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Abstracts of Original Articles


Toshio HIGUCHI
(M. Okada – Dept. Pharmacology)

In the amphibian kidney the glomeruli are supplied with blood from the renal arteries, and the tubule mostly from the renal portal veins. It is why amphibians have used for experimental separation of the glomerular and tubular functions from one another; Gurwitsch, for example, tried to isolate the tubular function by ligating the renal portal veins.

On the other hand, the clearance technique was recently introduced to prove itself as a useful method for physiological investigation of the kidney.

As there is much controversy in results attained from those experimental ligation methods standing upon such an anatomical speciality as the double blood supplies, the author tried to clarify the normal function of the kidney, the reliability of Gurwitsch's method and the actions of a few drugs upon it. The results are as follows:

1) In toads urine flow is regulated primarily by the glomerular filtration rate and secondarily by the tubular reabsorption of water.

2) The renal activities, both glomerular and tubular functions, change inconstantly, and in warm season they are greater than in cold season.

3) The PAH clearance represents the total renal blood flow in PAH blood level under 3 mg/dl, that is about 10 times as large as glomerular blood flow of the same kidney.

4) Glucose in the glomerular filtrate is reabsorbed about to 90% by the tubular epithel when the animal is in normal blood sugar level (22~67 mg/dl) but a complete reabsorption cannot be found in all instances anaeasthetized with urethane.

5) Phloridizin causes a marked glyco-
suria accompanied by concomitant reduction of the blood sugar level in toad, by blocking almost completely (about to 99%) the tubular reabsorption of glucose, but it affects quite little on the other functions of the kidney.

6) Posterior pituitary extract (pituitran) decreases the urine flow of toad not by promoting the tubular reabsorption of water, but by reducing the glomerular filtration rate.

7) By ligation of the renal portal veins (Gurwitsch's operation) the glomerular filtration rate of the operated kidney are not changed, but the urine flow and the glucose excretion increased and the PAH clearance decreased in comparison with the control kidney. But these changes are too little to compare with ones of the glucose excretion by administration of phloridzin. These facts indicate that changes by Gurwitsch's operation do not point out the depression of the tubular activity but the diminution of the peritubular blood flow, and so Gurwitsch's operation is not suitable to isolate the tubular function.

8) Vinyl cast of the renal vessels and the tubules of the toad shows clearly the anastomosis between the different system of vessels. This anatomical observation coincides with results attained from the clearance technique applied on the toad operated by Gurwitsch's method, that is, such an experimental ligation technique as Gurwitsch's method is not suitable to separate the function of the glomerulus from the tubules.

2. On Changes of the Urine Flow and Clearance Value in Toads with V. Caudalis Ligated.

Toshio HIGUCHI
(M. Okada – Dept. Pharmacology)

As soon as V. cava caudalis is ligated, blood flow in the kidney extremely decreased with counter-currents in some portal veins. Such circulatory changes are accompanied by depression of the urine flow and the inulin or PAH clearance, but the correlation ratios between them (CIN/V and CIN/
of albumin and globulin estimated turbidimetrically fairly well agreed with those of albumin plus α-globulin, and β-plus γ-globulins, respectively.


Yaeko AKIKUSA
(K. Ohta — Dept. Pediatrics)

The author investigated the fluctuation of the number and the size of fat globule and the fatty content in the human milk. In order to facilitate the calculation with a microscope the special calculating plate-glass, which was ½ in depth of Thoma’s hemacytometer, was prepared. As the special instrument, which was ½ capacity of Gerber’s Butyrometer, was prepared, it was possible to estimate the fatty content in the minute milk.

1) In the coostrum of the early stage, the number of fat globules was little and its size varied from large to small and few fatty content was contained. However, in the cutostrum of the late stage, mainly the minute fat globule and the fatty content increased. Thereafter, the number of all fat globules and minute fat globules decreased, but both small and middle size fat globules increased. On the other hand, the fatty content was stable or seldom decreased. These conditions were almost the same in the ripe milk. In the end stage of lactation, the number of fat globules and the fatty content decreased and the size became irregular.

2) More small and middle size of fat globules and fatty content were found at the end of milk secretion than at the beginning of milk secretion.

3) The longer was the interval of the suck, the larger percentage of the minute fat globule and the less fatty content.

IV. The Characteristic Value of the Fat in the Human Milk.

The fatty content in the human milk was estimated by the use of the semi-minute method.
1) In the colostrum of the early stage, a saponification value was low and an iodine value was high and a Polenske's value was fairly low. But these values took a turn gradually. From 9th day to 11th day in the postpartum a saponification value was high (290~250) and an iodine value was low (40 more or less) and a Polenske's value raised to some degree (40~50). A Reichert-Meissl's value fluctuated from 9 to 15 throughout the whole duration of the colostrum. These values in the ripe milk were almost the same with those of 9~11th day milk in the postpartum. In the end stage of lactation a saponification value, an iodine value and a Polenske's value increased. After all, more unsaturated higher fatty acid, which contained a high nutritive value and could be absorbed well, like the oleic acid, was contained in the colostrum than in the ripe milk.

2) In the end stage of lactation a saponification value was lower and an iodine value was higher than those of the early stage of lactation.

3) No difference between both milk fats, which were contained in the large and small fat globules, were found about the characteristic values measured in the present report.


Kimio UESUGI
(T. Shimazaki - Dept. Psychiatry)
(S. Miyamoto - Dept. Biochemistry)

In the first and second experiments dealing with the electric shocks to normal intact rabbits at such various electric pressures as 30 V, 50 V, 110 V and 155 V, the present writer has reported the changes of their blood nature caused by the shocks. The consequential tendencies in general were 1) that the initial and secondary changes after the electric shocks were different from each other, 2) that both the initial and secondary changes showed increases according to the rise of electric pressure, 3) that especially the secondary reactions were more quick and acute in accordance with the increase of electric pressure, and 4) that, among these, the initial reactions were due to the control of nerves by electric shocks and the secondary ones were probably due to the influences of hypophysis-adrenal cortex hormones.

Following these, I have made experiments with rabbits injected beforehand with ACTH and Cortisone, electrifying them at 110 V for two or three seconds. The resultant changes of their blood nature were:

1) that the reaction of the electric shocks dealt to their living bodies injected beforehand with Cortisone was as if they had been dealt with electrification at lower voltage than they really were, and thus showed that Cortisone worked defensively against the shocks, that is, with Cortisone beforehand given may lessen the shocks.

2) that in the groups injected with a little quantity of ACTH similar defensive effects were to be seen. That showed that injection of a small amount of ACTH before electric shocks were given urged Cortisone to be secreted naturally.

3) that in the groups dealt with frequent and large quantity of ACTH the defensive effects were more in some (G8, G8- Gs, and blood sugar) and less in others (serum viscosity ratio), though there was comparatively weak defensive effect on the whole and in some cases (Gs, total protein in serum, A/G proportion serum albumin density, serum globulin density and Cl in blood etc.) there was more susceptibility to the shocks.

4) More susceptibility to the shocks in the groups given frequent and large quantity of ACTH seems to indicate that the dose of ACTH causes the gland to work so forcibly as to be utterly unable to secrete Cortisone at the time of electrifications, and

5) that these experiments had proved that Cortisone was defensive against electric shocks.

Jiro ENOMOTO, Shunichi HIRAOKA, Hideo OKAMOTO (I. Aoike — Dept. Orthopedics) and Takeshi KASUGA (K. Oh—a — Dept. Pathology)

The patient was a 45-year-old male who had visited our clinic with the chief complaint of lumbergia following a confusion on the lumbar region. He had been diagnosed and treated as tuberculosis of the lumbar vertebrae but died 30 months later of tuberculous meningitis.

Of interest is the x-ray findings. The earlier x-ray films showed no atrophic nor destructive features of the vertebral bodies but bone proliferations similar to those seen in traumatic spondylolysis or spondylosis deformans were observed. Along the course of disease, a localized destruction of the vertebral bodies became gradually discernible. On the postmortem examination, a marked atrophy over the lumbar vertebrae and advanced tuberculous lesions on the two vertebral bodies where osseous proliferation had been observed previously on x-ray were found.

These findings suggest that this case is a tuberculous spondylitis with a marked tendency of reactive osseous proliferations. It is indicated that the appearance of osteophyte on x-ray may interfere with early diagnosis of tuberculous spondylitis.


Hachiro NAKAJIMA and Akira MATSUYAMA (F. Furuhata — Dept. Legal Medicine)

The author investigated A blood group substance in group A human sera and Le- substance in A, B, O and AB sera of secretors and non-secretors.

(1) Group A human sera inhibit the activity of anti-A agglutinin, though much more weakly than saliva.

(2) Most Le(+) human sera inhibit the activity of anti-Le agglutinin, and Le(a-) human sera do not.

(3) Significant correlation was observed as to the anti-Le agglutinin inhibition titer between serum and saliva of Le(a+) individuals.


Sadokatsu YUI (K. Ohta — Dept. Pathology)

Despite high importance of the vascular lesions in malignant diseases, especially in relation to causation hematogenous metastasis, a thorough systemic study has not been attempted on the subject since the classical report of Goldmann in 1897. The author, utilizing 200 cancerous stomachs, dissected and fixed fresh, followed the vascular histologically in and around the carcinoma, often with serial sections. About 50 non-cancerous stomachs, similarly studied, served as the control materials. Results of the observations of the vascular lesions were classified into the specific and non-specific changes, and arranged according to the sites: arteries, veins, and the capillaries.

In the cancerous stomachs several types of non-specific changes occurred as in the non-cancerous stomachs. The arteries were found remarkably, and almost completely, resistant to the neoplastic changes. Several types of permeation of the veins by the carcinoma were demonstrated, as well as their stages, their relation to the proximal and distal lesions, and association with damages to the capillaries. Their typical examples were demonstrated in 40 photographs. All in all, permeation of the veins was observed in 115 cases (38.3%). This occurred usually in the submucosa and subserosa. The scirrhous type of carcinoma was more liable to vascular permeation (54.5%) than the medullary type (32.6%). The capillaries were often invaded, but this finding appeared to have not much significance on the genesis of metastasis, inasmuch as obli-
10. Studies on the Hyaluronidase (III)

Eiji SHIOKAWA
(H. Kita — Dept. Hygiene)

Studying a substance which promotes blood capillary permeability and existed in human saliva, a leukotaxine-like substance was extracted. This substance did not make a needle-shaped crystalline like leukotaxine, was activated by the action of pepsin, and destructed hyaluronic acid which extracted from human navel-string by Haas’s method.

