Physiological Chemistry.

Cheyne-Stokes Respiration. MARCUS S. PEMBREY (*J. Pathol. Bacteriol.*, 1908, **12**, 258—265).—This type of breathing is not necessarily pathological, but is a sign of decreased excitability of the nervous system. Carbon dioxide increases, and oxygen diminishes, until the depressed cells of the respiratory centre are stimulated to produce shallow and inefficient respiratory efforts, so that the increase of carbon dioxide and decrease of oxygen in the blood still continue; this in time increases the respiratory efforts, and culminates in dyspnœic breathing, which sweeps out the carbon dioxide and increases the oxygen taken in; the stimulation of the centre wanes, and finally apnœa sets in until the same series of events is repeated. This view is supported by analyses, and numerous tracings of the respiratory movements are given. W. D. H.

Equilibrium between the Cell and its Environment, with Special Reference to Red Blood Corpuscles. BENJAMIN MOORE and HERBERT E. ROAF (*Bio-Chem. J.*, 1908, **3**, 55—81).—The membrane theory fails to explain many phenomena, such as the difference in composition of the electrolytes within and without the cell, and the variations they undergo in different media. The view is advanced that adsorpates, or chemical combinations, are formed within the cell between the electrolytes and the proteins. These constituents undergo reversible changes of association and dissociation with alterations of osmotic pressure; the range varies for each constituent, and within it labile changes are alone possible. Drugs, toxins, and other agencies produce other adsorpates or compounds which upset cell-metabolism, on account of their stability at given osmotic pressures.
W. D. H.

Proteic Acids in Blood. J. BROWIŃSKI (*Zeitsch. physiol. Chem.*, 1908, **54**, 548—549).—The proteic acids of Bondzyński and others, which are discoverable in human urine, occur also in the urine of the horse. They can also be detected in the blood-serum of the horse after proteins have been removed by acidification, boiling, and filtering. They are not identical with urochrome. W. D. H.

Researches in Phagocytosis. HARTOG J. HAMBURGER and E. HEKMA (*Proc. k. Akad. Wetensch. Amsterdam*, 1907, **10**, 144—166).—The activity of the cells was determined by counting the percentage which took up carbon particles. The addition of water lessens this activity, but replacement of the cells in their own serum restores it either wholly or partly. A heightening of the concentration of the serum by salt similarly damages the cells, and again restoration occurs when they are returned to their own serum. In solutions of 0·9% sodium chloride, the phagocytic power is about equal to that in serum. In some cases, chemical action rather than osmotic changes alters phagocytic power; thus Ca ions and also OH ions increase it. Na ions are not harmful to leucocytes, although Loeb found they were to larvæ, heart muscle, &c. W. D. H.

Variations in the Proteolytic Activity of Pancreatic Juice. LUCIEN CAMUS and EUGÈNE GLEY (*J. Physiol. et Pathol. gén.*, 1907, 987—998).—The juice secreted under the influence of secretin is not always without action on proteins. When the secretion ceases after the first injection, the first portion of that secreted as a result of a second injection is slightly active, digesting egg-white more or less completely in thirty-six to forty-eight hours. If the second injection is made before the effect of the first has passed off, the juice is inactive. The juice which is secreted under the influence of an injection of Witte's peptone, or pilocarpine, is always slightly active, the secretion of active juice alternating with periods of the secretion of inactive juice. The addition of potassium oxalate to the juice, sufficient in amount to precipitate all its calcium salts, hinders, but does not abolish, its proteolytic activity. W. D. H.

Calcium Metabolism. S. W. PATTERSON (*Bio-Chem. J.*, 1908, **3**, 39—54).—A diet of oatmeal and maize produces calcium starvation in rabbits, but the blood undergoes no loss of calcium. The bones, however, lose calcium. In experiments on rabbits and men, the conclusion is drawn that the bones are the seat of calcium storage. W. D. H.

