

third chick received 53 worms between July 19 and July 28. When these chicks were killed September 5, twenty adult *Heterakis* were found in the first, six in the second and two in the third. Eight other chicks, from the same cage and killed at the same time, which had been kept under identical conditions, except that no earthworms were fed to them, did not show a single *Heterakis* present. There appears to be no escape from the conclusion that *Helodrilus* in some way may serve as an intermediate host for this nematode. The experiment does not show the nature of the transmission. Whether it is a case of true parasitism or is simply an association remains to be proved. It may be that the eggs of *Heterakis* simply cling to the more or less slimy surface of the earthworm and are transmitted in this way. Favoring this view is the probability that young chicks can become infected through eating eggs scattered in the feces of older chickens. However, the fact that small nematodes are frequently found in the nephridia of certain earthworms might furnish another suggestive hypothesis. Whatever the exact nature of transmission, the results are interesting. A hen and four young fowls, taken at random from the barnyard where the earthworms were found, were killed and examined for *Heterakis*. Nematodes were present in only two of these. Some of the fowls had the habit of going to the field instead of scratching and wallowing around the manure heap and this perhaps explains why more were not infected. Then the chances are small that any one chick would obtain a large number of earthworms, though the latter were only a short distance below the surface. In any case feeding *Helodrilus* under the conditions described was an efficient means of transmitting the *Heterakis* to young chicks.

JOHN W. SCOTT

UNIVERSITY OF WYOMING,
September 25, 1913

A NEW SPECIES OF MOROPUS (M. HOLLANDI) FROM
THE BASE OF THE MIDDLE MIOCENE OF
WESTERN NEBRASKA

WHILE studying the material representing

the Chalicotheres in the Carnegie Museum in connection with the revision of the superfamily Chalicotheroidea, which is about to be published, the writer has found that a quantity of material representing a specimen from the Upper Harrison Beds of western Nebraska (Middle Miocene) is undoubtedly referable to a new species, which he desires to name in honor of Dr. W. J. Holland, the Director of the Carnegie Museum.

Moropus Hollandi sp. nov.

Type Specimen.—Radius, ulna, and portion of fore foot, femur, tibia, fragment of fibula, and portions of both hind feet. No. 1424, Carnegie Museum Collection. This material was discovered in 1901 and partially described by O. A. Peterson (*Ann. Car. Mus.*, Vol. IV., pp. 60–61, 1906) as *M. elatus*.

Specific Characters.—Limbs slenderer than in *M. elatus* Marsh or *M. petersoni* Holland. Third trochanter of femur somewhat less developed than in the latter species; facet for the trapezium on the scaphoid much reduced, or wanting; facet for trapezium on *Mc. II* wanting; metacarpals proportionally long and slender; proximal and median phalanges of second digit of manus more compressed laterally than in *M. elatus* or *M. petersoni*. The animal was larger than a tapir, but considerably smaller than *M. elatus* Marsh, which was as large as a rhinoceros.

A more detailed description of this species will appear in the work to which reference has been made, the first part of which has gone to the printer.

O. A. PETERSON

CARNEGIE MUSEUM,
October 8, 1913.

THE AMERICAN CHEMICAL SOCIETY ROCHESTER MEETING

II

BIOLOGICAL CHEMISTRY SECTION

Carl L. Alsberg, *Chairman*
I. K. Phelps, *Secretary*

T. B. ALDRICH: *On the Presence of Histidine-like Bodies in the Pituitary Gland (Posterior Lobe)*. (Preliminary communication.)

From the Research Laboratory of Parke, Davis & Co., Detroit, Mich. Employing Pauly's diazo-

benzene sulphonic acid reaction for the detection of histidine it seems probable that histidine or some form of it in a free state is contained in the desiccated posterior lobe of the pituitary gland, since by benzoylating direct, using Inouye's method Pauly's reaction was positive and that the body (or bodies) giving Pauly's reaction after hydrolysis by means of mineral acids or digesting with pancreatin is not tyrosine (which gives a similar reaction) since after benzoylating the histidine reaction still persists. Furthermore, the histidine-like body (or bodies) is probably not histidine, since it does not give Weidel's reaction as modified by Fischer or Knopp's reaction with bromine.