11. Studies on Skin Temperature of the New Borns.

II. Influences of Room Temperature Difference and Clothings to the Skin Temperature of the New Borns.

Kazuo KIKUCHI
(H. Kita — Dept. Hygiene)

The skin temperature of the fifty-five newborns was measured according to the difference of room temperature (20~30°C) and clothings.

The skin temperature of the objects was decreased with lower room temperature.

The skin temperature of cheek and extremities was more sensitive than the other parts of the body, and at high temperature the abdominal skin temperature was influenced and increased.

Clothings and baby’s wrapping influenced the skin temperature of the covered parts, maintaining higher temperature.


Hiroshi YAMAGUCHI, Keizo KAMIYAMA, Ichiro NASHIMOTO, Tameo KUBOTA, Kazuo KIKUCHI

(H. Kita — Dept. Hygiene)

Houke SUDA, Hamao KUROSAKA
(K. Fujii — Dept. Gynecology)

and Masayoshi HUROHASHI
(K. Kawashima — Dept. Surgery)

Authors found the valuable utilization for recording of digital plethysmogram, lactation pressure and uterus contruction pressure on the application of electric resistance strain gauge transducer.

The combination of electronic manometer (formed of strain gauge transducer, oscillator and A.C. two stage amplifier), three stage D.C. amplifier and pen writing oscillograph are suitable for that purpose.

Water or physiological saline solution was used as the transmitter of the pressure change on the parts of body. The response with the pressure change are linear and stable.

This apparatus may be used for recording of the pressure change on the other parts of the body.

13. On the Possibility of Appearance of the Cell Membrane-like Pattern, and Systematic Observation of Various Factors Giving the Influences upon the Pattern.

Kazuei WATANABE
(S. Miyamoto — Dept. Biochemistry)

The patterns of dried egg albumin at 200°C in the absence and presence of gum arabic, soap, tauro-cholate or ammonium alum were classified inspectingly into 10 types. The physicochemical mechanisms for the development of those various types are discussed.

Hidenobu TSUCHIYA

(F. Shimizu – Dept. Microbiology)

In an attempt to determine the protozoacidal action of serum, the normal serum of various species of animal, including human, rabbit, guinea pig, sheep, rat, horse, chicken and snake were tested respectively to study the ability of these serum to destroy the protozoa, Trichomonas vaginalis, Leishmania donovani, Trypanosoma gambiense, Plasmodium berghei, Toxoplasma gondii and Spirillum mansoni muris.

From the results of in vitro tests, it was noticed that the normal serum, irrespective of the species, showed a protozoa-destroying effect, namely protozoacidal action, on some of the tested species. T. vulgaris, L. donovani and P. berghei, the last one when found extracellularly. In further studies, it was demonstrated that the protozoacidal substance or substances in the serum, as shown by in vitro tests, is located presumably in the thermalabile albumin fraction and was active even without the cooperation of a complement, although the absorption tests have shown that the effective constituent on T. vaginalis was not the same as on the other two protozoa.

On the other hand, the results from the in vivo tests showed that the normal human serum was the only one to be able to show a prophylactic or curative effect on the mice infected with T. gambiense, which is attributed to the action of the thermostable constituent in the serum.

15. Studies on Respiratory Metabolism in Patients with Pulmonary Tuberculosis.

Kazuo YASUTOMI

(K. Yanagi – 1st Dept. Internal Medicine)

Basal metabolism, metabolism at rest and in activity in patient with pulmonary tuberculosis were observed by the measurement of gas analysis with Douglas air bag method. The results were concluded as follows.

1) Without raised body temperature, basal metabolism of patients were same as the normal range from −10% to +20%.

2) Comparing the exsudative-form with the productive-form, the basal metabolic rate of the former were higher than the latter.

3) Comparing the feverless patients with the feverless patients, the basal metabolic rate and work metabolic rate of the former were higher than the latter.

4) Considering from the O₂ consumption and CO₂ output, the exsudative-form and the fever patients needed heavy lord of ventilation of the lung than the productive-form and the feverless.

5) Work metabolic rate showed almost same value in cases of the feverless and the productive-form, but larger value were observed in cases of the fever and the exsudative-form.

6) The average of the total daily work coefficient were 0.19, but the fever patients showed higher value, although they rested in bed always.

7) Calory consumption and calory requirement were 1636 Cals., 1817 Cals. in man, and 1554 Cals., 1726 Cals. in woman respectively.

8) Administration of fatty diet (fat 80 g. daily, usual diet fat 30 g daily), decreased the volume of expired gas, O₂ consumption, CO₂ output and R.Q. in patients with pulmonary tuberculosis. It eliminated the lord of respirating and circulating system, and it produced good results for patients with pulmonary tuberculosis in therapeutic stand point.


Sho MIYAMOTO, Koichi ANAN, Kiyoshi MIYAKAWA and Haruyuki INOUE

(S. Miyamoto – Dept. Biochemistry)

For the accurate determination of 17-ketosteroids in bile juice, the procedures of acid hydrolysis, ether extraction, washing of the ethereal layer, and time and temperature for the color reaction with m-dinitrobenzene, were systematically reexamined. The addition of a small volume of ethanol was recommended to get a clear separation between ethereal and aqueous layers, which appeared not to interfere with the colorimetric 17-KS determination.
17. Studies on Salting-out of Serum Proteins.

III. Barium Chloride Salting-out of Albumin and Globulin at Higher Temperatures.

Kimio UNO

(S. Miyamoto — Dept. Biochemistry)

The presence of BaCl₂ at a final concentration of 8 g/dl in the serum adjusted to pH 1.4 ~ 3.4 precipitated euglobulin alone on incubating at 50°C, whereby the amount of euglobulin precipitated was approximately constant in acid range of pH 1.4 ~ 3.4.

18. Studies on Clinical Application of So-called Serum-protein Salt-gelatification.

II. On Influences by the Measurements before Lung-resection; Especially Hunger.

Kazue ADACHI

(S. Miyamoto — Dept. Biochemistry)
(T. Uchio – Ishioka Hospital, Japan National Railway)

In case of pulmonary lappen resection and segmental resection I have observed on the reaction of salt-gelatification the process after the operation.

The influences by the measurements before the operation; especially hunger from reduction of diet, have seen interestingly. Then I made a report as a preliminary experiment before report 3 with main experiment, gathering the part of this experiments.

1) Gb, Gp, Gs, TPp, TPp, w₂ were increased by reduction of diet and these grades were slight in healthy.

2) About Ht measured at the same time, it was decreased in the quantity by the influence of reduction of diet and fasting. In this case this grade is slight in the group of healthies, but remarkable in the patients.

3) Summing up the above-mentioned phenomena, I have seen a tendency that influences caused by reduction of diet and fasting as the measurements before the operation were slight in the healthies and remarkable in tuberculosis patients.

4) These phenomena are observed by following mechanisms: A part of water in serum transfers to the cells. Because of it, the concentration of blood arises, and then a red blood corpuscle stagnate at the end of the blood vessels. For that reasons it seems that serum protein density is increased inspite of Ht’s decreasing.

5) On the point of water transferring of blood vessel by the hunger and red blood-corpuscle-stagnating the patient’s are more than the healthy’s which can be explained by following reason; the adjusting function of self-control nerves of the patients are keener than that of the healthies.


Sato KURIBAYASHI

(H. Kita — Dept. Hygiene)

The action spectra of E. coli by the ultraviolet radiation was obtained. In those experiments E. coli suspended in NaCl solution was used.

The bacterial suspension put in quartz capillaries were arranged to exposure with ultraviolet spectral lines dispersed by spectrometer. A Carbon arc was employed for a light source.

Observing action spectra of E. coli, the maximum bactericidal effectiveness was found at 2600 A, decreased to 2750 A, making a minimum, then increased to 2850 A and decreased again to the longer wave lengths.

Gates and others reported a maximum sensitivity at about 2600 A, and did not relate to a maximum at 2850 A.

The maximal effectiveness at 2600 A corresponds good with the maximum absorption of E. coli in ultraviolet absorption spectra, but for 2850 A no sign was found as far as ultraviolet absorption was concerned.

The protein absorption is found at about 2800 A usually, so a certain relation may exist concerning with a maximum at 2850 A.
20. A Study on the Significance of Enterococci in Food Sanitation.

III. The Multiplication of Enterococci in Foods and its Effects on the Quality of Foods.

Akira MIYABAYASHI
(F. Yanagisawa—Inst. Rural Welfare)
(F. Yanagisawa—Inst. Food-microbiology,
Chiba Univ.)

In an effort to investigate the problem as to whether the multiplication of enterococci causes spoilage of foods, the author conducted experiments on the multiplication of enterococci in foods, as well as in their extracts, using the strains which had previously been isolated from other foods. The author also examined if enterococci acquired resistance to antibiotics and preservatives. The results of the investigations are summarized as follows:

1. The enterococci put in the extracts of tuna and Tapes Philippinarum demonstrated a growth similar to that manifested by the enterococci cultured in bouillon media. The growth was not so good at 10°C, but was better at 20°C and 30°C.

2. Examinations of 7 kinds of foods (steamed rice, soy beans, meat, clams, tuna, squid and sea bass) inoculated with enterococci revealed that, while the growth of the organisms in the foods was excellent, no spoilage of the foods resulted. The fact that tests revealed no change in the quantity of NH₃-N would indicate that the organisms used in the present experiments were the strains showing weak proteolytic activity.

3. Examinations of the sensitivity of enterococci to antibiotics revealed that, while the development of the organisms was inhibited by 5 μg/cc of either penicillin, chloromycetin, terramycin or aureomycin, 67% of all the strains examined were capable of growth in the presence of 50 μg/cc of streptomycin. The organisms exhibited a rather strong resistance to such preservatives as furan derivatives, dehydroacetic acid and sorbic acid.

4. Tests on the resistance of enterococci to sugar and salt revealed that, while all the strains examined were capable of growth in a 40% sugar solution, none of them were capable of development in a 10% salt solution.


IV. Correlation between the W.-Reaction Values in the Presence of Sodium Chloride and Electrophoretic Patterns, and/or Total Protein Concentration of Human Sera.

Tatsundo TAKI
(S. Miyamoto—Dept. Biochemistry)

The amount of precipitated proteins in the acidic (pH 4.0) W.-reaction supplemented with NaCl (final concentration, 19%) showed the positive correlations to the concentration of albumin as well as γ-globulin in the serum specimens. This was also the case with the alkaline (pH 8.0) modified (NaCl-supplemented) W.-reaction, which was estimated turbidimetrically.

22. Studies on the Penicillin Antibody in Human Serum (I)

Hachiro NAKAJIMA
(T. Furuhata—Dept. Legal Medicine)

The author observed strong agglutination of human erythrocytes coated with penicillin G when it was added with the serum of a patient with an anamnesis of so-called penicillin-shock.