Fate of Carbon Acids in the Dog. I. Normal *dl*-α-Amino-acids. II. Methylated *dl*-α-Amino(Normal)-acids. III. Methylated *dl*-α-Amino-acids containing Side-Chains. IV. Dimethylated *dl*-α-Amino(Normal)-acids. V. Synthesis of Acetoacetic Acid by Perfusion through the Liver. ERNST FRIEDMANN (*Beitr. chem. Physiol. Path.*, 1908, **11**, 151—157, 158—176, 177—193, 194—201, 202—213).—Dogs were fed by the mouth on the various acids, and the urine examined for the substances given; the

C : N ratio was also taken as a guide as to whether the materials administered had passed into the urine. I. Glycine, *dl*-alanine, *dl*-amino-*n*-butyric acid, *dl*-amino-*n*-valeric acid, and *dl*-amino-*n*-hexoic acid were given. Thirteen % of the last-named substance passed into the urine; the remaining acids were almost completely broken down in the body.

II. In the second series, sarcosine, *dl*-α-methylamino-propionic, -butyric, -valeric, and -hexoic acids were given. The first two were found in the urine to about one-third of the amount given. The last three left the body almost unchanged.

III. In the third series, *dl*-α-amino*iso*butyric acid, *dl*-α-methylamino-*iso*valeric acid, *dl*-α-methylamino-β-methylvaleric acid, and *dl*-α-methyl-amino-γ-methylvaleric acid were given. The presence of a second tertiary hydrogen atom increases the ability of the organism to decompose the acid given; this is still more the case when the tertiary hydrogen atom is in the β-position to the carboxyl group.

IV. Dimethylaminoacetic, *dl*-α-dimethylamino-*n*-propionic, *dl*-α-di-methylamino-*n*-butyric, *dl*-α-dimethylamino-*n*-valeric and *dl*-α-dimethyl-amino-*n*-hexoic acids were given. On the average, about 50% of the substance administered was excreted as such. The introduction of the second methyl group does not therefore increase the difficulty of the organism to deal with the acids.

V. This research is on rather different lines to the four which precede it. The liver was perfused with a mixture of Ringer's fluid and blood to which various substances were added (alcohols, aldehydes, organic acid, &c.); many of these lead to the appearance of acetone in the issuing fluid. Of those investigated, only acetaldehyde and aldol led also to the appearance of acetoacetic acid. In the case of the first of these, aldol is probably first formed as a condensation product.

W. D. H.

Production of Fat from Proteins. Estimation of Fat. ELLY A. BOGDANOFF (*J. Landw.*, 1908, **56**, 53—87).—The results of experiments with pigs indicated that mixed foods very rich in proteins had very slight fattening effect. It is, however, considered probable that a certain amount of fat can be formed from protein.

In estimating the amounts of fat, the substance, cut thin and dried at 97—100°, is first kept in contact with ether for some hours. It is then cut into smaller pieces, and again extracted. The residue is then finely ground, extracted with ether for two days in a Soxhlet apparatus, after which it is treated with boiling alcohol for two days or longer. The residue obtained by distilling the alcoholic extract is extracted with ether, and all the ether extracts united. The substance is practically free from fat after the above treatment. Traces of fat can, however, be obtained by Dormeyer's artificial digestion method, followed by extraction with ether.

N. H. J. M.

Parenteral Nitrogenous Metabolism. I. LEONOR MICHAELIS and PETER RONA (*Pflüger's Archiv*, 1908, **121**, 163—168).—In a dog in nitrogenous equilibrium, half of the milk in the diet used during the first period of the research was withdrawn, and a subcutaneous injection of the corresponding quantity of caseinogen substituted. There was a great increase in nitrogenous excretion, although no caseinogen as such passed into the urine. The injected protein is believed to have been katabolised, and at the same time some of the nitrogenous breakdown is attributed to a toxic action; the animal gave indications of this by a rise of temperature and other symptoms. The most noteworthy effect, which was subsequently confirmed on other animals, was a swelling of the mammary glands, leading in some cases to actual milk formation. This suggests that the mammæ do not actually form caseinogen, but are merely the seat of its excretion. W. D. H.

