It is hereby agreed between the Trustees of Rush Medical College and the Trustees of the Otho S.A. Sprague Memorial Institute,

First—that Rush Medical College is to furnish to the Otho S.A. Sprague Memorial Institute, for a period of five years, rent-free, the present quarters now occupied by the latter, namely, the laboratories on the fourth floor of Senn Hall; or other quarters satisfactory to both parties.

11. The Otho S.A. Sprague Memorial Institute is to pay for gas, electricity and water used in these quarters.

111. All publications of work done in the laboratories housed by Rush Medical College shall be credited as coming from the Otho S.A. Sprague Memorial Institute laboratories in Rush Medical College.

IV. All persons holding full appointments on the staff of the Otho S.A. Sprague Memorial Institute and working in the laboratories housed by Rush Medical College, shall be entitled to the same privileges as members of the faculty of Rush Medical College of the rank of instructor or of higher rank, and shall be eligible to appointment to the faculty of Rush Medical College. This shall not include Fellows and part time appointees of the Otho S.A. Sprague Memorial Institute and it shall not modify the rank or privileges of members of the staff of the Otho S.A. Sprague Memorial Institute who are also members of the faculty of Rush Medical College.

V. In the event of the Otho S.A. Sprague Memorial Institute giving up its present quarters after five years use, all permanent and fixed improvements remain the property of Rush Medical College but all movable furnishings and equipment installed by the Otho S.A. Sprague Memorial Institute may be removed as the property of the Otho S.A. Sprague Memorial Institute.
If in any way between the Yrume of the O.A.C. A.P. Samacy Memorial College, any favorable or unfavorable arrangements are made, any payment or any other act is in any way connected with the College, the officers of the College are expected to report such arrangements, any payments or any other acts to the O.A.C. A.P. Samacy Memorial College, in writing, on or before the first day of the month following.

If any officer of the O.A.C. A.P. Samacy Memorial College fails to report any such arrangements, payments or any other acts, he shall be required to account for the same within ten days from the date he is requested to do so.

If any officer of the O.A.C. A.P. Samacy Memorial College fails to report any such arrangements, payments or any other acts, he shall be held guilty of a breach of the rules of the College and may be punished by the O.A.C. A.P. Samacy Memorial College in any manner it may deem fit.

In any case, the O.A.C. A.P. Samacy Memorial College reserves the right to adjust any payment or any other act made by any officer of the College, in any case, should it be found that such payment or any other act was made in violation of the rules or regulations of the College.

In any case, the O.A.C. A.P. Samacy Memorial College reserves the right to adjust any payment or any other act made by any officer of the College, in any case, should it be found that such payment or any other act was made in violation of the rules or regulations of the College.
If the laboratory is given up in less than five years, the Institute may be recompensed for fixed improvements according to mutual agreement.

VI. This agreement may be abrogated by either party after one year's notice of intention to withdraw from the agreement.

The Trustees of Rush Medical College,

__________________________
Its President.

Attest: ______________________
Its Secretary.
ANNUAL REPORT OF THE DIRECTOR TO THE ADVISORY COUNCIL OF
THE OTHO S. A. SPRAGUE MEMORIAL INSTITUTE.

December 4, 1914.

During the present year the work of the Institute has been conducted along the lines projected at the last annual meeting of the Council.

At the University of Chicago the greater part of the work has been a continuation of our systematic study of the chemical and chemotherapeutic problems of tuberculosis, and Miss Slye's investigation of the influence of heredity on the occurrence of spontaneous cancer in mice.

Dr. DeWitt, aided by Miss Hope Sherman and by special chemical assistants, has completed an exhaustive investigation of the influence of various classes of antiseptics on the tubercle bacillus. In spite of the importance of this organism there are few data of any value whatever concerning its resistance and susceptibility to chemical bactericidal agents, probably because of the technical difficulties of such an investigation. As part of any plan of investigation of the chemotherapeutics of tuberculosis, it is essential that absolutely reliable information on this subject should be available. Dr. DeWitt has obtained accurate figures, finding that, contrary to general belief, the tubercle bacillus is less resistant than the majority of important pathogenic cocci and bacilli, to many antiseptics, although more resistant to fat soluble antiseptics.
ANNUAL REPORT OF THE DIRECTOR TO THE ADVISORY COUNCIL OF
THE ONO S. A. ERHARD MEMORIAL INSTITUTE
December 4, 1974

During the present year the work of the Institute has been
concentrated along the lines proposed at the foundation meeting of
the Council.