This agglutination was specifically inhibited by penicillin and not by other antibiotics such as tetracycline, dihydrostreptomycin and chloramphenicol.

An antibody specific for penicillin is considered to have been produced in this patient.

The author also examined the serum of 6 patients who were operated for a harelip or a cleft palate before and after penicillin injections, and observed the production of penicillin antibody.

In the cases which possessed the antibody before the injections, marked rises of the antibody titer were observed.
23. Survey on the Rural State of Parasites, Especially Hookworms and Intestinal Worms, and Analysis of Chief Causes of Infestation with These Worms among National Railway Workers under the Control of the Railway Bureau of Mito.

III. Survey on the Real State of Infestation with Hookworms among Families of Workers under the Control of the Railway Bureau of Mito.

Koichi NOMIYAMA
(S. Miyamoto—Inst. Rural Welfare)

Survey was performed on the actual condition of infestation with hookworms among 1,583 families of railway workers in the area of Sui-Gun line, and following results were obtained.

1. Two hundred ninety carriers of hookworms were found in this area, indicating 18.3%.

2. From the regional standpoint they showed the same difference as workers themselves.

3. Workers revealed peculiar conditions of infestation according to variety of vocation, but their families indicated no difference in this connection.

The preceding facts proved that different conditions of infestation with hookworms among workers according to variety of vocation depended upon their vocational life, while conditions of infestation among their families were strongly influenced by their mode of private life.


I. Physico-Chemical Properties of Hammersten Pepsin and Crystalline Pepsin (NBC) by Electrophoresis.

Yasuo MATSUMURA
(S. Miyamoto—Dept. Biochemistry)

The mobilities of H- and NBC-pepsins at pH 5.0 or 5.5 approximately corresponded to those of a-globulin and albumin of human serum, respectively. Besides those main BPB-stainable bands there were a few BPB-positive and several ninhydrin-positive bands with both pepsin preparations. The pepsin activity of H- and NBC-pepsin in paper electrophoretic pattern deviated slightly from the protein peak towards cathode, while the activity and protein peaks approximately paralleled with each other in the case of NBC- and H-pepsin. H- and NBC- were likely contaminated by a considerable amount of unidentified mucoid.


I. On Changes of Blood Specific Gravity and Various Numerical Values Concerning Red Corpuscles (i.e. Capacity Proportion of Red Corpuscle (Ht), Number of Red Corpuscle (R), Density of Haemoglobin (Hb), Average Red Corpuscle Volume (Ht/R), Average Volume of Red Corpuscle Haemoglobin (Hb/R), and Average Density of Red Corpuscle Haemoglobin (Hb/Ht)).

Satomi YAMAMOTO, Kinio UESUGI, Terutane YAMADA, Hirotoshi YANO and Shunichi ANDO
(S. Miyamoto—Dept. Biochemistry)

The present writers have been engaged in research works on functional mechanism of electric shock treatments done to psychiatric patients since 1949. Recently the use of chlorpromazine has attracted attention as a treatment for psychiatric cases. With the due interest that we have had in the functional mechanism of the new treatment, we started the present work with the special view to find the relationship between the reaction of a living body after it was treated with chlorpromazine injection and the similar reaction after it was treated with various poisons (stimulants) for autonomic nerves. The results of our observation of the changes of various natures of blood [Gb, Gp, Gb-Gp, R, Ht, Hb, Ht/R, Hb/R, Hb/Ht, etc.] caused in a human body after it was dealt muscular injection of 50 mg of chlorpromazine are as follows:

1) Both Gb and Gp showed gradual mild decrease from 30 minutes till 90 minutes after the injection and the decrease continued until five hours after the injection. Meanwhile (Gb–Gp) value was found decreased 30 minutes after the injection, then
it started increasing until it nearly reached
the value prior to the injection when three
hours passed after the injection. After that
its changes were parallel to those of normal
(Ga-Gf) value.

2) Those changes of red corpuscles such
as macro volume (R, Ht and Hb) were
approximately parallel to each other after
the injection was dealt. They showed gradua-
lar decrease from 30 minutes till an hour
after the injection, and then their changes until five hours after the injection
were almost parallel to their normal values,
though in the negative phase.

3) Micro volume, (Ht/R and Hb/R)
showed very slight increase between an hour
and three hours after the injection, and
almost no change was found as to Hb/Ht
after the chlorpromazine injection.

4) Total examination of the above stated
results proved that the change caused by
the chlorpromazine injection meant the ap-
pearance of simple hypoaemia and of reno-
vated big red corpuscles.

26. Ecological Studies on Fresh
Water Animals in the Mountain
Stream of the Eastern
Area of Lake Suwa. III.

Tokio YAZAKI
(S. Miyamoto—Inst. Rural Welfare)

Refer to No. 3, Vol. 7.

27. Studies on Skin Temperature
of the New Borns.

III. On the Skin Temperature and its
Timed Variation in Winter Season.

Kazuo KIKUCHI
(H. Kita—Dept. Hygiene)

The skin temperature of six new-borns
was measured sequentially from 7 a.m. to
7 p.m. by three hours interval.
The skin temperature was influenced by
small variation of room temperature, even
it was 1°C up or fall, and the skin tem-
perature of the new borns was always gov-
erned by the environmental temperature.
The most sensitive parts were extremities
and forehead.

28. Studies on the Penicillin Anti-
body in Human Serum (II)

Hachiro NAKAJIMA
(T. Furuhata—Dept. Legal Medicine)

The author investigated the distributions
of penicillin antibody in human serum
through indirect agglutination.

(1) Among 82 individuals formerly treated
with penicillin, 51 (37.8%) were proved
to possess the antibody. The titer of the
antibody was up to 1:128 in saline and
1:2048 in serum medium, but in most cases
not higher than 1:8.

Among 18 individuals with no anamnesis
of penicillin treatment, no antibody was
detected except one case.

(2) 3 among the 6 who suffered shock
or allergic reaction for penicillin showed no
antibody detectable.

(3) No significant correlation was ob-
erved between the presence of penicillin
antibody in serum and the results of penicil-
lin skin test.

29. The Discovery of Anti-M
Agglutinin in a
Human Serum.

Mitsuo YOKOYAMA, Makoto TAKEUCHI
and Takeshi SUZUKI
(T. Furuhata—Dept. Legal Medicine)

A case of naturally occurring anti-M ag-
glutinin in the serum of a woman is de-
scribed here.

The anti-M agglutinin reacted to the cells
possessing M and Mn but not to N, more-
over, the serum showed a typical double
dose effect that agglutinated more strongly
M type cells than MN type cells at 18°C
and in this cases, the anti-M agglutinin
gave strong reaction at lower temperature
but the serum did not show any reaction
at 37°C.
30. The Frequency of Newer Blood Types in Japan.
Mitsuo YOKOYAMA, Makoto TAKEUCHI, Chiaki YAMAJI, Kimio HAYAKAWA
(T. Furuhata – Dept. Legal Medicine)
Masayori KUNIYUKI, Mutsumo KITAHAMA
(NICHIYAKU Blood Bank)
Takashi TANAKA and Tetsu NOZAKI
(S. Akiya, K. Tanaka – General Institute of Legal Medicine)

It has already been investigated the distribution of ABO, MN, Q and several other blood types in Japan.

However, following the discovery of the causal relationship of hemolytic disease of the newborn and transfusion reaction, numerous newer blood factors were described with the aid of atypical antibodies other than Rh. These findings were made possible by the elaboration of various sensitive methods for detection of such antibodies.

Since the discovery of Rh factor, many investigators have reported many varieties of antibodies and their antigens, so called “New”, “Rare”, “Private”, and “Public” antigen respectively to date.

Fortunately, we have received recently such rare and valuable anti-sera as Cw, C, D, E, e, C, Kell (K), Ce (k), Penney (Kp\(^a\)), Rautenberg (Kp\(^b\)), Lewis (Le\(^a\) and Le\(^b\)), Duffy (Fy\(^a\)), Jk (Jk\(^a\)), Miltenburger (Mi\(^a\)), Diego (Di\(^a\)) and S in the MN blood types from Dr. Levine (Ortho Research Foundation), Dr. Race, Dr. Mounant (Lister Institute), Dr. Allen (Blood Grouping Laboratory in Boston), Dr. Griffiths (Dade Reagent Inc.), Dr. Palmer and Dr. Fisk (Hyland Laboratories), Dr. Cahan (Knickerbocker Research Foundation) and investigated the reactions of red cells with those anti-sera in Japanese and compared the frequencies in white population.

In testing of Rh-Hr types, we employed 2% cell suspension in own serum and the others, we prepared 2% cell suspension in physiological saline, and added equal volume to the anti-serum.

The examination for agglutination after those were placed at their optimum temperature for 60 minutes by the indirect Coombs test except Rh-Hr, Cw, Le\(^a\) and Le\(^b\).

31. Studies on the Tomography (on the Restorability of the Tomographic Images).
Toshiro UESUGI
(T. Adachi – Dept. Radiology)

Tomograms of the model of the bronchial system made of metal wire was taken. Each tomogram was traced and superimposed on a sheet of paper. This restored image of the bronchial system was compared with the routine roentgenogram of the metal model.

Tomograms of the thoracic phantom were taken and the above mentioned process of restoration was carried out. The phantom consisted of vinylite (bronchi and vessels), shavings (lung) and plaster of Paris (ribs).

Results are as follows:
(1) Tomograms of thin layer should be taken, because the restoration of the traced images of the bronchi could not be complete even with layers of 1 cm in distance.
(2) More actual shadow tracings could be obtained in tomographic restored images than in routine images, especially in roentgenograms with many complicated shadows.
(3) The branches of bronchus of less than 2.0–2.5 mm in diameter could not be restored by tracings in vinyl-injected phantom.
(4) Only a few per cent of real branches of bronchus could be restored by tracing.


I. Changes in the Number of Red Blood Corpuscles (R), Hematocrit (Ht) and Hemoglobin Density (Hb).
Hiroshi YANO
(S. Miyamoto – Dept. Biochemistry)
(N. Nishi – Dept. Surgery, Tokyo Railway Hospital)

On studying the changes in the various red blood corpuscle quantities at the time of certain...
of certain surgical operations (lobectomy, gastric resection, appendectomy and hemor-
roidectomy) and during the recovery pe-
riod thereafter, the following results were
obtained.

1) Lobectomy.
A conspicuous decrease was noted in the
observed red blood corpuscle quantities
(R, Ht, Hb) starting immediately after the
operation and continuing thereafter for 2
to 3 days. This indicates that the affection
by the operation is very large in this group
when compared with the other observed
groups.