Protein Synthesis in Animals. VALDEMAR HENRIQUES (*Zeitsch. physiol. Chem.*, 1908, **54**, 406—422).—If animals are fed with the abiuretic products of protein cleavage obtained by the action of trypsin and erepsin, they remain in nitrogenous equilibrium, or may even put on nitrogen. If these products are boiled for six hours with 20% sulphuric acid, they retain this property; but after seventeen hours' boiling they lose it. What this means exactly, it is impossible to say. It was, however, noticed that the tryptophan reaction remained unchanged in the products capable of utilisation. W. D. H.

The Value of Amides in Carnivora. W. VÖLTZ and G. YAKUWA (*Pflüger's Archiv*, 1908, **121**, 117—149. Compare Abstr., 1907, ii, 109).—A mixture of ammonium acetate, acetamide, and glycine increases the absorption of nitrogenous material; asparagine does not influence nitrogenous katabolism until after its administration ceases, and then it is lessened; acetamide increases nitrogenous katabolism, and ammonium acetate has a still more marked effect; glycine has no effect. W. D. H.

Chemical Studies on Growth. IV. Transformation of Glycogen by Enzyme Action in Embryonic Tissues. LAFAYETTE B. MENDEL and TADASU SAIKI. **V. Autolysis of Embryonic Tissues. VI. Purines, Pentose, and Cholesterol of Eggs. VII. Catalase in Embryonic Tissues. VIII. Lipase in Embryonic Tissues. IX. Embryonic Muscular and Nervous Tissues.** LAFAYETTE B. MENDEL and CHARLES S. LEAVENWORTH (*Amer. J. Physiol.*, 1908, **21**, 64—68, 69—76, 77—84, 85—94, 95—98, 99—104. Compare Abstr., 1907, ii, 895).—Embryo pigs were used throughout.

IV. The embryonic muscle contains glycogen at an earlier date than the liver, and when digested with glycogen causes more of it to disappear than in the case of the liver. In later embryonic life, the liver acquires its characteristic capacities, and overtakes the muscles in efficiency. These organs were not freed from blood, but in all cases the glycogen digesting power of the blood is relatively small.

V. Experiments on autolysis were confined to the liver; autolysis in the fœtal liver is less rapid than that in the adult; this is not due to lack of autolytic ferments, but to the want of development of acid, which in its turn may be attributable to scarcity of carbohydrate. If the acidity is artificially equalised in the two cases, autolysis proceeds at an equal velocity in both.

VI. The figures given adduce further evidence of the progressive synthesis of purines during embryonic growth, and, as in adult and embryo organs already examined, guanine and adenine predominate. The yield of pentose (absent in fresh eggs) increases as nucleo-proteins are elaborated. There is no evidence that a synthesis of cholesterol occurs in the development of the chick; that present in early stages appears like other lipoids of the yolk to disappear, acting as sources of energy in growth.

VII. Any difference in the amount of oxygen liberated from hydrogen peroxide by embryonic, as compared with adult, organs appears to be due to extraneous causes (for example, the inhibiting influence of acid) rather than to an absence of catalase in the embryonic tissues.

VIII. Lipase is present at an early stage in the embryonic liver and intestine; but the action of extracts is less pronounced than that of those obtained from full-grown animals.

IX. Embryonic tissues are relatively rich in water. Creatine is present in the embryonic muscle, but in less amount than in the adult. Among the purine bases, adenine and guanine preponderate as in other tissues. Hypoxanthine is free in the tissue as in the adult.