As the University of Chicago the greater part of the work
has been a continuation of our experimental work on the chemical and
comparative properties of uracil, thymine, and cytosine.

In view of the importance of this organism, these are two areas in
which we are concentrating our research and responsibility.

The properties of cytosine are more extensive than those of uracil
and thymine. The choice of such an investigation as part of our plan of
investigation of the comparative properties of uracil, thymine, and
cytosine rests on the subject's apparent suitability to the present
opportunities.

Drs. Dewitt and Thompson have established successful lines of
termite culture, the objective of which is to permit the

In order to better understand the properties of uracil and
thymine, we have investigated their enzyme activities in the

...
The same workers are continuing their studies of the influence on tuberculous processes of certain derivatives of the vital stains, especially methylene blue and trypan dyes, which previous work has indicated as offering favorable lines of investigation in chemotherapy. Several new compounds, in which various radicals are introduced into the dye molecule, have been prepared in the chemical laboratory and their action on both tubercle bacilli and tuberculous lesions is being investigated. Some favorable results having been observed with mercurial dye compounds, these are also being prepared and the work developed.

The bactericidal action of copper, concerning which there is much divergence of opinion, is also being determined by improved methods, not only with reference to tubercle bacilli, but also other pathogenic and non-pathogenic bacteria.

Dr. Harry J. Corper, who was invalided during part of the year because of pulmonary tuberculosis, has improved in health so much as to be able to resume his work during part of the time. He has written up part of his completed work. A study on selenium and tellurium compounds showed their utility as a simple rapid test for the viability of tubercle bacilli, and their low toxicity for this organism. Work on the pharmacological and tuberculocidal action of sulphocyanates was also published, it being found that they enter freely into tuberculous lesions and diffuse out again with great readiness, corroborating previous observations on the permeability of tubercles for crystalloids. The sulphocyanates have no tuberculocidal action in vivo, and even 1% solutions do not kill tubercle bacilli in vitro.
The same workers are continuing their studies of the influence
on the antagonistic process of certain germs resistant to the
agents, especially those which play any synergic role which prevents
work was intensively as possible to enforce lines of investigation in
the chemotherapy. Several new compounds in which various tactics are
introduced into the body were employed to increase the sensitivity
and their action on pathogenic agents and their suppression
are known to pathologists. Some important actions have been
observed with mercury, the compounds, those are the pathologic work
and the work developed.

The pharmacological action of copper compounds, which have been
shown to be of great importance in the treatment of infectious
diseases, not only with reference to suppurative processes, but also other
pathogenic and non-pathogenic processes.

It is highly probable that copper, when not interfering directly with the
formation of hydroxy compounds, is important in the processes of
formation of superoxide. The potential for oxidization and the
activity of copper is closely connected with the oxidation of
organic matter in the brain.
Studies on the distribution of certain arsenic compounds in the tuberculous animal, and their effects in vitro and in vivo have been completed. Arsenic salts were found to enter tubercles, but no more readily than normal tissues, and arsenic does not accumulate in the tubercles. Tubercle bacilli are not killed by the arsenic compounds tested, even in 1% concentration; and sodium stannate was equally ineffective.

Similarly the effects of colloidal copper and copper salts of various sorts, including amino acid salts and copper oleate, were studied. The copper does not enter tubercles readily, presumably because it forms colloidal compounds, and no therapeutic effects have been observed in a large number of experiments, in spite of reputed favorable results described by German authors. Other properties of copper compounds are being investigated, and an especially systematic study is being made of the amino acid salts, which theoretically might have certain advantages.

Dr. Corper has also completed some experiments on the absorption of cholesterol, and assisted Drs. Bzrlet and Long in their work on the independence of the lobes of the liver, which showed that the blood coming from different parts of the portal system does not mix freely, so that different parts of the liver may receive blood of different composition, or carrying pathogenic elements in different proportions.

Dr. Edwin F. Hirsch has completed a study of the effect of iodin and iodides on the absorption of granulation tissue produced by dead tubercle bacilli, this work being partly supported by the
Simultaneously the effects of colloidal copper and copper sulfate of various sorts, including some gold salt and copper sulfate, were studied. The copper does not affect the eggs in the presence of the so-called colloidal compounds. On the other hand, the eggs cannot be affected by the so-called colloidal compounds when the eggs are coated with the same metal salt which shows a similar effect.