2) Gastric resection
Hardly any change was observed in the
R, Ht and Hb for the first 24 hours after
the operation. This indicates that the affec-
tion by the operation is smaller in this
group than in the lobectomy group and
that protective measures such as blood
infusion, etc., could be effectively employed
to a certain extent. The characteristics
of this group was that a notable decrease in
the said quantities were observed from 3
to 7 days after the operation. This results
is considered to be due largely to the insufficiency in nutrition caused by the gastric
resection.

3) Appendectomy.
No notable change in R, Ht or Hb indicat-
ing the affection by the operation was
observed. Recovery was observed to begin
as early as 6 hours after the operation and
rather an increase in the quantities was
observed 2 days after the operation. The
quantities returned to normal after 7 days.

4) Haemorrhoidectomy
In the case of appendectomy, hardly
any change in the R, Ht or Hb indicating
affection by the operation was observed.
In this group, however, immediate recovery
did not occur but a slight decrease con-
tinued for 24 hours after the operation.
Thereafter, gradual recovery and return to
normal was observed. Recovery appeared
to be slightly slower than in the append-
dectomy group.

In the above observations, it was noticed
that the changes in R and the changes in
Ht and Hb were not necessarily parallel.
This seems to imply that a certain change
in the nature of the red blood corpuscles
has occurred. It is my plan to include
further study of this aspect in a second
report.

33. Effect of the Digestive Juices
on the Normal Flora of the
Alimentary Tract.
Kunio HITOTSUNE
(F. Shizuku – Dept. Microbiology)

The author described in Report I on the
normal flora of mice that in portions of
the alimentary tract they contain respec-
tively the same characteristics bacterial flora,
as already discussed by many workers, the
empty stomach was almost sterile, and bacilli
were few in number and kind in the
small intestine, in the large intestine it
was even more complex with bacilli being
numerous in number and in kind.

And then, when the effect of crude endo-
toxin prepared from the heavy suspension
of E. coli on the variation of intestinal
bacterial flora was examined, the author
found a remarkable increase in the number
of bacilli in the intestine, especially in the
duodenum and jejunum. By quantitative
examination of digestive juices, it was clarified
that the proliferation of bacilli in the
small intestine of mice intraperitoneally
injected with endotoxin occurred as the result
of the decrease in the amount of tryptic
juice.

In Report II on the bactericidal activity
of digestive enzymes, such as amylase, pep-
sin and trypsin, the author showed trypsin
to be the most effective in weak acid state
and discussed the role of the trypsin as the
natural nonspecific defence mechanism.

34. On Medical Inquiry on Ameliora-
tion of the Conditions of
People in the Highland,
Mountain Region.

I. Summary of the Investigated Region
Binsei KITAHARA
(F. Yanagisawa – Inst. Rural Welfare)

In order to investigate the various
problems on ameliorations of the conditions
of people in the mountain-region, I thought
it the most appropriate way to choose a
colony in the deep valley and study from
many aspects.
35. Studies of a Farm-Village (Izumi-Mura, Shioya-Gun, Tochigi-Prefecture) from a Standpoint of Rural Welfare. I.

Gichiyo KOZAKA
(S. Miyamoto—Inst. Rural Welfare)
Refer to No. 7, Vol. 6.


Shozo TAKAYAMA
(Cancer Institute, Tokyo)

1. Incidence of peculiar mesenchymal hyperplasia with formation of cartilage was 13.7% of all tumor-bearing rats fed with DAB.
2. Histological details were described. Theory of secondary induction by DAB induced cholangiocarcinoma and glandular hepatoma was favored in its causation.
3. Histogenesis of mixed tumor in human liver may be interpreted also in this way.

37. Experimental Studies on the Prevention of Food Poisoning Caused by Pickled Fishes (Mackerels Processed by "SAKURABOSHI" Method)." 

Makoto HAYASHI
(F. Yanagisawa—Inst. Rural Welfare)

Studies carried out by some members of the Institute of Food-Microbiology of Chiba University have revealed that histamine is the main factor in the development of food poisoning caused by pickled fishes (fishes processed by the method called "Sakuraboshi") and that the organism which produces histamine is Proteus morganii.

Findings of the experimental studies performed by the author in an effort to develop some effective way of preventing food poisoning due to excess accumulation of histamine are summarized as follows:

1) Histamine was detected in 19 of the 167 samples of various kinds of both dried and pickled fishes available on the market. Of various samples tested, those processed by "Sakuraboshi" method showed the highest rate of detection of histamine; it was detected in 20.0% of mackerels, 17.1% of sardines and 4.9% of scads, all processed by "Sakuraboshi" method. However, quantitative determination of histamine revealed no evidence of its excess accumulation in any of the samples tested, an average amount being 0.1 mg/g in almost every kind of fish.

2) Experiments on the processing of mackerels by "Sakuraboshi" method after P. morganii has been put to them showed that the formation of histamine could be prevented if the work was done in low temperature from beginning to end. Experiments on the use of the antibacterial action of some preservatives for the prevention of poisoning showed that none of them could prevent the formation of histamine.

3) It was revealed that the action of histamine decomposing organisms was responsible for a decrease in the amount of histamine taking place while the pickled mackerels were stored.

4) Investigations performed to see if the
destruction of histamine could be brought about by placing histamine decomposing organisms on the fishes in the course of processing did not show any marked results, although a slight decrease in the formation of histamine was observed. It was revealed, however, that histamine could not be detected in the decoction of mackerels, to which histamine had previously been added. 10 days after histamine decomposing organisms were isolated in it.

5) Of a total of 225 strains of aerobic non-pathogenic organisms belonging to 3 genera and 2 groups of organisms tested for the amino-acids deacetylation, 83 strains (36.9%) showed the action of L-glutamic acid deacetylation, i.e., the production of gamma-amino butyric acid, 52 strains (23.6%) were capable of producing putrescine, 3 strains (5.8%) were capable of producing agmatine, no strain was capable of producing cadaverine, 11 strains (4.9%) were capable of producing tyramine and 94 strains (41.5%) were capable of producing histamine.

38. Cytological Studies on Paramecium.

Kyoto WATANABE

(J. Ito—Dept. Hygiene, Faculty of Education, Shizuoka Univ.)

The present paper deals with the results of electron-microscopical study of the fine structures of Paramecium caudatum and Paramecium aurelia carried out by means of ultra-thin section.

1) The cortex is covered externally by a thin sheath (outer-limiting membrane), constituting the pellicle. Beneath the membrane, there is a space, and the periphery of the plasma is limited by a ridgework forming a pattern of polygons with depressed centers.

2) The kinetodesmal fiber is observed as a bundle of fine parallel filaments.

3) The ciliary ring seems to be made up of two closely apposed concentric circle walls, and the space between the two walls is divided into about 9 parts by septa.

4) The pharyngeal papillae consist of 8 parallel rows of cilia.

5) Each mitochondrion is surrounded by an outer membrane. A membranous fold-or plica-structure can be seen in the interior of mitochondria.

6) The macronucleus is surrounded by a thin nuclear membrane. The bead-like structures are distributed throughout the whole macronucleus. They measured about 0.1 to 0.2 μ in diameter. It is inferred that the bead-like structures are related to chromosomes.

Spherical granules which measure 1 μ or more in diameter are scattered here and there in the macronucleus, and often fuse into two or more large vacuolated masses. Some of the spherical granules have fine-grained centers and densely osmiophilic perimeters. These granules are identified as nucleoli, being based upon their reaction.

7) The micronucleus also is surrounded by a thin membrane. In one part of the micronucleus globular particles connected by strands can be seen, sometimes forming thick fibers or spiral structures, while in the other part entangled filamentous bodies are found.


II. On Changes of Various Elements of Leucocyte (i.e., Total Counts of Leucocytes (W), Counts of Neutrophilic Leucocytes (N), Lymphocyte-Counts (Ly), Monocyte-Counts (M) and Eosinophilic Leucocyte-Counts (E)).

Satomi YAMAMOTO, Kinnyo UESUGI, Terutane YAMADA, Hirotohi YANO, Shunichi ANDO and Eiichiro KAWAKAMI

(S. Miyamoto—Dept. Biochemistry)

The present writers have had the experiments of the changes of the various elements of leucocytes in the blood of the psychiatric patients with no discernible physical abnormality who had previously been dealt with a muscular injection of 50 mg of chlorpromazine (Contomin). The results of our experiments of the experiments:

1) Leucocyte-counts (W), neutrophilic leucocyte counts (N), stab cells (St), segmented leucocytes (Seg) and monocytes (M) proved to decrease at about 30 minutes after the injection, but later increased and was in the positive phase at 90 minutes.
after the injection. Gradual increase was observed until 5 hours after the injection.

2) Lymphocyte counts (Ly), great lymphocyte counts (G. Ly) and small lymphocyte counts (K. Ly) showed decrease at 30 minutes after the injection, but gradually increased, though still in the negative phase, until they were in the positive phase at 4 or 5 hours after the injection.

3) As for eosinophilic leucocyte counts, they showed decrease at 30 minutes after the injection, and the decrease went on gradually till 4 hours later, but then they started increasing.


II. On the Changes in the Mean Corpuscular Volume (Ht/R), Mean Corpuscular Hemoglobin (Hb/R) and Mean Corpuscular Hemoglobin Concentration (Hb/Ht) 

Hiroshi YANO 
(S. Miyamoto — Dept. Biochemistry) 
(N. Nishi — Dept. Surgery, Tokyo Railway Hospital)

I conducted a comparative study of changes in the various red blood corpuscle quantities at the time of and after certain surgical operations (lobectomy, gastric resection, appendectomy, haemorrhoidectomy) and obtained the following results.

1. The values of Ht/R, Hb/R and Hb/Ht after the various surgical operations were not constant and increased or decreased during certain periods after the operation.

2. In the cases of lobectomy, gastric resection and haemorrhoidectomy, a conspicuous decrease in Ht/R and Hb/R was observed immediately after the operation whereas no changes was observed in Hb/Ht.

3. In the case of gastric resection, during the period from 12 hours after the operation to 2 days after the operation, Ht/R increased, Hb/Ht decreased and no change was observed in Hb/R.

4. In the cases of appendectomy and haemorrhoidectomy, Ht/R and Hb/R were observed to increase and decrease parallelly after the operation and no change was observed in Hb/Ht.

It is my intention to study in the future, in relation to the changes in Ht/R, Hb/R and Hb/Ht, where Ht/R is observed to undergo particularly marked changes, the problem as to whether this change is attributable to macro-erythrocytose, micro-erythrocytose or expansion and contraction of blood corpuscles.