W. D. H.

Importance of Calcium Salts for the Growing Organism. HANS ARON and ROBERT SEBAUER (*Biochem. Zeitsch.*, 1908, **8**, 1—28).—The amount of lime required by a growing mammal is at least 1·2% of the increase in body weight. The same diet may at one time contain enough lime, when given in small quantity, so as to produce but little growth, and at another time, when given in large rations, it may not contain enough lime, on account of the more rapid increase in body weight. The body as a whole is not affected by a shortage of lime; the effects are limited to the skeleton (possibly the brain is also affected to some extent). The bones do not weigh less, but contain less organic substance and more water than normal ones. The dry substance of the skeleton of lime-starved animals also contains a smaller percentage of ash than that of normal animals, but the proportion of calcium in the ash is not appreciably decreased. These chemical changes agree with those observed in rachitic bones.

G. B.

Nitrates in Vegetable Foods, Cured Meats, and Elsewhere. WILLIAM D. RICHARDSON (*J. Amer. Chem. Soc.*, 1907, **29**, 1757—1767).—The results of a large number of determinations of nitrates in different foods (fruits, vegetables, and cured meats), showed that with a diet consisting of fresh vegetables, the equivalent of 1 to 2 grams of sodium nitrate could be consumed daily. Smaller amounts of nitrates could be consumed with a diet consisting partly of cured meats, so that the quantities of nitrates in the latter must be considered harmless.

N. H. J. M.

The Substitution of Bromine by Chlorine in the Animal Body. M. BÖNINGER (*Chem. Zentr.*, 1907, ii, 1539; from *Zeitsch. exper. Path. Ther.*, 1907, **4**, 414—418).—In absolute chlorine hunger in the dog, bromine can take its place; even in the blood serum, chlorides are replaced by bromides. Cumulation of the halogen was not observed. W. D. H.

The Cell and its Medium. III. Inorganic Salts of the Protozoan Cell and its Medium. AMOS W. PETERS (*Amer. J. Physiol.*, 1908, **21**, 105—125).—*Paramœcia* were placed in pure distilled water which was frequently changed, the organisms being at each change separated by the centrifuge. Mere centrifugalising was found to produce no injury. In spite of this, the animals contaminated the water; this was due to the diffusion outwards of the salts of the cells, and this led to loss of movement and, finally, death. Moderate withdrawal of the salts is harmless. W. D. H.

[Amount of] Arginine, Lysine, and Histidine in the Hydrolytic Products of Various Animal Tissues. ALFRED J. WAKEMAN (*J. Biol. Chem.*, 1908, **4**, 119—147).—Variations occur in the yield of these three substances from different tissue proteins. The group (or groups) in the protein molecule which yield the bases is large in the case of muscle, and small in that of the kidney; but in the same organ of different species of animal, the variations are very small. In pathological organs, even when gross changes occur, as in acute atrophy of the liver, the composition of the liver protein is not essentially changed so far as the amount of, and proportion between, the bases is concerned, and the amount of histidine is least influenced by degenerative changes. W. D. H.

The Work of the Intestinal Muscle. OTTO COHNHEIM (*Zeitsch. physiol. Chem.*, 1908, **54**, 461—480).—The production of carbon dioxide in the normal movements of the intestine is from 20 to 36 mg. per 100 grams of muscle per hour. This is about one-tenth of that found in striped muscle, and from 1/20 to 1/70 of that produced by glandular activity. The movements were made to occur by placing the intestine in oxygenated Ringer's solution. W. D. H.

Formation of Dextrorotatory Lactic Acid in Autolysis. III. In Muscle. KATSUJI INOUYE and K. KONDO (*Zeitsch. physiol. Chem.*, 1908, **54**, 481—500).—During autolysis of rabbit's and bird's muscle, there is, as in rigor mortis, a formation of sarco-lactic acid, even in the presence of chloroform water. Later (about the seventh day of autolysis), the amount diminishes. In the muscles of cold-blooded animals (fish), the same occurs, but the increase is not so marked. The same occurs in filtered extracts of the muscles, and therefore the acid cannot be a product of cellular activity. The action is regarded as due to a ferment, and the source of the acid to be both carbohydrate and protein. W. D. H.