It would seem probable also that Pauly's reaction is not a specific reaction for histidine, but a reaction for certain bodies yet to be positively determined.

J. H. LONG: *The Mutual Action of Pepsin and Trypsin.*

The older physiologists seem to have considered this a comparatively simple question, but their findings were not in agreement. Kühne was one of the first to discuss the problem and he concluded that pepsin destroys trypsin. This is probably correct, but his experimental evidence does not warrant the statement. In all such experiments the reaction of the medium must be pretty definitely known, as the content of hydrogen or hydroxyl ions is often the determining factor. In most of the older work these points were almost wholly overlooked, as the combining power of protein for acid or alkali was not known or not recognized. Making a due allowance for the reaction of the medium, the present experiments show that within the practical limits of body behavior trypsin has no important action on pepsin, while the action of pepsin on trypsin is markedly destructive, while an acid medium weakens the trypsin, pepsin plus acid seems to destroy it rather rapidly.

G. O. HIGLEY: *A Further Study on the Well Water of Delaware, Ohio.*

The purpose of this study was to supplement that reported on at the spring meeting—to trace the relation between well water and an outbreak of typhoid. The city water had been examined and found safe. The water of about 100 wells has been analyzed and much of it found polluted. Five vaults were now selected in various parts of the city and in widely different soils: these were heavily salted and a weekly test for chlorides made during a period of nearly two months of the

water of thirteen wells located from 58 to 118 feet from the vaults. Comparison of results of analyses made before and after the salting process, showed a decided increase in chlorides in well water at four of the five centers and in seven of the thirteen wells.

H. P. ARMSBY: *Comparison of the Observed and Computed Heat Production of Cattle.*

JACOB ROSENBLOOM and S. ROY MILLS: *The Non-interference of Ptomaines with Certain Tests for Morphine.*

We have determined experimentally that bacterial products formed during aerobic and anaerobic putrefaction of various human organs do not give reactions simulating those due to the presence of morphine and in no way do they interfere with the detection of morphine when added to these putrefactive products.

JACOB ROSENBLOOM: *On the Distribution of Mercury Following Acute Bichloride of Mercury Poisoning.*

The writer has estimated the amount of mercury in the organs of a woman who died eight days after ingestion of bichloride of mercury.

JAMES P. ATKINSON: *The Effect of Electrolisis on Whole Proteins, Witte's Peptone, and some of their Decomposition Products.*

Whole protein (egg white), Witte's peptone and protein (horse serum), hydrolyzed by hydrochloric acid, yield approximately 50 per cent. of the total nitrogen as ammonia when electrolyzed in a sulphuric-acid solution. The amino acids tested, glycylglycine, uric acid and urea, do not yield as much nitrogen as ammonia under the same conditions, while ammonium sulphate is unaffected.

A. F. BLAKESLEE and R. A. GORTNER: *The Non-development of Cytolytic Sera following the Intravenous Injection of Mould Spores.*

Intravenous injections of the spores of each race of Mucor "V" were given to rabbits, rabbit No. 5 receiving 30 injections of the ♂ race and rabbit No. 55 receiving 29 injections of the ♀ race. Each injection would average about 500,000,000 spores. Following the last injection of approximately 800,000,000 spores a loop of blood was taken at intervals of 30 minutes for 6 hours, then every hour for 4 hours more, then every two hours for 16 hours more and later at less frequent intervals. Separation cultures were made of agar which contained the loop of blood taken and the number of mould colonies which developed were counted. A similar test was made at the same time, using rabbits which had received their first injection of the spores. In each case the disappearance of the

spores occurred after about 43 hours, the immunized rabbits retaining the viable spores as long as the check rabbits.

R. A. GORTNER and A. F. BLAKESLEE: *The Occurrence of a Toxin in the Bread Mould, Rhizopus nigricans*.

We have found that there is a toxin in the bread mould which, when administered intravenously to rabbits, causes their death with all of the symptoms of anaphylaxis. The toxin is stable to peptic digestion and to heating at 100° for five minutes. The toxin, as prepared, is present in the mould to about 4 per cent., is soluble in water, from which solution it may be precipitated by alcohol, and is non-dialyzable. The lethal dose for rabbits, when given intravenously, is about 1:225,000 parts of body weight.