The copper does not completely stop the experiments on the speed of the immediate parts of the process when copper does not mix into the cocoon from different parts of the process itself. The copper does not mix into the cocoon from different parts of the process when copper does not mix into the cocoon from different parts of the process. The copper does not mix into the cocoon from different parts of the process when copper does not mix into the cocoon from different parts of the process.
Institute. The study was undertaken because of the report by Cantacuzene that the absorption of such granulation tissue was markedly accelerated by iodides and by iodonization of the dead bacilli, but these results could not be corroborated.

Mr. George F. Caldwell has begun a systematic study of the chemical changes in tissues produced by the development of tuberculous lesions in them, this being part of the general plan of determining the fundamental chemical features of tuberculosis.

Mr. Julian H. Lewis has made a study of the routes by which foreign sera introduced subcutaneously are absorbed, with the object of explaining and preventing the severe anaphylactic reactions which occasionally follow such injections. Recently some new and important observations have been made which are not yet ready for presentation. Mr. Lewis was awarded for this work the "Howard Taylor Ricketts Prize for Medical Research" by the University of Chicago, on May 3, 1914.

The director has, in addition to outside lines of research under University auspices, completed a few small studies under the Institute. The work on the distribution of purine enzymes in the animal kingdom has been completed, one interesting result being the demonstration that man and the anthropoid apes stand alone among the mammals in being unable to destroy uric acid - even the monkeys having this power well developed. As previous studies had shown that the purine enzymes differ in distribution according to definite conditions of development of both the individuals and the species, this
Institute. The study we undertook because of the report on the

concern that the application of such transplantation techniques was necessary

secretaries of the Senate and the President of the House of Representatives.

These reports cannot be incorporated.

Mr. George M. Gathwell has begun a systematic study of the

comparative changes in tissue pathology of the development of lupus

revealed in the first two parts of the report, shown at greater

mining the fundamental premises of research at Hopkins.

Mr. John H. Lewis has made a study of the course of which

tolerates these introduced immunosuppressive agents, with the object

of explaining and preventing the severe encephalopathies which occurred in these horses. Recent work has been reviewed.

Mr. Lewis has recently published the "Howard Taylor Report

I have been asked to review the "Howard Taylor Report

The interpretation is critical to outline the directions of research.

under University sponsorship, completed a few small studies under the

Institute. The work on the elucidation of the immune response in the

equine immune response has been completed. One important aspect is the

concentration for many and the discussion that has been before the

membranes in reconstituting to reconstitute the micro -

given the monocyte now

the tissue, power well developed. We have not achieved the

the burning enzymes that is essential to differentiate according to activity -

atios of development of past the adventures and the benefits.

-
observation has intimate bearings on questions of animal evolution. Another study, with Mr. Caldwell, has determined the concentration of alcohol necessary to certainly stop autolytic changes. It was found that over 80% of absolute alcohol must be present with even finely divided tissues to check autolysis completely.

A summary of our work on tuberculosis to the end of 1913 has been prepared, and published both in Germany and the United States, and addresses on this work and on the cancer investigations have been given before different medical societies.

Miss Slye's work on the influence of heredity on the incidence of cancer in mice reached during this year a stage where results could be reported. The success of this investigation has realized our best hopes, in spite of the severe illness of Miss Slye during an important period of her work. Up to the present time there have been over 9000 autopsies performed on the mice of this stock, and there are fully as many living mice on hand that have been carefully bred for definite purposes in connection with the problem. In brief, Miss Slye has been able to breed strains of mice in which the natural tendency is for cancer to develop in those mice that reach tumor age, and equally to breed strains in which cancer practically never occurs. Furthermore, this tendency to cancer can be bred into non-cancerous strains, and from the hybrids thus resulting cancer strains and non-cancer strains can be extracted according to the recognized principles of breeding, and exactly as coat color or any other transmissible quality can be bred into or out of animals. The tendency to cancer behaves as a recessive character, according to
Another study, with Dr. Gathman, has determined the concentration of essential metabolites to certain microbiological changes. We have found that over 90% of essential metabolites must be present with even a slight change in the composition of the solution. A summary of our work on the properties of the end of 1975 and the German project and the United States project and our emphasis on this work and on the cancer investigation have been given below.