Vagus Inhibition and the Output of Potassium from the Heart. WILLIAM H. HOWELL and W. W. DUKE (*Amer. J. Physiol.*, 1908, **21**, 51—63. Compare Abstr., 1907, ii, 110).—If the isolated mammalian heart is perfused with Locke's fluid and the vagus stimulated, the increase in potassium of the fluid may amount to as much as 29%. It is believed that the inhibiting influence of the vagus is due to the liberation of potassium in diffusible form, and it is the potassium which inhibits the heart. The amount of calcium in the circulating fluid does not alter. Stimulation of the accelerator nerves causes no increase in the amount of potassium in the circulating fluid. W. D. H.

Carbon Dioxide in the Regulation of the Heart Rate. YANDELL HENDERSON (*Amer. J. Physiol.*, 1908, **21**, 126—156).—In dogs under artificial respiration, the development of shock is dependent, not upon the extent of injury, or the intensity of stimulation of afferent nerves, but on the rate of pulmonary ventilation. Diminution in the amount of carbon dioxide in arterial blood increases the heart rate up to cardiac tetanus, and by regulation of the rate of pulmonary ventilation the heart can be adjusted to any desired rate of beat. The hypothesis is presented that acapnia (this is, diminution of carbon dioxide in the blood and tissues resulting from hyperpnœa and from exhalation of carbon dioxide from exposed viscera) is the cause of surgical shock. W. D. H.

The Iron of the Liver. V. SCAFFIDI (*Zeitsch. physiol. Chem.*, 1908, **54**, 448—460).—One hundred grams of rabbit's liver contains 9 mg. of iron; there are on the average 19 mg. of iron para-nucleinates in the whole liver. The nucleo-protein contains from 0·18% to 0·44% of iron. In animals treated with iron para-nucleinate, this rises to 1·1%. The quantity of iron in the nucleo-protein is, however, not proportional to the total iron of the liver. Although the amount of iron in the nucleo-protein is thus variable, the percentage of phosphorus is constant. W. D. H.

Nature of the Fat in Normal and Pathological Human Livers. PERCIVAL HARTLEY and A. MAVROGORDATO (*J. Path. Bact.*, 1908, **12**, 371—377).—The iodine value of the higher fatty acids from adipose tissue is 65; that from the normal liver 115—120. When the amount of fat in the liver is abnormally great, the iodine value falls. Whether this is due to fat transported from the adipose tissue or to excessive formation of fat from carbohydrate is discussed, but left uncertain. W. D. H.

Perfusion of Excised Kidneys. IX. Effects of Poisons. TORALD SOLLMANN and ROBERT A. HATCHER (*Amer. J. Physiol.*, 1908, **21**, 37—50).—The ureter-flow in excised kidneys depends mainly on glomerular pressure, and the various poisons investigated are regarded as having their effect rather on the vessels than on the renal epithelium. Chloral, *Hydrastis*, hydrocyanic acid, and juniper cause vaso-dilation and increase of ureter flow; adrenaline, sodium arsenate, digitalis, mercuric chloride, and picric acid have the reverse effect. Alcohol, caffeine, cantharidin, carbon dioxide, carbon monoxide, ergot, formaldehyde, hydrastinine, and sodium thiocyanate in the concentrations used have no effect. The effect of the drugs on the intact kidney *in vivo* in cases where the comparison is capable of being made, is stated to be the same as in the excised organ. W. D. H.

The Occurrence of Scatole in the Human Intestine. CHRISTIAN A. HERTER (*J. Biol. Chem.*, 1908, **4**, 101—109).—Scatole is by no means always present in the lower gut in either children or adults. When intestinal putrefaction is excessive, it is present, and this is sometimes accompanied with increased formation of indole. When indole is absent in the fæces, indican is present in the urine; hence the scatole is probably produced later in the intestine. Its formation is due mainly to putrefactive anaërobic bacteria. Certain strains of the bacillus of malignant œdema and of *B. putrificus* form scatole; but *B. coli communis* forms indole, and usually little or no scatole. The conditions giving rise to the two products are thus different. The formation of indoleacetic acid is perhaps a necessary step in the production of scatole, most bacteria attacking it with difficulty if at all. W. D. H.