RAY E. NEIDIG: *Effect of Acids Upon the Catalase of Taka-diastase*.

Data were presented showing the inhibiting effect of several of the important inorganic and organic acids toward catalase of taka-diastase. Curves were plotted for different acid concentrations which show the quantity of oxygen liberated at stated intervals. The acids, arranged in order of the magnitude of their inhibiting effect for equinormal solutions, are as follows: sulphuric, hydrochloric, oxalic, tartaric, citric and acetic. The inhibiting effect of the first three was much more pronounced than that of the others. Neutralization of the acid solution usually restored some of the activity, the amount of increase depending upon the particular acid used. Van Slyke's amino-nitrogen apparatus was used in these experiments for measuring the amount of oxygen liberated.

RAY E. NEIDIG: *Polyatomic Alcohols as Sources of Carbon for Molds*.

A comparison of some of the polyatomic alcohols occurring in nature was undertaken in order to determine the degree of their utilization by molds as sole sources of carbon. The alcohols used were methyl alcohol, glycol, glycerol, erythrite, adonite, mannite, dulcitol and sorbitol. Eight species of molds representing four genera were cultivated in media containing these alcohols.

It was found that methyl alcohol produced no growth, glycol induced germination only, glycerol produced strong cultures, erythrite could be used by the majority of molds and adonite by only a few, while all three of the hexatomic alcohols may be regarded as good sources of carbon. These results indicate that molds are able to use both optically active and inactive compounds as sources of carbon. If viewed from the standpoint of their

oxidation products it is possible that active compounds are first formed and these are then utilized in the development of the molds.

ARTHUR W. DOX and W. E. RUTH: *Cleavage of Benzoylalanine by Mold Enzymes*.

Continuing our studies on the enzymic cleavage of glycocholic derivatives by means of the formol-titrimetric method, a homologue of hippuric acid, viz., benzoylalanine, was tested. Seven species of the lower fungi were found to produce an enzyme capable of decomposing *DL*-benzoylalanine to the extent of 12.8 per cent. to 24.5 per cent. in two weeks.

F. C. COOK: *The Importance of Food Accessories as shown by Rat-feeding Experiments*.

Most of the twelve white rats fed on a basal diet of protein, fat, carbohydrates and salts for eighty days lost weight during the last three weeks. For thirty-five days immediately following, 5 c.c. of meat extract, plant extract solution or milk were alternately added to the basal diet, the nitrogen and sodium chloride being equal. Milk and meat extract stimulated growth, plant extract showed little stimulating power. Eleven young white rats fed for thirty-five days on the basal diet, plus one of the three accessories, showed similar results. Milk, also meat extract, gave the biuret reaction and precipitates with phosphotungstic acid. Plant extract gave neither. Meat extract is a hydrolyzed product practically free from fat and carbohydrates. The rats gained more on a smaller number of calories when milk or meat extract was ingested than when fed on the basal diet alone.

CHRISTINE CHAPMAN and W. C. ETHERIDGE: *Influence of Certain Organic Substances Upon the Secretion of Diastase by Various Fungi*.

In this work the influence of varying concentration of cane sugar, glucose, peptone and tannic acid upon the secretion of diastase by *Aspergillus niger*, *Aspergillus Oryzae*, *Penicillium expansum*, *Penicillium camembertii*, *Mucor Rouxii* and *Cephalothecium roseum* has been investigated. Czapek's solution was employed with the sugar replaced by 0.4 per cent. soluble starch. To this was added the quantity substance whose influence was to be determined. It was found in general that the presence of any of the above organic substances retarded the secretion of diastase by the fungi mentioned. The higher the concentration the greater the retardation.

H. H. BUNZEL: *The Role of Oxidases in the Curly Dwarf Disease of Potatoes*.

OLIVER E. CLOSSON: *A Time Recorder for Kymograph Tracings.*

It is at best a tedious operation to find the projection of the time record on the different graphs as ordinarily traced upon smoked paper.

By the following simple device the time interval can easily be recorded by a fine line, entirely across the paper.