41. An Immature Female Gnathostoma Spinigerum Obtained from the Indoluted Nodule of a Young Child.

Toru YOSHIZAWA, Hiroshi MAEMURA, Saeko MAYUMI 
(K. Ohta — Dept. Pediatrics)
Yuki ASAKO, Tomeji UDAGAWA 
and Hiroshi TANAKA 
(R. Kano — Dept. Public Health)

A nematid worm appeared spontaneously from the indoluted nodule of 1 11/12-year-old female on 8th May 1957 and after the examination of the worm and the patient, this was found to be a case of Gnathostomiasis.

History of the present illness: At the age of 1 3/4 years (early in March 1957) the patient took the raw meat of crucian carp. After about 10 days, the creeping eruptions appeared successively on the skin of the lower abdominal wall, chest and back. Urticaria was observed repeatedly on hand and on foot at the age of 1 11/12 years (early in May 1957) and at around the same time the patient experienced the transient hematuria. In 9th May 1957, a worm appeared from the nodule in the skin of the upper part of back.

Clinical examination: In 10th May, the patient was admitted to our hospital. Blood examination revealed a total white cell count of 10000 per cubic millimeter; differential, 29 segmentals, 5 band, 24 lymphocytes, 4 monocytes, 10 eosinophiles. Interdermal test with Gnathostoma-antigen showed positive. On admission the creeping eruption, hematuria and urticaria were not marked.

The structures of this worm were shown in figures. The worm obtained was 14.5 mm
long and 0.9 mm wide. The head had 9 rows of hooklets and the vulva was observed at the portion 8.9 mm behind the head tip. The tubules of the reproductive system flocked together around the vulva, their endings being disposed at the terminus of the anterior and posterior. Spines on cuticle shown from the cervical region to the middle of the body and also on the posterior extremity. Almost of these spines on the anterior portion had tips as illustrated in Figs. 4, 5, and 9. The morphological characteristics mentioned above, the worm was identified as the immature female of Gnathostoma spinigerum Owen, 1836. The infection probably took place in Kyoto in March 1957 with the meat of cruson cat (Cataphyllis calcarata) on which boiling water was sprinkled in a moment. The occurrence of female Gnathostoma from man was suspected to be rather rare and the case of Gnathostoma infection in a body might be the first report in this country.

42. Study on the Effect of Zinc Oil for Chronic Tuberculous Fistula.

II. Bacteriological Study on Zinc Preparation, Especially on Zinc Oil.

Shunichi HIRAOKA

(I. Aoki — Dept. Orthopedics)

For the purpose of the study 5 kinds of experiments are performed, namely: 1) inhibiting effect of zinc preparations for tuberculous bacillus in liquid cultivation. 2) effect of zinc oil for tuberculous bacillus. 3) inhibiting effect of zinc oxide for streptococcus and coli bacillus. 4) comparing 3) with zinc oil. 5) inhibiting effect of zinc oxide and oil mixed with protein for streptococcus and coli bacillus. The results are following:

1. In vitro, zinc salts have some degree of bactericidal activity for tuberculous bacillus, streptococcus and coli bacillus, that is same order to zinc oxide or oil, but in the presence of protein, these effects are weakened in every case.

2. Clinically, zinc oil shows good result for chronic fistula, but the above findings in vitro cannot support the fact, then many considerations should be paid for in vitro because of the complexity of living body.

3. Zinc oil has the other properties, for instance, absorption, promotion of epithelization etc., so that these may be effective in vivo.

4. From the bacteriological study, the effect of zinc oil cannot be hoped but thinking about its other characteristics, the effect in vivo should be studies further more.


Hiroshi TANAKA, Kazuo TAKEMOTO, Yuki ASAKO, Tomoji UDAWA

(R. Kano — Dept. Public Health) and Kenji SUGIYAMA

(F. Yanagisawa — Inst. Rural Welfare)

The distribution of the hookworm infestation among the rail way employees were recently studied by Nomiyama. The results showed that the workers who have the more chance to work outdoor harboured the worm in the higher percentages. From this result, the infection through the respiratory tract was to be assumed.

A series of the present studies attempts to prove this mode of the infection. And the preparation of the material was presented in the present paper. As the material of the hookworm, the eggs of Ancylostoma caninum were collected and concentrated, applying the flotation technic with saturated saline solution and the centrifugation. Enormous numbers of the rhabditoid larvae were obtained, applying the cultivation of the concentrated eggs in the liver extract solution or physiological saline solution.

After this preliminary experiment, the experiment will develop on the intratracheal injection of the eggs and larvae of Ancylostoma caninum in the laboratory rats and also in the dogs in this series of the studies to consider the possibility of the human hookworm infection through tracheal tract.
44. Acute Glomerulonephritis of Children which Was Prevalent at the End of 1955.

Hiroshi SUDO, Akira NEGISHI, Michio SATO, Yutaka YASUTOMI, Reiji IKEDA and Toshikane OKANO
(K. Ohta – Dept. Pediatrics)

Clinical observations were made in 18 children of acute glomerulonephritis who visited our clinic as outpatients or were hospitalized between September 1, 1955 and January 31, 1956. The prevalence of this disease was definitely due to hemolytic streptococci. In comparison with sporadic cases, the symptoms of the present prevalence were seldom serious, and the prognosis was more favorable. It seemed characteristic of this prevalence that the interval between the preceding disease and this disease was comparatively short, and often less than a week.

45. Statistical Observations of Diarrhea of Infants.

Hiroshi SUDO, Akira NEGISHI, Sadao MAYUMI, Yutaka YASUTOMI, Kazuo SEKIGUTI and Hiroshi MAEMURA
(K. Ohta – Dept. Pediatrics)

Statistical observations were made on diarrhea of infants under 2 years of age who visited our clinic as outpatients or were hospitalized between January, 1947 and December, 1955. The results were as follows.

1. The hospitalized infants were 59, and 7.8% of the total inpatients (757). The outpatients were 776, and 7.7% of the total outpatients (10,075). Among these outpatients, the symptoms were mild in 740 (88.6%), medium in 86 (10.3%), and severe in 9 (1.1%).

2. As for the seasonal occurrence, diarrhea was observed less often in spring, and comparatively often in summer and winter, but no marked difference was noted in summer by months.

3. As to the observation by age in months of infants, it occurred often between 3 and 5 months and then decreased rapidly.

4. It occurred more often in male than female, and the number of the male patients were 1.5 times as large as that of the female patients.

5. The causes were parenteral infections in 35.2% and improper feeding in 10.3%, and these two were noted in more than half of the cases of diarrhea of infants.

6. As for the treatments, symptomatic treatments were mainly given in 1947 and 1948, but treatments by sulfanamide preparations and antibiotics became popular after 1949, and these were 74% of the treatments of diarrhea of infants in 1955.

7. As to the duration of the treatments, 82.3% of the mild degree were cured within 8 days, and 47.7% of the medium degree were cured within the same days. Only 11.1% of the severe degree (excluding the lethal patients) were cured within the same days.

8. All the infants of mild and medium degrees of diarrhea were cured and the mortality was 0%, but the mortality of the patients of severe diarrhea was 44.4%.

46. Studies on B. Coli Detected Predominantly in the Feces of the Infants with Diarrhea.

Hiroshi SUDO
(K. Ohta – Dept. Pediatrics)

B. coli isolated from 30 infants with diarrhea excluding such enteropathogenic organisms infections as Shigella, Salmonella, Proteus, and Paracolon etc. were studied. The same bacillus from equal number of healthy infants were also investigated. The number of these specimens in the pathogenic group was 39 and that in the healthy infants group, 34.

The results of them were compared.

1. Of the 13 serotypes of pathogenic E. coli, only one specimen of E. coli 0-44 was isolated in the pathogenic group and two specimens of E. coli 0-75 and 0-126 in the healthy infants group. The incidence of pathogenic E. coli was higher in the latter (11.8%) than in the former (2.6%).

2. In both groups there were not remarkable changes in "IMVIC"-system-test. E. coli type was found in a large number in both the pathogenic and the healthy infants groups, when those coli specimens were classified by this test. The number of E. coli type was 35 specimens (89.7%) in the former and 29 specimens (85.5%) in the latter.
3. Hemolytic B. coli on rabbit's defibrile blood agar were found 10 specimens in both groups. The incidence was 25.6% in the patients group and 29.4% in the healthy group.

4. When the pathogenic groups was compared with the healthy group in the results of nine carbohydrates fermentation test, Succharose- and Raffinose-fermenting specimens were more found in the former than in the latter. And then, of the E. coli type specimens that were found in both groups, Succharose-Raffinose-fermenting specimens commanded a majority (75.1%) in the former and were comparatively few (24.1%) in the latter.

5. When the toxin of each B. coli were administered in young mice by peritoneal injection, some of them had loose bowels with bleeding, became emaciated and finally died. At that time, the influences of these toxin on the mice were comparatively larger in Succharose-Raffinose-fermenting specimens, like in pathogenic E. coli 0-111, 0-55 and 0-26, than in the Succharose-Raffinose simultaneously nonfermenting specimens.

6. The above toxin labeled P* administered in young mice by peritoneal injection and its transitive conditions to several organs were studied. In the results, the coli toxin labeled P* was found at the highest in liver, spleen and bones, next to them, in heart, lungs, kidneys, stomach and intestine and at least in brain. However when free P was administered, the majority of it was commanded in bones.

7. The appearance of Succharose-Raffinose-fermenting B. coli in the feces of two infants were investigated for 40 days. These specimens generally appeared before and through diarrhea and remained afterward. It also appeared in such conditions as common cold or accumulation fever etc. without loose bowels.

8. Through the studies above mentioned, it is considered that Succharose-Raffinose-fermenting B. coli is in close connection with infantile diarrhea.

47. Study on the Effect of Zinc Oil for Chronic Tuberculous Fistula.

III. Patho-Histological Study of Experimental Skin Lesion Treated with Zinc Oil.

Shunichi HIRAOKA
(I. Aoki - Dept. Orthopedics)

The fresh skin injuries for experiment are treated with zinc oil and compared with the control. The treated one shows first exudative but later its recovery is promoted and at last more quickly than the control.

At the tuberculous ulcer of guinea pig caused by Koch's phenomenon, zinc oil shows the irritating or exudative effect at the start of treatment, after then promotes the excretion of caseous matter, hyperemia of granulation and epithelization.

By the histochemical determination of zinc ion in the tissues, no trace of zinc is found in granulation but in epithelium around the granulation it is spread widely after the 6th day of experiment and in epithelium newly multiplied its intensive existence is proved.

From the above mentioned observations together with of the former reports, zinc oil is thought to have a unspecific recovering effect for chronic tuberculous fistula.


