943) and other recent material in the library of the National Research Council. The number of references to each substance is: actinomycin 15, actinomycin 8, citrinin 5, clavacin 3, flavicin 1, fumigacin 4, fumigatin 6, gliotoxin 4, gramicidin 30, penatin 4, penicillin 52, pyocyanase 11, pyocyanine 52, streptothricin 5, tyrocidin 21, tyrothricin 20. The number of references dated before 1940 is: actinomycin 12, citrinin 2, fumigatin 1, gliotoxin 3, penicillin 8, pyocyanase 6, pyocyanine 44. F. S.

INDEX OF AUTHORS' NAMES, A III.—continued.

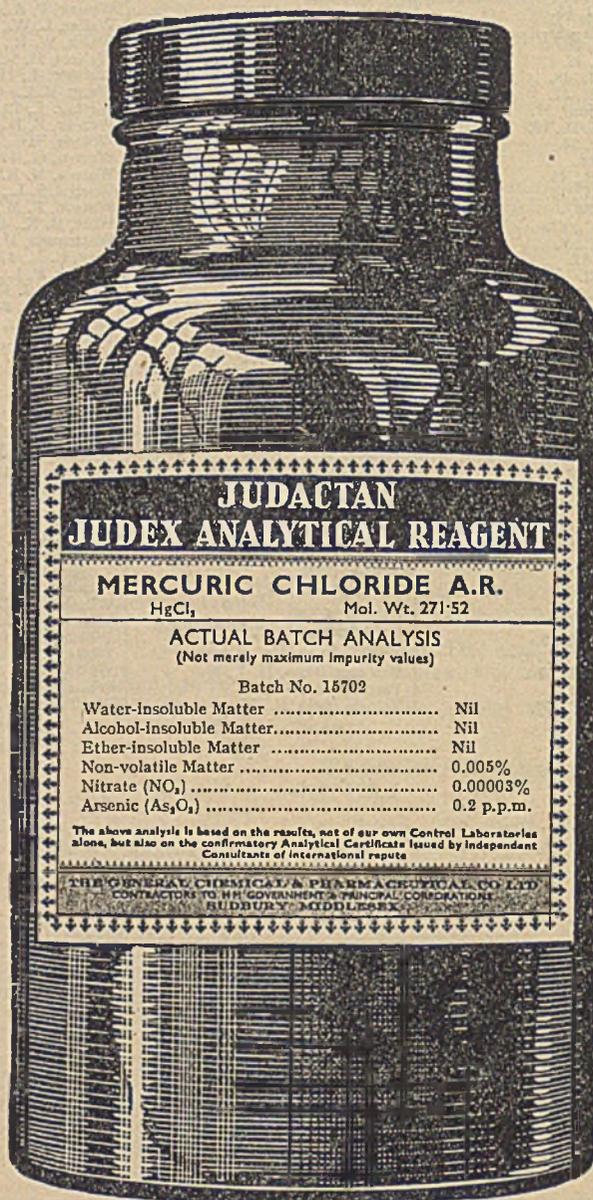
- Schütz, F., 63.
Schuler, W., 50.
Schuller, A., 1.
Schumann, F., 64.
Schuwirth, K., 20.
Schwab, J. L., 46.
Schwabacher, H., 78.
Schwartz, L., 54.
Schwartz, R., 77.
Schweigert, B. S., 17.
Schweizer, M., 29.
Scott, D. B. M., 46.
Scott, E. W., 61.
Scott, G. L., 56.
Scott, G. T., 82.
Seals, H. H., 7.
Sears, H., 71.
Segaloff, A., 33.
Seifiter, J., 61.
Seifiter, S., 9.
Selye, H., 14.
Sepulveda, B., 13.
Sesler, C. L., 53, 76.
Shackman, N. H., 54.
Shaffer, C. B., 36.
Shannon, G. E., 58.
Shapiro, S., 10.
Sharp, D. G., 78.
Shattock, P. M. F., 76.
Shebrak, A. R., 85.
Sheppard, E. M., 29.
Sherman, H. C., 42.
Sherrill, J. W., 27.
Shigalov, V. P., 67.
Shills, M. E., 42.
Shleser, I. H., 28.
Shoemaker, R. C., 71.
Shwachman, H., 19.
Sidorov, B. N., 85.
Siegel, H., 59.
Sigrist, E., 23.
Silverman, M., 73.
Silverthorne, N., 74.
Simola, P. E., 38, 50.
Sims, J. L., 40.
Singer, E., 8.
Singer, T. P., 64.
Skinner, T. C., 32.
Slanetz, C. A., 43.
Slavin, H. B., 78.
Slocum, H. C., 67.
Smadel, J. E., 78.
Small, S. M., 22.
Smick, W. E., 71.
Smith, G. F., 63.
Smith, O., 86.
Smith, W., 60.
Smolik, E. A., 17.
Smorodincev, I. A., 67.
- Snell, E. E., 47.
Snider, G. G., 42.
Snow, A., 53.
Snow, A. G., jun., 34.
Sobotka, H., 16.
Sokolov, N. N., 85.
Solomon, W. M., 52.
Spector, H., 45.
Sperry, R. W., 19.
Spies, J. R., 51.
Spinik, W. W., 53, 54, 76.
Spiridanoff, S., 47.
Spiridonova, N. S., 83.
Sprockin, B. E., 14.
Spühler, O., 37.
Stack, J. K., 2.
Stähli, W., 11, 55.
Stamler, F. W., 49.
Steele, D. G., 30.
Steele, J. M., 47.
Steenbock, H., 48.
Steigmann, F., 11.
Stein, I. F., jun., 57.
Steinbach, H. B., 18.