A fine spring wire stretched two to three millimeters from the smoked surface will, when picked by the armature of the time signal magnet, strike the smoked paper on the rebound and remove a fine line of soot.

By a little adjusting a single distinct line is recorded at each closure of the circuit. If it is inconvenient to adjust any recorder to write perpendicular to the base line it is a simple matter to adjust so that the time line is parallel to any such line.

OLIVER E. CLOSSON: *Apparatus for Studying Oxidases.*

The reaction of oxidases with hydrogen peroxide liberates heat, and the temperature factor being large as well as the expansion of the gas, all necessitate a thermostat control and continued agitation of the mixture for comparative studies.

To obtain uniform temperature and continuous record of the liberated gas the following apparatus was devised.

A shaking member with two compartments, one for holding the hydrogen peroxide and the other for the enzyme solution, is connected by a tube with ground joint to a large cylindrical container with center at the axis of motion so that liquid in this container is not agitated by motion around the axis. This arrangement allows the shaking of the reacting solution and the measure of the liberated oxygen by the water displaced.

The large container has a tube extending along the axis to the outside of the thermostat, which allows the discharge of the displaced water into a vessel suspended by a spring, so that a writing arm can be made to record the volume, giving on a rotating drum a curve, which can be analyzed at one's leisure.

AMOS W. PETERS and MARY E. TURNBULL: *A Method for Studying Slight Degrees of Glycosuria, Adapted from Macleod and S. R. Benedict.*

Urine is clarified by the method of Macleod, *i. e.*, urine + concentrated acetic acid + Merck's blood charcoal. No sugar is lost by this procedure, the urine is diluted to only 7/5 original volume, the

filtrate is water-clear for polarization. Five c.c. of the filtrate, contained in a 100 c.c. Kjeldahl flask, is neutralized with saturated solution of Na_2CO_3 , using alizarine, and 5 c.c. of a modified Benedict reagent is added. After placing a pebble in the liquid and fixing the flask in an inclined position directly over a small Bunsen flame the whole is boiled for $2\frac{1}{2}$ minutes. The resulting small volume is transferred to a centrifuge tube and made to 10 c.c. Examined under a shaded electric light and against a dark background even a trace of dextrose shows turbidity, and after centrifugation so little as 0.0035 per cent. shows a film of red precipitate. Quantitative estimations are made by comparison with standards based upon a normal urine obtained under normal diet and showing zero rotation, or nearly so, after clarification, and to which dextrose is added in steps of 0.01 per cent. The sensitivity is such that pronounced differences result with these small intervals.

Composition of the above reagent: Sod. citrate 100 gm.; sod. acetate 100 gm.; sod. carb. anhyd. 50 gm.; cryst. copper sulph. (Kahlbaum) 12.5 gm.; dist. water add 500 c.c.

W. S. HUBBARD and D. M. COWIE: *A Method of Estimating Fat in Infant Stools.*

S. L. JODIDI: *Nature of Humus and its Relation to Plant Life.*

PHILIP ADOLPH KOBER: *The Estimation of Protein, Animo and Nucleic Acids in Potable Waters.*

WILLIAM N. BERG: *Surface Tension in Muscle Contraction.*

Macallum quotes Jensen to the effect that "a thread measuring 1 millimeter in diameter formed of the plasmodium of *Chondrioderma*, a Myxomycete, may, when it is in the dense condition, bear up a weight of nearly a gram. If the force engaged is surface tension it would amount to about 6,000 dynes per centimeter."

At the same time Macallum does not quote Pfeffer, who says that in the case of the plasmodium of *Chondrioderma*, the outer membrane may vary reversibly, in its consistency, from that of the fluid protoplasm in the interior of the cell to that of solid gelatinous masses.

Jensen obtained the figure of 6,000 dynes per centimeter by dividing the weight sustained by the plasmodium thread by the circumference of the thread. It would have been just as logical to divide the weight sustained by a steel wire by the circumference of the wire and call the equipment the surface tension of steel.