Tetsu SHIONO
(K. Ohta - Dept. Pediatrics)

Clinical and experimental studies were made on the effect of infantile dystrophy on the growth of hard tissue and following results were obtained:

(I) By the lowering of the intake of food the increase of the body weight of infants and young children is markedly disturbed and dystrophy develops but even in these cases the increase of the stature is not comparatively so disturbed, the degree of disturbance of the stature being light as compared to that of the body weight. Therefore, the smaller the body weight is the smaller the Kaup's index and the greater the body weight is the larger the Kaup's index.
The formula height month/weight month was opposite to this; the smaller the body weight is the larger the formula height month/weight month and it becomes smaller as the body weight becomes larger (Tabs. 1–6, Figs. 1, 2).

2) The growth of the teeth of the white rats is disturbed by absolute hunger, decrease of food, and lack of protein and carbohydrate but in comparing with the disturbance caused by diarrhoea it was light in even case. There was hardly any disturbance due to the deficiency of fat (Tabs. 7–12, Figs. 3–5, Abb. 1–9).

3) By the removal of the submandibular gland occurred hyperfunction of the salivary gland (Hypersialadenismus) of white rats, and hypofunction of the salivary gland (Hypoexualadenismus) occurred by the removal of the parotis and submandibular gland.

The former accelerated the growth of the teeth of white rats, the latter retarded it.

The administration of Parotin (This preparation is the salivary gland hormone extracted from fresh parotis gland of mammals, purified by a special method and lyophilized.) had a good effect on the increase of the stature of the infant and furthermore it was thought that at a certain stage of infantile dystrophia swelling and hyperfunction of the salivary gland (Hypersialadenismus) was observed and thereby probably maintaining the growth of the hard tissue (Tabs. 13–16, Figs. 6–13, Abb. 10, 11).

49. Studies on Vitamin A in Body Fluid of Children.

Takahashi YOSHIZAWA

(K. Ohta—Dept. Pediatrics)

I. Study on the Clinical Quantitative Determination of Vitamin A, Especially the Quantitative Determination of Plasma Vitamin A

To determine correctly the plasma carotene level chromatographic procedures must be used, but these procedures are not practical clinically because, besides the loss of vitamin A of the eluate after the above procedures, the technique is complicated. If a method is used whereby the determina-
tion is done in two steps by dividing into the analysis of carotenoid and determination of vitamin A, a large amount of sample will become necessary, making it impractical in the field of pediatrics. For these reasons, the author decided to make clinical studies using the Carr-Price method which is simple, speedy and accurate enough for practical use, instead of aiming at complete accuracy. As the first step, studies were made on each of the procedures up to colorimetry and the following conclusion was obtained.

1) To centrifugate the plasma the ordinary method was sufficient.

2) Plasma was able to be preserved for 4 days after drawing the blood (Fig. 1).

3) By the Carr-Price method saponification was necessary (Table 1, 2).

4) In order to extract the unsaponifiable fraction with petroleum ether, it was necessary to perform the extraction three times (Table 3).

5) It was not necessary to add water for the purpose of isolating the solvent for extracting the unsaponifiable fraction in the case of the plasma and milk.

6) To remove the alcoholic potassium hydroxide in the extracted solution washing with an equal amount of water twice was sufficient (Table 4).

7) In washing the vitamin A and carotenoid remaining in the sodium sulfate and on the filter paper after dehydration and filtering, practically all were recovered by washing three times, 1 cc. each time, with petroleum ether (Table 7, 8).

8) To distill off the petroleum ether it was safe it done below 70°C in a stream of N₂ or CO₂ (Table 9, 10).

9) In the colorimetric procedure, as it was learned that the fading speed, after the appearance of the color after mixing the reagents, differs between the standard vitamin A and the vitamin A in the plasma and milk, it was thought that it was necessary to read the maximum optical density after coloring (Fig. 5, 6).

10) The coloring was the same when the solvent-reagent ratio was from 1:1 to 1:29. By the author's method the coloring was the same when the concentration of antimony trichloride in the reagent was 12–30% but when acetic anhydride was added the coloring decreased 10% and the color
II. Plasma Vitamin A and Carotenoid Levels in Normal Children

The result of quantitative determination by the modified method of Carr-Price as stated in report 1, of plasma vitamin A and carotenoid on 10 infants, 20 young children, 20 school children and 20 adults to all of whom vitamin A were not administered during the past few months, was 88.4±2.58 I.U.% of plasma vitamin A and 28.4±2.27 % of plasma carotenoid in children (Table 1, 3).

The difference of both plasma vitamin A and carotenoid level between the age classes was not significant but the level showed a tendency to increase with age. In regard to the plasma vitamin A level there was observed a significant difference between the children in general and adults (Fig. 1, 2, Table 2, 4).

In regard to the seasonal variation between winter-spring and summer-autumn there was observed no significant difference in the plasma vitamin A level but in every age class the level was somewhat high in the summer-autumn season. In regard to the carotenoid level there was observed no definite tendency (Table 5, 6).

Among those in the same age class the individual difference was not marked with the plasma vitamin A level but was marked with the carotenoid level. In all age classes the plasma vitamin A and carotenoid level were higher in the female than in the male (Table 7).

The plasma vitamin A level of the infant administered with even a small quantity of vitamin A was higher than that of those not administered but there was no difference in the case of the plasma carotenoid (Table 8).

III. Plasma Vitamin A and Carotenoid Levels in Children during Various Diseases

As a result of studying the plasma vitamin A and carotenoid levels in children during various diseases by the authors modified method of Carr-Price, the following was obtained.

The average values of 20 cases of various diseases with liver dysfunction were 46.7 I.U.% for vitamin A and 21.8 % for carotenoid, both showing a decrease (Table 1).

The average values of 20 cases of nephritis of various types were 99.7 I.U.% for vitamin A and 43.4 % for carotenoid, both showing somewhat an increase (Table 2).

The average values of 10 cases with nephrotic syndrome were 141.4 I.U.% for vitamin A and 99.4 % for carotenoid, showing a marked increase, but in two of these cases the vitamin A level was very low (Table 3).

The average values of plasma vitamin A of 20 cases with exanthematous infectious diseases were 42.1 I.U.% for chicken pox, being the lowest, 46.1 I.U.% for Izumi fever; 52.3 I.U.% for scarlet fever; 59.8 I.U.% for rubella. The carotenoid level was generally within normal range (Table 4).

The average values of 10 cases each of acute and colitis and dysentery were 40.2 and diarrhea 53.31 I.U.%, respectively, for vitamin A, showing a decrease, and 16.7 and 31.1 %, respectively for carotenoid (Table 6, 7).

The average values for vitamin A of 15 cases of malnutrition without diarrhea was 69.9 I.U.%, showing somewhat a decrease, and of those in 3 cases of infant and young children it was particularly low. The average values for carotenoid was 32.3 % (Table 8).

The average vitamin A values of 7 cases of bronchopneumonia, 6 cases of bronchitis 11 cases of tonsillitis and 4 cases of laryngitis were 50.1, 52.9, 56.8 and 59.9 I.U.% respectively, all showing a decrease. The average values for carotenoid were 17.9, 19.7, 51.5 and 37.9 %, respectively, the values for only tonsillitis being high (Table 9).

In 3 cases undergoing fever therapy and 1 case with fever but with no systemic symptoms whatsoever, the plasma vitamin A level after fever a decrease (Fig. 4-7).

In 10 case with disturbance of mental and body development both the plasma vitamin A and carotenoid levels were normal (Table 10).

In 6 of 10 cases showing a plasma carotenoid level of over 130 % aurantiasis were observed but in 3 of cases which appeared to be aurantiasis the plasma carotenoid level showed no abnormality (Table 11).
IV. Some Findings on the Distribution of Vitamin A and Carotenoid in the Body

In studying the difference of the amount of vitamin A and carotenoid of the small 1 gram cut pieces of the liver of the rabbit by the author's modified method of Carr-Price. In general a greater amount of vitamin A was contained in the piece taken from the deeper part than the piece from the superficial layer, showing that an error is easily made by determining the vitamin A content of the part of liver taken from only one part.

With this in mind, the correlation of plasma level to the concentration in the liver of 11 cases of corpses of children was studied. The result was that the vitamin A content a weak correlation was observed and with carotenoid no correlation was observed with 1 gram of liver but a rough correlation was observed with the whole liver (Fig. 1-4).

In normal children vitamin A was not excreted in the urine even though a large amount of vitamin A was administered. However, in a total of 16 cases of broncho-pneumonia, acute nephritis, nephrotic syndrome and auranthiasis, vitamin A was excreted in the urine. Carotenoid was not demonstrated in the urine in any of the cases (Table 4, 5).

In the sputum a very small amount of vitamin A was excreted (Table 7). A small amount of vitamin A and carotenoid was contained in the pus (Table 8), and in the leukocytes which is the chief composition of pus, a small amount of vitamin A and carotenoid was observed but none of both was contained in the erythrocytes (Table 9).

There was a diffusion of a small amount of vitamin A and carotenoid into the ascites, pleural fluid and pericardial fluid (Table 10).

It seemed that fundamentally there is no diffusion of vitamin A and carotenoid into the cerebrospinal fluid (Table 11, 12).

The majority of plasma vitamin A and carotenoid was contained in the \( \gamma \)-globulin and a part in the \( \gamma \)-globulin (Table 15).

V. Study on the Variation of Plasma Vitamin A and Carotenoid by Administration of Vitamin A and Carotene during Diseases.

Vitamin A or carotene was administered experimentally a total of 26 times to 16 children with various diseases and one normal child. The administration was done as follows: to 8 cases vitamin A was given orally 14 times, to 3 cases vitamin A intramuscularly 4 times, to 5 natural carotene orally 3 times, to 2 cases Augecyn intravenously 2 times and to one case vitamin A continuously 3 times.

By oral administration when vitamin A in an aqueous medium was administered, in all cases the plasma vitamin A level increased markedly 3 to 6 hours after administration, but when vitamin A in an oily medium was administered the effect was often not marked in infants and young children and during fever the increase of the plasma vitamin A content was small even by the administration of vitamin A (Fig. 1-9).

The plasma vitamin A level increased markedly even by the intramuscular administration of vitamin A, but it required 6 to 24 hours for the plasma vitamin A level to reach the maximum (Fig. 10-12).

By the intravenous administration of Augecin (vitamin A-like substance, was made from carrot) the plasma vitamin A and carotenoid level increased slightly (Fig. 16, 17).

When carrot soup is used in the treatment of diarrhea of infant and young children it has a good effect on the vitamin A metabolism and the plasma vitamin A and carotenoid levels showed an increase (Fig. 13, 14).