Steinberg, T., 25.
Steiner, M., 68.
Steinkamp, R., 41.
Steinmann, H., 17.
Stevens, B., 55.
Steward, F. C., 82.
Stewart, H. C., 8.
Stoekel, J., 33.
Stöckly, A., 82.
Stokes, J. L., 76.
Stoll, A. M., 71.
Stoner, H. B., 13.
Stonyer, A. J., 11.
Stout, P. R., 82.
Stoves, J. I., 1.
Straker, A., 25.
Stratton, F., 9.
Strauss, E., 8, 65.
Streckler, E. A., 23.
Strong, F. M., 47.
Stutzman, J. W., 57.
Sulkin, N. M., 6.
Sure, B., 47.
Suter, H., 16.
Sutliff, W. D., 55.
Sutton, W. R., 41.
Swift, R. W., 49.
Szép, Ö., 61.
Szepsenwol, J., 3.
- TABANERA, J. A., 9.
Takacs, W. S., 78, 79.
Taliaferro, W. H., 70.
Tamthai, B., 21.
Tanquary, M. C., 49.
- Taplin, G. V., 54.
Tayloe, G. B., 54.
Taylor, A. R., 78.
Taylor, D., 82.
Taylor, G. L., 7.
Taylor, G. W., 18.
Taylor, H. G., 69.
Taylor, J., 78.
Taylor, N. B., 11.
Taylor, T. J., 77.
Tecoz, H. F., 62.
Tedin, O., 85.
Telbisz, A., 62.
Telsler, S. E., 37.
Templeton, F. E., 34.
Te Winkel, L. E., 4.
Thacker, E. J., 49.
Thierstein, S. T., 3.
Thomas, G. J., 58.
Thomas, L., 78.
Thompson, K. W., 29.
Thompson, M. R., 60.
Thomson, J. D., 17.
Thomson, M. L., 6, 13.
Thomson, P., 25.
Thorn, G. W., 52.
Thornton, N. C., 83.
Thorogood, E., 35.
Tidrick, R. T., 40.
Tidy, H., 34.
Tierney, N. A., 51.
Tischer, L. A., 77, 78, 79.
Tomkins, E. H., 6.
Tonutti, E., 28.
Toomey, J. A., 77, 78, 79.
Tornetta, F. J., 29.
Towne, E. B., 2.
Townsend, C. T., 72.
Trager, W., 46.
Tramer, M., 22.
Trappe, W., 39.
Trask, J. D., 78.
Treusch, J. V., 63.
Trowell, H. C., 6.
Tschelladinova, A. I., 84.
Tucker, J., 62.
Tudor, R. B., 55.
Tuohy, E. L., 41.
Turner, C. L., 33.
Turner, C. W., 29.
Turner, G. G., 37.
Turner, V. H., 32.
- ULRICH, A., 83.
Ungerleider, H. E., 16.
Ungley, C. C., 14.
- VAN DER BERG, H. J., 26.
Varco, R. L., 55.
Velo de Ipola, R., 77.
- Vernon, P. E., 25.
Vickery, H. B., 83.
Vidgoff, B., 31.
Vidoli, M., 56.
Viollier, G., 45.
Vivino, A. E., 49.
Vivino, J. J., 76.
Vogth, W., 28.
Volksen, W., 48.
Vollenweider, H., 80.
Volotov, E. N., 85.
Voth, P. D., 82.
- WAGENER, H. P., 23.
Wainio, W. W., 49.
Waksman, S. A., 56, 69.
Walker, P. A., 30.
Waller, L. W., 42.
Walsh, W. R., 27.
Walters, H. V., 26.
Walther, J., 11.
Wang, Y. L., 45.
Waring, J., 79.
Warner, F. D., 49.