C. S. HUDSON and T. S. HARDING: *The Estimation of Raffinose by a Modified Biological Method.*

WILLIAM SALANT and J. B. RIEGER: *The Elimination of Zinc.*

The experiments were made on rabbits. Zinc was given intravenously and zinc acetate subcutaneously. The urine collected for period of 24-48 hours showed the presence of 1-2 milligrams of zinc. Much larger amounts were found in the feces and contents of the gastro-intestinal canal after the subcutaneous injections. The quantities of zinc varied between 8.5 and 17.1 milligrams in 24-48 hours, which represented 10-34 per cent. of the amounts introduced. The amounts of zinc eliminated by this channel were greater after intravenous injection, being 17-20 milligrams, or 40 per cent. of the quantity administered.

WILLIAM SALANT and L. P. TREUTHARDT: *The Absorption and Fate of Tin in the Body.*

Tin in the form of a double salt was given subcutaneously and by mouth to different animals. Analyses of the urine and feces, contents of the stomach and intestines, which were made gravimetrically and volumetrically, gave the following results: After the subcutaneous administration 5-15 per cent. was eliminated in the urine in 24-48 hours. The feces of the corresponding period contained much smaller amounts. The contents of the stomach and intestines and the feces contained as much or more tin than the urine. In some animals the amount of tin eliminated by the kidneys was smaller than that recovered from the gastro-intestinal contents and feces.

Analysis of the skin indicated the presence of 20-25 per cent. of the amount of tin injected.

When double salts of tin were given by mouth, small quantities of it were found in the tissues and in the urine, indicating that absorption from the gastrointestinal canal takes place to a very small extent only and may be insignificant in some animals.

The amount of tin found in the liver of rabbits at the end of 48 hours varied between 0.6 per cent. and 10.8 per cent. The kidneys of such animals contained quantities varying between 1.6 and 8.2 per cent. of the amount of tin injected. Experiments on the absorption of salt from the blood indicate that 85-95 per cent. may disappear in 2-3 hours after the intravenous injection of 70-200 milligrams tin.

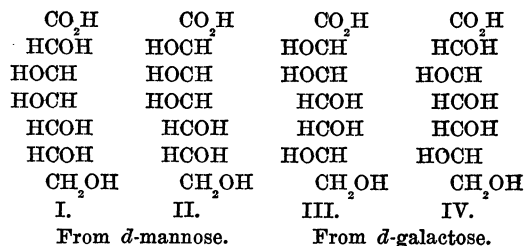
DONALD D. VAN SLYKE and GUSTAVE M. MEYER: *The Fate of Protein Digestion Products in the Body.*

Previous work by the authors has shown that

during digestion amino acids are absorbed into the blood, as the amino acid nitrogen of the latter per 100 c.c. rises, in a dog, from 4-5 mg. before feeding to 10-12 mg. after a meal of meat. The low concentration of amino acids in the blood even at its maximum indicates that the digestive products must be removed rapidly from the circulation. This is found to be the case after the injection of amino acids directly into the circulation. They disappear from the blood almost as fast as they enter it. Analysis of the tissue shows that these have absorbed the amino acids from the blood, without subjecting them to any immediate chemical change. This apparently follows later, but in the muscles is so slow that no decrease in amino acid nitrogen can be determined within the first 3-4 hours after the injection. In the liver, on the other hand, the amino acids absorbed as the result of the injection have entirely disappeared in this time, indicating that the metabolism of these products is particularly rapid in the liver. It is less so in the other organs, but whether as sluggish as in the muscles is not yet certain. During starvation the amino nitrogen of the tissues, which amounts to 40-80 mg. per 100 gm. of fresh tissue, tends to increase rather than disappear, indicating that the amino acids of the tissues can originate from autolysis of the tissues themselves as well as from digestion of food proteins.

GEORGE PEIRCE: *The Configuration of Some Heptoses.*

d-mannohexahydroxyheptoric acid and *d*-galahexahydroxyheptoric acid yield on oxidation two pentahydroxykinetic acids that are optical antipodes of each other. The configuration of four of the asymmetric carbon atoms in each monobasic acid is known and the configuration of the fifth is given by the above fact. The corresponding heptites are also optical antipodes.



Of the following four configurations I. and III. are seen to be the two that give optical antipodes on oxidation or reduction of the end carbon atoms. These two are, therefore, the formulæ for the α compounds. The β galactose compounds of

formula IV. have been synthesized. The β man-nose compounds of formula II. have not yet been prepared.