Constituents of Ox Bile. I. KURT LANGHELD (*Ber.*, 1908, **41**, 378—385).—A new method is described for treating the acids of ox bile, which allows of the isolation of more than 80% of the crude product in the form of definite chemical compounds. The crude acids are treated directly with alcohol, which leaves the cholic acid undissolved, and after separation of the fatty acids the remainder is esterified by Fischer's method. The substances isolated are obtained in the following percentages: cholic acid, 50·8; palmitic and stearic acids, 5·4; deoxycholic acid, from the esters soluble in light petroleum, 1; deoxycholic acid, from the insoluble esters, 20·7. The last is a mixture of deoxycholic acid, m. p. 172—173°, $[\alpha]_D^{20}+53·28°$, and its isomeride, Mylius's choleic acid, m. p. 187—188°, $[\alpha]_D^{20}+47·97°$, the existence of which, although denied by Latschinoff (Abstr., 1887, 682) and Lassar-Cohn (Abstr., 1893, ii, 220), is now confirmed. Myristic acid was not found in the bile. G. Y.

The Protein Hydrolysis of Cows' Milk. ALBERT J. J. VANDEVELDE (*Bull. Soc. chim. Belg.*, 1907, **21**, 434—458).—The author finds that a 3% solution of iodoform in acetone is the most suitable reagent for use in studying the enzymes of milk. The addition of 3·3 c.c. of this solution to 25 c.c. of milk sterilises the latter completely without interfering with the action of the enzyme. It is shown that the proteolytic enzyme present in cows' milk is capable of digesting about two-thirds of the proteins present in the milk; the action is limited, and does not appear to be influenced by the age of the cow or by the quantity of milk yielded by the cow. The activity of the enzyme bears no relation to the period of lactation. W. P. S.

Parent Substance of the Hippuric Acid Produced in Animals. HARALAMB VASILIU (*Bied. Zentr.*, 1908, **37**, 29—32; from *Mitt. Landw. Inst. Univ. Breslau*, 1906).—The chief source of hippuric acid seems to be phenylalanine. The fact that carnivorous animals, notwithstanding the considerable amounts of phenylalanine present in meat, eliminate only small amounts of hippuric acid in the urine is shown, by an experiment made by the author on himself, to be probably due to the combustion of the benzene ring.

N. H. J. M.

The Relation of Nitrifying Bacteria to the Urorosein Reaction of Nencki and Sieber. CHRISTIAN A. HERTER (*J. Biol. Chem.*, 1908, **4**, 239—251).—The urorosein reaction sometimes (perhaps always) depends for its development, when the reaction is induced by adding hydrochloric acid to the urine, on the presence of bacteria in that fluid. The bacteria can be isolated, and a pure culture obtained; if this is added to sterile urine, the typical urorosein reaction can then be obtained. These bacteria are capable of forming nitrites, and the reaction depends on the liberation of nitrous acid.

Doubtless the urorosein chromogen would be more frequently detected if nitrites were employed; the action is probably due to oxidation, and not to the formation of a nitroso-compound. Urorosein is distinct from scatole-red, and its chromogen occurs quite independently of the absorption of scatole from the intestine. The urorosein chromogen is indoleacetic acid, but further evidence of this is postponed.

W. D. H.

A Thermosoluble Protein said to be that of Bence-Jones. L. GRIMBERT (*J. Pharm. Chim.*, 1908, [vi], **27**, 97—101).—The proteins from urine, described by various authors as the albumose of Bence-Jones, are not identical, and chiefly resemble each other in being redissolved on heating. The solubilities of the protein in a case observed by the author are compared with those observed by other French investigators (compare Patein, Abstr., 1904, i, 954). G. B.