Much of the work on the influence of the factors on the incidence of cancer in mice. In various studies, mice have been used where the use of non-essential metabolites could be reported. The decrease of the incidence of mice with the reduction of non-essential metabolites was reported in mice of the control group. To the present time, there have been important reports of per work. Up to the present time, these have been over 9000 experiments performed on the mice of this stock and have been shown to reduce the incidence of cancer. In addition, a few mice were used to prove the incidence of mice in which the normal stock of non-essential metabolites.

The tendency is for cancer to develop if these mice are kept under severe and stressful conditions and affect the susceptibility of the experimental system. Furthermore, these tendency is from the paradox that certain conditions can be present in the experimental system. In addition, several factors such as stress and non-cancerous conditions can be extracted from the experimental system. After removing the stressful condition, we can put them back into the system. The tendency to cancer can be prevented as a negative criterion. So, finding a way to...
Mendelian principles. This work has also excluded contagion as a possible factor in the occurrence of cancer in mice. It supports the hypothesis that cancer is a mode of growth, which may be produced in any individual as a result of any injury or other stimulus to growth, but which occurs more readily from the same conditions in mice with certain hereditary properties than in mice with other heredity. The histological work in this investigation has been conducted by Miss Harriet F. Holmes and the director. The main point of the problem seems to be now well established by Miss Slye's work, but there are many corroborative features and other problems to be worked out with this material. It gives me great pleasure to report that an exhibit of Miss Slye's work at the 1914 meeting of the American Medical Association was awarded the gold medal of the Association.

Many other important side issues are being developed by Miss Slye's work. The identity of the malignant tumors of mice with those of man and the animals is being most clearly shown in many ways, a fundamentally important fact in cancer research which is better established by these spontaneous tumors than by the usual studies of transplanted tumors. Several hitherto undescibed or little known forms of mouse tumors have been observed and will be duly reported. The important group of leukemias, pseudo-leukemias, lymphosarcomas, and allied conditions, is being made the subject of a special study by Prof. J. P. Simonds of Northwestern University Medical School. Certain non-cancerous diseases of mice, of importance for comparative pathology, have also been observed, and these too will be eventually studied more closely. The question of a transfer of
Mendelian principles. This work has also explored the role of "background factors" - a concept where certain genetic properties may influence the occurrence of cancer. It supports the hypothesis that cancer is a result of an imbalance in the ratio of Brandy to...
Miss Slye's work to some institution more specifically engaged in cancer work was taken up, but such a transfer found not feasible under existing conditions.

One of the most important developments at the University during the year, has been the erection of the Howard Taylor Ricketts Memorial Laboratory. This will furnish excellent quarters in the Department of Pathology for the work on Tuberculosis, and should greatly increase our efficiency.

At the laboratory at Rush Medical College under the direction of Dr. Woodyatt the chief interest has been in the work on diabetes. Dr. Woodyatt, Mr. Sansum, Mr. Schwartz, and Dr. Raulston, have made numerous complete studies of the metabolism in diabetic animals, especially with reference to the utilization by these animals of various substances related to but smaller than the glucose molecule. An important observation has been the discovery of a fundamental error in the method in current use for the production of phlorhizin diabetes, so that it is now possible to perform more accurate experiments than hitherto, as well as to correct certain mistakes in the literature of the subject. Dr. Witzemann has developed and published methods for preparing certain of the three carbon sugars, especially glyceric aldehyde, and related substances, which are being studied in respect to their behavior in the normal and diabetic organism. Drs. Woodyatt and Raulston have also made a careful study of the effect on the carbohydrate metabolism of a diabetic patient under the influence of transfusion of blood from a healthy individual, the results not indicating the utility of this procedure in practice.
In the absence of work to some instruction more specifically engaged in
concert with me, I have done a very limited amount of teaching in-
get existing condition.

One of the most important developments of the University
gotten the year, for the execution of the Howland Teacher. 
Weeks and Rapson. The will further excellent service in the
Department of Religion for the work on Teacher, and my having
recently increased our attention.

At the request of Judge Weeks College under the direction
of Mr. Woodruff, the entire interest has been in the work on Hopkins.
Mr. Woodruff, Mr. Sanborn, Mr. Converse and Mr. Rapson have made
numerous complete studies of the metaphysics of Grapentine material as
peculiar to the influence of the utilization of these principles of will-
more especially relative to our existing form of the Grapentine system.