M. X. SULLIVAN: *Some Organic Constituents of the Culture Solution and the Mycelium of Molds from Soil.*

Examination was made of the dried mycelium of mixed mold cultures from soil and of *Penicillium glaucum* grown on Raulin's solution and of the filtered solution after mold growth for organic constituents. In the mixed molds was found a large number of organic substances, many of which were subsequently found in *Penicillium glaucum*. In the alcoholic soda extract of *Penicillium glaucum* were found oleic and palmitic acids, a fatty acid melting at 54° C., a fatty acid which appears to be elaidic acid, hypoxanthine, guanine and adenine, histidine, thymine and chlorine. In the direct alcohol extract was found mannite, cholesterol bodies, hypoxanthine and cerebrosides. From mold grown on Raulin's solution plus peptone a small amount of guanidine was found. In the culture solution after a number of weeks' growth were found fatty acids, purine bases, a small quantity of a histidine-like body, pentose sugar, unidentified aldehydes, etc. Many of these compounds have been found in soil and the conclusion is drawn that microorganisms, such as yeasts, bacteria and molds, play an important part in their formation.

M. X. SULLIVAN: *Vanillin in Wheat and its Relation to Soil.*

By means of the sodium bisulphite aldehyde method, an aldehyde smelling like vanillin and giving vanillin color reactions was found in the alcohol and ether extracts of ungerminated wheat seeds, in the roots, seeds and tops, respectively, of young wheat seedlings in rotten wood, and in the water in which wheat had germinated and grown. Estimated quantitatively by Folin and Denis's colorimetric method, the amount in the ungerminated seed is small, several parts per million, but is considerably increased during germination and the early stages of growth. Treating the seed with 5 per cent. sulphuric acid also increased the amount of vanillin extractable. The presence of vanillin in other plants was indicated. The vanillin of soil undoubtedly has its origin in part in vegetable debris and plant.

W. R. BLOOR: *A Method for the Determination of Small Amounts of Fat.* (Preliminary report.)

The method consists essentially in extracting the fat from the tissue or liquid with an excess of alco-

hol-ether (25 per cent. ether), measuring an aliquot portion of the filtered extract into distilled water and determining the amount of fat by comparison of the cloudy suspension so obtained with a standard fat solution by the use of the nephelometer. The method has given good results with blood and milk.

C. G. MACARTHUR and G. NORBURY: *Nitrogenous Hydrolysis Products of Several Phosphatids.*

Sheep brain kephalin, sheep brain lecithin, ox heart cuorin and ox heart lecithin were prepared, purified and then hydrolyzed in a dilute hydrochloric acid solution. In each case the fatty acid residue contained nitrogen, usually about one sixth of the total. The filtrate nitrogen was separated by a special method into four fractions, representing (1) ammonia, (2) chlorine or other basic compound, (3) amino acid, or compounds not precipitated by platinum chloride but precipitated by mercuric acetate in a sodium carbonate solution, and (4) the filtrate from (3). The two lecithins contain about two fifths of the nitrogen in the form (2), while kephalin and cuorin contain practically none. In all of them, fraction (3) is large, varying from one third to one half.

L. V. BURTON and C. G. MACARTHUR: *Fatty Acids from Kephalin.*

The fatty acids obtained from hydrolyzing purified kephalin in a dilute hydrochloric acid solution were separated by the lead acetate method into the saturated and unsaturated fatty acids. The saturated acid fraction represented about one third of the total and was found to contain stearic and palmitic in the ratio of three to one. The unsaturated fatty acids were separated by the bromination method into clupanodonic acid, linolic acid and oleic acid. The amount of clupanodonic acid present was small, less than 2 per cent. The linolic acid was found to represent about one sixth of the total fatty acids. Oleic acid comprised about one third of the total.

E. B. FORBES: *A Metabolism Experiment with Swine.*

The usual practical rations for swine contain an excess of acid over basic mineral elements. Urinary ammonia varies directly with this excess of mineral acid, provided the protein intake remains the same. Increased protein intake increases urinary ammonia. This excess of mineral acid in practical swine rations seems not to affect calcium retention.