Excretion of Urochrome in Man. ST. DOMBROWSKI (*Zeitsch. physiol. Chem.*, 1908, **54**, 390—397).—Urochrome is precipitated as a compound with cuprous oxide. The nitrogen in this was determined, and from this was subtracted the nitrogen due to the presence of purine substances in the precipitate. Normal urine contains from 0·45 to 0·47 gram in the twenty-four hours. In pneumonia (1 case), the amount was 0·78; in typhoid fever (4 cases), it rose to 0·76—1·05.

W. D. H.

Changes in the Bile Occurring in some Infectious Diseases. HELEN BALDWIN (*J. Biol. Chem.*, 1908, **4**, 213—220).—Although the method used (Ritter's) for the estimation of the cholesterol is not considered absolutely accurate, the following facts were noted: the increase in the cholesterol of the bile is slight in cholecystitis if there is free drainage, and but little disintegration of epithelium cells is present. The increase is marked when the bile flow is obstructed, and the bile filled with masses of degenerating cells. Most of the increase is in suspension rather than solution. Cholecystitis is a common complication not only in typhoid fever as is well known, but also in pneumonia and suppuration in various parts. W. D. H.

Prosecretin in Relation to Diabetes Mellitus. FRANCIS A. BAINBRIDGE (*Bio-Chem. J.*, 1908, **3**, 82—86).—The yield of secretin from the duodenal mucous membrane is almost or quite as great in diabetic as in non-diabetic people. It is doubtful if the absence of prosecretin has any causal relationship to diabetes. In the cases where observers have failed to find it, it is suggested that its disappearance is due to rapid post-mortem changes. W. D. H.

Production of Glycosuria in Rabbits by Intravenous Injection of Sea-water made Isotonic with the Blood. THEO. C. BURNETT (*J. Biol. Chem.*, 1908, **4**, 57—62).—The magnesium in sea-water is responsible for the glycosuria that follows its injection. W. D. H.

Metabolism, Nitrogenous and Inorganic, in Pancreatic Diabetes in Dogs. W. FALTON and JAMES LYMAN WHITNEY (*Beitr. chem. Physiol. Path.*, 1908, **11**, 224—228).—After extirpation of the pancreas there is an enormous increase in protein katabolism, which cannot be ascribed to fever (as it partly may in phloridzin diabetes), nor to accidental occurrence of infectious disease. This is accompanied by a relatively large increase in the mineral constituents of the urine, and also a rise in endogenous uric acid formation. The tissue breakdown appears to be particularly great, for the tissue proteins are richer in saline material than reserve proteins. It is possible that bone atrophy may contribute to the result. W. D. H.

Lactic Acid in Eclampsia. JULIUS DONATH (*Zeitsch. physiol. Chem.*, 1908, **54**, 550).—It is pointed out that A. ten Doesschate's view (this vol., ii, 122) that lactic acid is the result and not the cause of convulsions has been advanced previously by the author. W. D. H.

The Purgative Inefficiency of Saline Cathartics when Injected Subcutaneously or Intravenously. JOHN AUER (*J. Biol. Chem.*, 1908, **4**, 197—212).—MacCallum (Abstr., 1903, ii, 742; 1904, ii, 63, 191, 755) stated that saline purgatives have the same action whether they are introduced into the alimentary canal, or injected subcutaneously or intravenously. This was disputed by the present author (Abstr., 1906, ii, 876), but confirmed by Bancroft. The present paper is a reply to the latter, and reaffirms the author's previous contentions. W. D. H.

The Behaviour of Calcium Formate and Acetate in the Organism. ATTILIO BONANNI (*Chem. Zentr.*, 1907, ii, 1803; from *Arch. Farm. sper.*, 1907, **6**, 419—443).—The urine of dogs and rabbits contains normally minute quantities of formic and acetic acids. After intravenous or subcutaneous administration of the calcium salts of these acids, the amount increases, but the quantity excreted is not so great as that given. The actual quantities vary in the two animals. Numerical details are given. W. D. H.