50. Studies on Bath for Pulmonary Tuberculous Patient.

Hisao FUJII
(S. Obuchi - 2nd Dept. Internal Medicine)

Pulmonary tuberculous patient has been limited hardly to take bath, and permitted only for over Rest Grade 4 in Welfare Ministry Standard.

I observed the influence of pulmonary tuberculous patient by bath on
1) Changes upon human reaction for tuberculous patient by bath such as stress.
2) Changes upon clinical symptoms.
Then I obtained results as follows,
1) Changes upon human reaction were
not seen entirely among 2-3 R.G. group, 4-5 R.G. group and normal healthy group before and after bath.

2) I have been admitting to take bath for 3 R.G. patient once a week, but they were not observed any bad influence.

From these results, I consider that the standard for bath of tuberculous patient less severe should be to take bath once a week for 3 R.G. patient at least.

51. Fundamental Studies Concerning Antidiabetic Effects of Calcium Mesotarrtrate.

- Effects of Calcium Mesotrrtrate to Alloxan Diabetic Rabbits -
  Fumiyoishi YANAGISAWA, Masuo WATANABE and Shinji UI
  (F. Yanagisawa - Inst. Rural Welfare)

Experiments have been made upon antidiabetic effects of Calcium Mesotarrtrate to alloxan diabetic rabbits in 5 cases. In 2 cases of them, the rabbits had been dosed per os 70 mg/kg twice a day for 5 or 6 days. At the end of the experimental period, in either case the blood sugar level had been lowered to its average level, and urine sugar level had been so extremely decreased as not to excrete almost at all.

When the dosage of calcium mesotarrtrate was, however, stopped, the blood sugar and urine sugar levels in those rabbits increased again, and were restored to the former state.

The other 3 cases were treated through intravenous injection. The 2 cases of them were those of serious diabetes, which were injected 15 mg/kg (twice a day) for 5 or 6 days successively.

The result was that the blood sugar level, 500 mg/dl or so before the injection, had been lowered to 200-300 mg/dl, and that the urine sugar level had been extremely decreased.

In the other case, a mild diabetes, after the injection of 23 mg/kg, the blood sugar level became normal and the urine sugar level disappeared. These three cases of injection were also recovered to the former state after the stoppage of the injection.

These experiments as mentioned above prove that Calcium Mesotarrtrate has remarkable antidiabetic effects to alloxan diabetic rabbits.

52. Fundamental Studies Concerning Antidiabetic Effects of Calcium Mesotarrtrate.

- Acute and Chronic Toxicity Results of Calcium Mesotarrtrate -
  Fumiyoishi YANAGISAWA and Masuo WATANABE
  (F. Yanagisawa - Inst. Rural Welfare)

1) Calcium Mesotarrtrate given to mice per os up to 10.0 g/kg, or 0.12 g/kg through intravenous and abdominal injections caused no toxic symptoms.

2) Rats were continuously dosed per os so large quantity as 2.0 g/kg, 1.0 g/kg, 0.4 g/kg of Calcium Mesotarrtrate respectively (6 times a week) for 3 months. At the end of the experimental period the rats did not indicate any difference as regards their growth and development, producing no perceptible ill effects at all.

3) Rats were continuously dosed per os so large quantity as 2.0 g/kg, 1.0 g/kg, 0.4 g/kg of Calcium Mesotarrtrate respectively for 3 months. When the rats were killed and examined from the pathohistological point of view after the experimental period, those rats which had been dosed 0.4 g/kg and 1.0 g/kg showed no perceptible ill effects at all in their principal viscera. But those rats which had been dosed 2.0 g/kg indicated the decrease of β-cells, condensation of nuclei, and foams in their pancreas, besides a few extraordinary effects in their kidneys and heart.


1. Soluble Proteins of the Bone.
   Hideo OKAMOTO
   (I. Aoike - Dept. Orthopedics)

Although it is a well-known fact that the bone matrix plays an important role in bone formation, little studies have been carried out on the tissue up to the date.

The author has studied soluble and insoluble proteins contained in the bone matrix from the cortex of the bovine femur by the use of paper electrophoresis, and obtained the following results.

(1) The extraction of proteins was considered to be complete within 72 hours
irrespective of the conditions.

2) The electrophoretic findings of proteins extracted in normal saline solution coincided with that of γ-globulin in human serum.

3) The electrophoretic findings of proteins extracted in acid and alkaline solutions were slightly different from those of proteins extracted in normal saline.

4) A fraction more rapidly migrating appeared on electrophoretic examination when proteins were extracted in normal saline containing hyaluronidase, compared with plain normal saline solution.

5) White precipitates appeared but the paper-electrophoretic findings were not markedly altered by the addition of EDTA to the acid solution used for extraction of proteins.

54. Co-Existing Gastric Cancer and Chronic Gastric Ulcers.

Akihiko KAWASAKI

(E. Hamaguchi - Dept. Surgery)
(T. Ohara - Dept. Surgery, Tokyo First National Hospital)

Stomach cancer and gastric ulcers differ a great deal both in their clinical manifestations and histological findings. For example, it is known fact that the main change in the gastric mucosa in cancer is pangastritis, and that of ulcers antrum gastritis.

A study was made of 7 cases of chronic gastric ulcers with a co-existing separate primary cancer located. These cases were compared clinically and histologically with multiple gastric ulcers, ulcerocancer, and gastric cancer. The entire mucosa of the specimen was studied histologically and B. C. Morson's "Point system" (1955) was used to classify the changes.

The following results were obtained:

1) Morson's point system proved to be the most satisfactory method to show the degree and extent of intestinal metaplasia, atrophy of gastric glands and cellular infiltration of the mucous membrane. Using this system it is again confirmed that pangastritis occurs in cancer and antrum gastritis in ulcers.

2) It was found that the degree and extent of the changes in the mucosa are very similar in cases of co-existing cancer and ulcers and in cases of ulcerocancer, but the point distribution of co-existing cancer and ulcer ranked in between that of cancer and ulcers.

3) In cases of the co-existing cancer and ulcer, the cancer was most frequently found near the pylorus and the ulcer more toward the antrum on the small curvature. This was often complicated with a pyloric stenosis.

4) No correlation was found between the changes in the gastric mucosa and gastric secretion.

5) None of the co-existing cases had an absence of free hydrochloric acid in the gastric juice. Clinically, the age, duration of symptoms, and the erythrocyte sedimentation rate were similar to gastric ulcers.

In comparing the gastric mucosa of co-existing cancer and ulcers and ulcerocancer, similar gastric inflammation was found histologically. The difference was found in the location of the cancer. In ulcerocancer, the cancer was found in the periphery of the ulcer, but in co-existing cases it is distant from the ulcer. In cases of gastric ulcers the cancer can appear not only in the margin but anywhere there is gastric inflammation. The genesis of ulcerocancer is of interest to us all, but it is interesting to note also, that a cancer of the stomach can co-exist with a gastric ulcer as mentioned above.

55. Studies on Clinical Application of So-called Serum-Protein Salt-Gelification.

III. On the Alteration of Salt-Gelification in the Progress after Pulmonary Lappen Resections

Kazue ADACHI

(S. Miyamoto – Dept. Biochemistry)
(T. Ushio – Ishioka Hospital, Japan National Railway)

With the progress of post-pulmonary lappen and segmental resections and of Salt-Gelification value in each patients, I observed alterations and gained the following results.

(I) As compared with pre-operation value, basic pre-anesthesia value was higher
in every cases. And just pre-operation value was a little lower than the anesthsia value.

(I) First week the value was still lower than the pre-operation value and second weeks again it rised higher value. With weeks, showing low value, it was recovered into the normal.

(II) In comparison with the alteration of above-mentioned (I) nad (II) to that of blood sedimentation rate, the later was almost same to pre-operation value, basic anesthsia value, and just post-operation value.

First week it rised remarkably, on the contrary, the Salt-Gelification value was perceived only in lowest degree. Two weeks latter blood sedimentation rate value was falling and the Salt-Gelification value rised. Therefore both went on parallel.

(IV) A fall of the Salt-Gelification value which appeared first week was thought to be by the influence of both post-operation remedy and absolute rest for the patient. In the same period rising of blood sedimentation rate was researched to be by decrease of Hc.

56. Ecological Studies on Fresh Water Animals in the Mountain Stream of the Eastern Area of Lake Suwa. IV.

Tokiyo YAZAKI
(S. Miyamoto – Inst. Rural Welfare)

Refer to No. 3, Vol. 7.

58. Study on the Bactericidal Action of Immune Serum with Special Reference to the Modifying Effect of Absorbsents on the Bactericidal Action of Immune Serum.

Masakazu HASHIMOTO, Saisuke TAKUBO, Tadashi HATTORI, Shigeo OOKI, Chikami ISHIKAWA, Koichi YAMAGUCHI, Yoshihiro NAGAI, Takeshi OKAMOTO, Yasuo UEMURA, Kazuhisa ISONO and Junji TAMURA

(F. Shimizu – Dept. Microbiology)

In quantitative estimation of bactericidal power of anti-Salmonella paratyphi A rabbit serum, a modification of bactericidal activity was observed when it was tested after absorption with some absorbents. This modification was presented as the increase of bactericidal activity in that the absorbent serum showed a bactericidal action at higher dilution of serum, in which the unabsorbed serum did not, with no change in the appearance of Neisser-Wechsberg’s phenomenon.

The increase of bactericidal activity in modified immune serum could not be interpreted as the result of the appearance of nonspecific bactericidal agents, but must be the response of the specific bactericidin.

From the results of these experiments, it was suggested that in an immune serum there was the possibility of the presence of a nonspecific substance capable of masking the bactericidal action of specific antibody,
which was absorbed by some absorbents with no relation to the immunizing agent.


II. Extraction of Bone Proteins Following Treatment with Proteolytic Enzymes.

*Hideo OKAMOTO*
(J. Aoki — Dept. Orthopedics)

Paper-electrophoretic studies were carried out on the extracts of proteins contained in the compact bone of bovine femur, which had been powdered and treated with proteolytic enzymes, and the following results were obtained:

1. The amounts of extracted proteins were increased and the electrophoretic findings were altered with the preliminary treatment of bone proteins with proteolytic enzymes such as pepsin and trypsin.

2. The changes in the electrophoretic findings were more marked following the treatment with trypsin than pepsin, and more rapidly migrating fractions appeared with the action of trypsin.

3. It was found by this study that insoluble proteins other than water-soluble proteins were present in the bone at the room temperatures, which were extractable only after the breakdown into smaller molecules with proteolytic enzymes.