Water-drinking caused the elimination of sodium and chlorine; abstinence from drinking leads

to their retention. The feces may contain an abundance of sodium, but are nearly free from chlorine.

Potassium, magnesium and chlorine balances were usually positive, but were negative during periods of maximum intake, apparently through over-response in the way of protective elimination of excess ingested.

Calcium retention was satisfactory only on rations containing meat meal containing considerable bone and skim milk. Neither cereals nor soy beans furnish the calcium requisite for growth.

An excess of magnesium to calcium caused loss of calcium with a ration of rice polish and wheat bran. The excess of magnesium to calcium in corn and in other practical rations does not appreciably restrict calcium retention.

The important deficiencies of corn are, in order of magnitude, first, calcium; second, phosphorus; third, nitrogen.

Creatinin elimination was entirely independent of food, but varied in the same order as live weight, weight of dressed carcass, of flesh, of bones and of blood.

Soy beans, meat meal and skim milk increase the digestibility of the carbohydrates of the corn with which they are fed. Meat meal and skim milk increase the apparent digestibility of the fat, and decrease the digestibility of the crude fiber of the corn with which they are fed, the results being digestion coefficients of more than 100 and less than nothing.

V. C. MYERS and M. S. FINE: *The Fate of Creatinine and Creatinine when Administered to Rabbits.*

When creatine is administered subcutaneously to rabbits in amounts varying between 50 and 100 mgm. per kgm. of body weight per day, 25-80 per cent., depending upon the amount given, reappears in the urine unchanged, 2-10 per cent. is eliminated as creatinine, about 15 per cent. is retained by the muscle, while, if introduced in small amounts, as much as 50 per cent. may be metabolized. We are inclined to attach considerable significance to the slightly increased excretion of creatinine as indicating the metabolic relationship between these two substances. The creatine content of the muscle was raised from the normal of 0.52 per cent. to 0.55 per cent. (5 expts.) after the administration of creatine, and to 0.56 per cent. (3 expts.) after the administration of creatinine.

ANDREW HUNTER, M. H. GIVENS and C. M. GUION: *Studies in the Comparative Physiology of Purine Metabolism.*

PHILIP ADOLPH KOBER: *The Estimation of Protein, Amino and Nucleic Acids in Potable Waters.*

Experiments show that by using the right precipitants and evaporating to one tenth of the original volume proteins and nucleic acids can be estimated in potable waters by the author's nephelometric method. This method will easily reveal the presence of one part of substance in one million parts of water.

By using the copper method (to be described by the author in the next number of the *Journal of the American Chemical Society*) potable waters may be analyzed for amino acid nitrogen before or after hydrolysis. This method will reveal one part of amino acid nitrogen in one million of water, without difficulty.

HOWARD D. HASKINS: *The Acidity of Normal Urine.*

Certain modifications of Henderson's method were suggested. Permanent color standards were proposed for the range of acidity determined by paranitrophenol. A report was made of a study of variations of acidity in 24-hour samples and in fractional samples, i. e., the day's urine collected in five periods. No relation of concentration of urine to acidity was found. The effect of diet was slight. Night urine was distinctly acid in 50 per cent. of the cases, and morning urine (breakfast to 11) was of very low acidity in 50 per cent. of the cases. Sweating seemed to have a marked effect in causing higher acidity.

MAX KAHN: *Metabolism Studies of Five Cases of Endarteritis obliterans.*

Five patients suffering from obliterating endarteritis were fed on a Folin diet and their metabolism studied. It was found that the nitrogen metabolism was normal but that the calcium and ethereal sulfates were increased in the urine.

MAX KAHN: *Calcium Content of Tuberculous Areas in Lung Tissue.*

Wherever the tubercle bacillus lodges it induces a deposition of calcium salts which hinders the ingress of more tubercle bacilli. The body in general becomes poorer in lime salts. It was found that tubercular areas in the lungs contained two to three times as much calcium as normal lung tissue. The work is in progress.