Behaviour of Quinine in the Body. PAUL GROSSER (*Biochem. Zeitsch.*, 1908, **8**, 98—117).—Great discrepancies as to what happens to quinine in the body occur in previous writings on the subject.

Phosphotungstic acid precipitates it quantitatively in the urine, and in albuminous solutions, such as extracts of organs, the loss is almost 2% if protein material is removed by the kaolin method of Rona and Michaelis. The present observations were made on people suffering from malaria. The fæces contain at most 1% of the amount of quinine administered. If given by the mouth, or injected into the muscles, a quantity varying from 8% to 46% is recoverable in the urine. The causes of this extreme variation is far from clear. The remainder does not accumulate in the tissues, but is destroyed there. Perfusion of the liver by Brodie's method with Ringer's solution containing quinine shows that the issuing fluid contains less than that which enters, and the liver has the power of decomposing quinine. W. D. H.

Is Arsenious Anhydride, Introduced into the Animal Organism, Eliminated Unchanged or as Arsenic Acid? MARIO TONEGUTTI (*Boll. chim. farm.*, 1907, **46**, 899—908. Compare Abstr., 1907, ii, 908).—Arsenious acid, when introduced into the organism either by ingestion or intravenously, reappears unchanged in the urine, and is transformed into arsenic acid when the urine is treated with magnesia mixture. T. H. P.

The Influence of Potassium Cyanide on Protein Metabolism. ALFRED N. RICHARDS and GEORGE B. WALLACE (*J. Biol. Chem.*, 1908, **4**, 179—196).—There is an increase in the excretion of total nitrogen, which is due partly to the increased muscular work associated with the convulsions, and partly to the dyspnœa, but mainly to a specific influence of the poison on cell metabolism. The urea excretion runs parallel with that of total nitrogen, in spite of interference with respiration. This affords evidence that urea formation is not oxidative. The ammonia output varies within normal limits. There is a distinct increase in preformed creatinine; creatine was also found in the urine. The undetermined nitrogen varies considerably, but there is no evidence that any significant excretion of amino-acids occurs. Small doses of cyanide cause a greater increase in oxidised sulphur excretion than large doses, and probably in the latter case the increase in "neutral sulphur" occurs at the expense of sulphur which would otherwise be oxidised. W. D. H.

The Influence of Hydrazine on the Intermediary Metabolism of the Dog. FRANK P. UNDERHILL and ISRAEL S. KLEINER (*J. Biol. Chem.*, 1908, **4**, 165—178).—In inanition, the dog excretes urine, in which the ammonia-nitrogen is slightly increased in proportion to the urea-nitrogen. The excretion of creatinine varies, and there is a large output of creatine. Allantoin also is a constant constituent of such urine. In hydrazine poisoning, the partition of urinary nitrogen and sulphur is only slightly different from that which obtains during inanition. It has no specific action in causing an elimination of allantoin. It causes fatty degeneration of the liver. Emphasis is laid on the protective adaptation of the liver during hydrazine poisoning. W. D. H.

Comparison of the Hæmolytic and Toxic Action of Eel's Serum on the Marmot. LUCIEN CAMUS and EUGÈNE GLEY (*Arch. internat. Pharmacodyn. Thér.*, 1905, **15**, 159—169).—Eel's serum is globulicidal and also toxic towards the rabbit and guinea-pig. The pigeon, on the other hand, is very resistant to both actions. There are, however, animals, such as the marmot, in which the hæmolytic action is slight, and yet the serum is very toxic. Moreover, a temperature sufficiently high to destroy the hæmolytic power of eel's serum, only lessens its poisonous action. Not only are toxic actions elective, but the same is true for immunity. W. D. H.

Lecithid Formation. PRESTON KYES (*Biochem. Zeitsch.*, 1908, **8**, 42—46. Compare Abstr., 1907, ii, 569).—Polemical. A reply to Michaelis and Rona, (Abstr., 1907, i, 667); and Morgenroth and Carpi (Abstr., 1907, ii, 570).—The author adheres to the views he has expressed. G. B.