60. Studies on the Permeability of Erythrocyte Membrane in Circulating Blood.

*Ichiro YAMADA*
(S. Miyamoto — Dept. Biochemistry)

I. Fluctuation of Plasma and Erythrocyte Glucose Levels Following the Glucose Injection to the Dog.

The amount of non-sugar reducing substance was estimated by subtracting the Fujita-Iwatake glucose value from the Hagedorn-Jensen glucose value. Intravenously injected glucose rapidly penetrated into erythrocytes and reached the equilibrium between plasma and erythrocytes in 10 minutes. Non-sugar reducing substance showed the rises in erythrocytes for a short time immediately after the glucose injection and again 30 minutes after the injection.

II. Fluctuation of Hematological Values Concerning Erythrocytes Following to the Injection of Hypertonic Glucose Solution.

Red blood cell counts, hemoglobin content (Sahli value) and hematocrit values in the dog given intravenous injection of 20 ml of 20% glucose have implied the four stages of erythrocyte characteristics at an hour interval: macrocytosis, microcytosis, normocytosis and macrocytosis, successively.

III. Fluctuation of Specific Radioactivity in Whole Blood, Plasma and Erythrocytes Following the Intravenous Injection of P32-Phosphate.

Following the P32-phosphate injection to dog, the c.p.m./cc values of plasma and whole blood were decreased in the hyperbolic course. The c.p.m./cc of erythrocytes was increased with time and exceeded that of plasma in 15 min. to 45 minutes.

61. An Experimental Study on Erythroblastosis Fetalis.

*Mutsuo KITAHAMA*
(T. Furuhata — Dept. Legal Medicine)

The author studied rabbit blood types by using normal iso-agglutinin and iso-immune antibody, observed morphologically normal rabbit blood cells, and analyzed serum fractions. And erythroblastosis fetalis was experimentally caused in rabbits.

The results obtained were as follows:

1) Iso-agglutinins were found in 51 rabbits out of 172 (30%). However, the agglutinin titer were very low and the reactions were irregular so that the rabbit blood was not classifiable into any distinct groups.

2) H blood types were established using two different antibodies, anti-H and anti-Ho, made by iso-immunization.

The incidences among 140 rabbits were 0 type 2.8% (4), H1 type 8.6% (12), H2 type 43% (63) and H1H2 type 43.5% (61).

3) Antibodies, anti-G and anti-g, were also made from iso-immunization independently from H blood types. Thus, the author established G blood type.

The incidences were G type 29.5% (59), g type 19% (38) and Gg type 51.5%.

4) The author investigated numbers of

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5) There in normal blood 6)

a. They are making antiserum against baby red blood rect 6.

The number of the

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62.

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The results of the red blood cells of an normal hybrid of sheep and goat, as well as antibodies for their iso-agglutinins were studied.

1) The normal hybrid was 1.

The blood was found to have a

related

erythrocytes, leucocytes, hemoglobin index, numbers of blood platelets, numbers of reticular red blood cells, peripheral blood figure, bone marrow figure and serum protein fraction in blood of normal rabbit.

5) In crosses of 20 incompatible pairs there was no case of antibody production in mother rabbit sera against baby red blood cells.

6) Female rabbits were iso-immunized and antibodies were produced beforehand. They were crossbred with male rabbits possessing blood factors corresponding to the antibody.

5 pairs out of the 18 pairs produced 9 baby rabbits whose red blood cells were direct Coombs test positive.

6 newborns out of these 9 were normal. The other 3 were hydrops macerated foetus. However, no case of general jaundice, nuclear jaundice or a large amount of erythoblasts was observed.

62. The Relationship between Heteroagglutinin Titer, Complement Titer and Anti-F Antibody Titer and the Results of Transplantation with AAT 601 Ascites Hepatoma in Rats.

Yoshiaki FUKUMOTO
(T. Furuhata – Dept. Legal Medicine)

The purpose of this study is to investigate the relationship between the transplantation of tumors and the serological constitution of animals. The author investigated, in normal sera of the Wister strain rats and hybrid rats, the heteroagglutinin titer against the red blood cells of rabbit, fowl, sheep, guineapig and human O group, as well as the complement titer and the anti-F antibody titer. An important relationship was found between these titers and the results of the transplantation of AAT 601 ascites hepatoma.

1. The titer of the heteroagglutinin in normal rat sera against rabbit blood cells was highest and the maximum was 1:32. The next highest was that against human blood cells and the titers against sheep, fowl and guineapig followed in decreasing order. There was not found any definite relationship among the agglutinin titers of individual animals.

2. As for the relationship between the heteroagglutinin titer and the results of transplantation of AAT 601 ascites hepatoma, many cases of resistance were found in the animals showing positive agglutination and higher titers, whereas the fatal cases occurred in animals showing no agglutination or relatively low agglutinin titer.

3. The highest complement titer in rat serum was 1:32 and the Wister strain rats showed higher titer than the hybrids. The anti-F antibody titer was relatively lower than the complement titer and the highest observed was 1:32.

4. So far as the complement titer was concerned, the relationship between the heteroagglutinin titer and the results of AAT 601 ascites hepatoma transplantation showed that the animal showing a high titer apparently had ascites hepatoma resistance.

The same relationship was seen in the case of anti-F antibody titer.

63. Examination of the Conditions for P52 Radioautographic Histological Preparations.

Shunichi MIYAZAKI and Yasushi MAKI
(S. Miyamoto – Dept. Biochemistry)

I. On the Methods for Tissue Fixation and Dehydration for P52 Radioautographic Preparations; Especially on Dissolving out of P52 from the Tissue during Fixation and Dehydration.

P52 Dissolving out during fixation was minimized by adding basic lead acetate at 2 g/dl to the fixing solution (an ethanol-formalin mixture (9:1)), and that during alcohol dehydration by the presence of desiccant such as CaCl2.

II. On the Conditions of Staining of Formalin-Fixed Preparation; Loss of P52 during Various Operations (Removals of Paraffin and Xylol, Washing and Staining.)

Treatments with xylol for paraffin removal and with pure alcohol for xylol removal, little loss of P52 was observed. However, the use of more dilute alcohol, water washing and staining increased the P52 loss by 50% at the completion of stain-
ing process.

64. Examination of the Conditions for \( \text{P}^{32} \) Radioautographic Histological Preparations.


Shunichi MIYAZAKI and Yasushi MAKI

(S. Miyamoto — Dept. Biochemistry)

The use of potassium alum as a catalyst at the stage of hematoxylin staining solubilized \( \text{P}^{32} \) from the tissue slices. For this reason, it has been devised that weak acid salt of aluminum takes a part in keeping \( \text{P}^{32} \) insoluble in the alkaline solution. When basic aluminum acetate was used to satisfy the above requirement the \( \text{P}^{32} \) loss was decreased, but it could not give better hematoxylin staining than in the case of potassium alum.

65. Study on High Voltage Radiography.

II. Efficiency of Bucky Grid.

Jo HOMMA

(Dept. Radiology, St. Luke’s International Hospital, Tokyo)

(T. Adachi — Dept. Radiology)

The author has carried out a comparative study of the efficiency of various bucky grids, specially manufactured for this experiment, utilizing a Victoreen r-Meter and water phantom at 100 kVp. The influence of the thickness of lead foil to the efficiency of the removal of scattered rays is also investigated.

The following results were obtained:
1. Scattered rays are decreased sufficiently for practical purposes by several layers of lead foils, a single foil being inadequate in removing these rays.
2. The author succeeded in getting domestic bucky grids made having an efficiency similar to G. E. 8:1 bucky grid.
3. In our country, it is first necessary to manufacture good bucky driving mechanism in order to take radiograms of 1/10 ~ 1/20 sec. exposure time.
4. Bucky mechanism which can be used in the upright position must be constructed as practically all of own country’s products are constructed for use only in the horizontal position.

66. The Time Occurrence of Numbers of Parasite Eggs on the Surface of Solution at Floatation Technic and the Determination of Their Specific Gravities by Floatation Technic.

Hiroshi TANZAKA, Yuki ASAKO, Tomoji UDAGAWA, Ryoji AMANO

(R. Kano — Dept. Public Health)

Kenji SUGIYAMA

(S. Miyamoto — Inst. Rural Welfare)

Isao OYABASHI, Ryoji HIRAO

(H. Kita — Dept. Hygiene)

and Goichi NOMIYAMA

(S. Miyamoto — Inst. Rural Welfare)

The floatation technic for the detection of eggs of intestinal parasites has been practically used for the clinical diagnosis. However, the mechanism of the floatation of eggs in the solution has not yet been clarified. In the present study, the time occurrence of the numbers of floating eggs of Ancylostoma caninum and Trichocephalus vulpis were quantitatively observed.

The period of time, by which the numbers of eggs reached to the maximum value, was 1/2 to 8 hours, using the solution of salt or sugar with a specific gravity, 1.180. Each period observed did not coincide with the values estimated at the floatation of particles, with the velocity calculated from Stokes' law. This result was mainly caused by a convection current appearing in the solution.

The reduction of numbers of eggs was often observed after 4 hours. And as the reduction did not occur in a wet chamber, the decrease of egg numbers was thought to be caused by the evaporation from the surface of the solution.

The specific gravities of eggs of both worms were measured, applying the floatation technic with a series of solution in the different kinds of specific gravities. And the mean values of specific gravities of eggs are about 1.080 at A. caninum and somewhat higher than 1.215 at T. vulpis.
67. Study on the Intraperitoneal Injection of Beryllium Oxide in the Rats. I.

Tomoji UDAGAWA, Yuki ASAKO, Kazuo TAKEMOTO
(R. Kano — Dept. Public Health)
Masaaki KUROSAWA, Atsushi MATSU-SHITA, Kohtaro HURUYA
(I. Aoki — Dept. Orthopedics)
and Isao OBAYASHI
(H. Kita — Dept. Hygiene)

By intraperitoneal administration of BeO suspension, pathological changes of the rats in relatively earlier period were examined.

1) At the 1st week, non-specific change, similar to the other dust reaction, was seen. BeO corpuscles were phagotized mainly at omentum major.

2) At the 2nd week, so-called Be nodules were observed on the serosa of abdominal organs, and had slight fibroplastic tendency at their surroundings.

3) At the 3rd week, the proliferation of connective tissue began to be seen. At the 4th week, the severe adhesion, which is never seen at any other reaction due to foreign body, was observed. In severe cases ileus occurred at times.

4) After the 4th week, BeO corpuscles were transfused gradually into the regional lymphnodes, splenic pulp and Glisson’s sheath of the liver. And then they arose fibrosis, activity of phagocytic function and nuclear change of giant cells around them. Hyalinosis was seen at some parts of those histological changes. And almost parts of the changes became to show the peculiar pictures related to the so-called Be-granuloma.