MAX KAHN and A. HYMANSON: *Metabolism Studies of Two Cases of Amaurotic Idiocy.*

Two cases of amaurotic family idiocy were kept under observation until death. The metabolism of nitrogen, sulfur and phosphorus was carefully

studied. It was found that both retention and absorption were normal or above normal. The digestive system does not seem to be at all deranged in this fatal disease.

T. L. HARKEY: *Further Studies of Edema.*

OLIVE G. PATTERSON: *A Study of the Influence of External Hemorrhages on the Partition of Urinary Nitrogen.*

VICTOR E. LEVINE: *Biochemical Studies of Selenium.*

BENJAMIN HOROWITZ and W. J. GIES: *Pigments Produced from Thymol by Ammonium Hydroxide.*

LOUIS BERMAN and W. J. GIES: *A Differential Stain for Mucine and Mucoids.*

MAX KAHN and W. J. GIES: *The Origin and Significance of Salivary Sulfoeyanate.*

A. P. LOTHROP and W. J. GIES: *Biochemical Studies of Dental Caries.*

W. J. GIES: *Further Studies of the Permeability of Lipin-Colloid Membranes.*

W. D. BANCROFT: *Light and Health.*

(To be concluded.)

CHARLES L. PARSONS,
Secretary

SOCIETIES AND ACADEMIES

THE AMERICAN MATHEMATICAL SOCIETY

THE one hundred and sixty-fifth regular meeting of the society was held at Columbia University on Saturday, October 25, extending through the usual morning and afternoon sessions. Thirty-three members were in attendance. President E. B. Van Vleck occupied the chair, being relieved by Professor H. S. White. The following new members were elected: R. W. Burgess, Cornell University; Tomlinson Fort, University of Michigan; Cora B. Hennel, Indiana University; Arthur Korn, Charlottenburg, Germany; J. H. Kindle, University of Cincinnati; M. A. Linton, Provident Life and Trust Company, Philadelphia; John McDonnell, Geodetic Survey of Canada; J. Q. McNatt, Colorado Fuel and Iron Company; T. E. Mason, Indiana University; B. E. Mitchell, Columbia University; George Paaswell, New York City; D. M. Smith, Georgia School of Technology; Panaiotis Zervos, University of Athens. Twelve applications for membership were received.

The meetings of the Chicago Section having been for some years of equal importance with the meetings held in New York and technically described as meetings of the society, it has been decided to obliterate this outgrown distinction by making the Chicago meetings also regular meet-

ings of the society, so far as the presentation of scientific papers is concerned. The society will hereafter enjoy a possibly unique distinction, in that it will hold practically simultaneous meetings in two cities.

Following closely on the volume of the Princeton Colloquium Lectures, the society will shortly publish the Madison Colloquium Lectures of Professors L. E. Dickson and W. F. Osgood. This will be Volume IV. of the series of Colloquium volumes, its predecessors being the Boston, New Haven and Princeton Lectures.

It was decided to hold the summer meeting of 1914 at Brown University, in acceptance of the invitation by that university to participate in the celebration of its one hundred and fiftieth anniversary.

The following papers were read at the October meeting:

G. M. Green: "Projective differential geometry of one-parameter families of space curves, and conjugate nets on a curved surface."

G. M. Green: "One-parameter families of curves in the plane."

Edward Kasner: "The classification of analytic curves in conformal geometry."

G. H. Graves: "Systems of algebraic curves of least order for genera 3 and 4."

A. A. Bennett: "Quadri-quadric transformations."

A. A. Bennett: "A set of postulates for a general field admitting addition, multiplication, and an operation of the third grade."

T. H. Gronwall: "On analytic functions of several variables."

H. Galajikian: "Concerning the continuity and derivatives of the solution of a certain non-linear integral equation."

G. M. Green: "On the limit of the ratio of arc to chord at a point of a real curve."

W. H. Roever: "Geometric derivation of a formula for the southerly deviation of falling bodies."

The San Francisco Section held a meeting also on October 25. The Southwestern Section will meet at the University of Missouri on November 29. The society will meet in Chicago on December 26-27, and will hold its annual meeting in New York on December 30-31. At the latter meeting Professor H. B. Fine will deliver his presidential address on "An unpublished theorem of Kronecker respecting numerical equations."

F. N. COLE,
Secretary