Warner, S. G., 39.
Warren, G., 72.
Warren, M. G., 50.
Warren, S. L., 11.
Watson, E. M., 29.
Watt, B. K., 4.
Wattenwyl, H., 33.
Way, E. L., 47.
Weaver, F. L., 60.
Welchert, C. K., 30.
Weil, A., 19, 23.
Weinman, H., 82.
Weinstein, M., 22.
Weiss, K., 38.
Weiss, S., 16.
Weissberg, J., 14.
Weissman, V., 11.
Welch, A. D., 47.
Wenger, O. C., 44.
Wenner, R., 33.
Wernde, L., 18.
Westman, A., 29.
Westall, T. S., 26.
Weston, R. E., 11.
Westphal, U., 40, 64.
Wetzel, N. C., 1.
Weygandt, P. L., 31.
Whalley, M. E., 88.
Wheeler, R. S., 3.
Wheeler, S. M., 77.
Whicheer, C. H., 29.
White, J. L., 44.
White, M. H. G., 78.
Whitehead, M. R., 86.
Whittaker, S. R. F., 79.
- Widdowson, E. M., 52.
Wiener, A. S., 7.
Wiesinger, K., 17.
Wiggers, C. J., 17.
Wilbur, K. M., 31.
Wilder, R. M., 41.
Wilkins, W. H., 69.
Wilkinson, J. F., 43.
Willi, H., 15.
Williams, H. C. M., 74.
Williams, P. C., 33.
Williams, R. D., 46.
Williams, R. H., 23, 50.
Wilson, A., 13, 60.
Wilson, E. C. G., 45.
Wilson, H. E., 46.
Wilson, P. W., 72.
Wilson, W. M., 31.
Wing, M., 10.
Winkler, A. W., 28.
Winnick, T., 12.
Winters, W. L., 27.
Wintersteiner, O., 88.
Winzler, H., 60.
Winston, R. J., 70.
Wirz, H., 28.
Wise, B., 73.
Wolf, D. E., 47.
Wollheim, E., 6.
Wood, W. D., 56.
Woodburne, R. T., 21.
Woods, W. W., 37.
Worley, L. G., 5.
Wright, G. G., 80.
Wright, H. P., 41.
Wright, L. D., 47.
Wright, M. H., 73.
Wright, W. D., 25.
Wulff, V. J., 24.
Wyss, O. A. M., 20.
- YAMAFUJI, K., 63.
Yanof, Z. A., 12.
Yaskin, J. C., 22.
Yerkes, R. M., 29.
Youmans, J. B., 41.
Young, L. E., 54.
Young, T. O., 27.
Young, W. C., 29.
Yudkin, J., 43.
- ZEPF, H. D., 74.
Ziegler, L. H., 23.
Ziegler, P. T., 46.
Zimmerman, F. T., 20.
Zimmerman, P. W., 56, 87.
Zuch, T. L., 72.
Zucker, T. F., 34.
Zwerner, R. L., 11.
Zworykin, N., 72.



JUDACTAN

ANALYTICAL REAGENTS WITH ACTUAL BATCH ANALYSIS

ACTUAL
BATCH
ANALYSIS



Each Batch
subjected
to
INDEPENDENT
ANALYSIS
before
label is printed

You are invited to compare the above actual batch analysis with the purities

guaranteed by the specifications of any competing maker in this country or abroad

THE GENERAL CHEMICAL & PHARMACEUTICAL CO. LTD.

Chemical Manufacturers, Judex Works, Sudbury, Middlesex