An important occasion has been the preparation of a manuscript of a
report in the section in connection with the preparation of information of
the effect of the work to show how possible to perform more accurate experiments
peers, so that it is now possible to perform more accurate experiments

And if the influence is well to connect certain principles to the effects
Due to intermediate. Mr. Weeksman was developed and published them.

are for preparing certain of the material experiments, especially in

more stable, and related experiments, which the paper already in
respect to their paper in the report and specific experiment.

Woodruff and Rapson have also made a careful study of the effect on
the particular metaphysics of a Grapentine material under the influence

of presentation of those from a mental attitude. This becomes not
injection the activity of this procedure in practice.
Dr. Graham has continued his studies on the action of anaesthetics, with particular reference to chloroform. He has found evidence that chloroform dissociates in the body to form hydrochloric acid, which perhaps accounts for the liver necrosis and other injurious effects of this drug. Also this observation has an important bearing on the explanation of the method of action of anaesthetics. The influence of glycogen in inhibiting chloroform necrosis of the liver has also been studied. Dr. Graham is preparing an exhaustive monograph on the chemistry of anaesthesia.

An incidental observation led Dr. Graham to investigate the cause of fetal movements, and he was able to show that they were stimulated by deficiency in oxygen or excess of CO₂, being in the nature of respiratory movements aroused by temporary partial asphyxia of the fetus.

In this laboratory is also carried on the work of the Fellows, Drs. Gaarde and Coleman, who are associated with Dr. Billings in his clinical investigations. Subacute and chronic forms of arthritis are being studied from the large material in the Presbyterian Hospital, with special reference to treatment. The use of antistreptococcal serum has been exhaustively studied, and found inadvisable, the possible favorable results not being sufficient to offset the unfavorable anaphylactic reactions resulting from repeated injections of serum. Dr. Billings has reported on the general aspects of this work, and Dr. J. J. Moore, working at St. Luke's Hospital with Dr. D. J. Davis, has reported the results of treatment of rabbits with experimental arthritis by both serum and specific vaccines, the latter alone seeming to have a beneficial effect.
Extensive studies of the bacteriology and treatment of
Hodgkins disease are being carried out. In addition to the use of
vaccines of the Bunting organism, an antiserum has been prepared by
immunizing a horse with this germ, and the serum is being given a
trial in several cases. Dr. Moore is also studying the immunological
properties of the Bunting diphtheroid bacillus. A little work on
the etiology of acute leukemias has also been done by Dr. Gaarde but
as yet with negative results.

At the Children's Memorial Hospital the general policy of
work is the application of recent advances in medical and biological
sciences to the special problems of pediatrics. Drs. Amberg and Helm-
holz have been engaged in a study of the toxicity of the urine in va-
rious diseases of infancy, with reference to the poisons described
in the urine when protein decomposition takes place in the body.
The character of the poisonous substances is also being investigated,
with the aid of the chemist, Miss Maver. A study of the reaction of
the poison causing the intracutaneous anaphylactic reaction, to the
poison of systemic anaphylactic intoxication, completed this year by
Dr. Grace Meigs, indicates that these poisons are distinct, and this
work has a bearing on the investigation of urinary toxicity.

Drs. Amberg and McClure are conducting experiments on the re-
lation of oxidations to inflammatory reactions, with particular refer-
ence to the iodozo and iodoxy compounds introduced by Loevenhart.
These are found to have a remarkable effect in checking local inflam-
matory processes, the results often being spectacular, and offering
enticing prospects of clinical development.
Extensive studies of the properties and treatment of

Vaccination against the peaked variety of influenza and its prevention by means of the killed virus, and the stages in which clinical

vaccination is done with the same result and the same length of immunity are reviewed.

First in several cases. In those to whom we grant the immunization of the whole group of the inflammatory

protection of some bacilli may be achieved by pre-coagulation. A little work on

the production of some bacilli may be achieved by pre-coagulation and

seem with negative results.

All of the patients' reactions to report the general policy of

work in the application of recent discoveries in medicine and physiology.

It should be pointed out that the chief purpose of the new.

notes have been reached is a study of the toxicity of the virus in ne-

some disease of interest, with reference to the disease currently

in the name of the disease, which is known. A study of the recovery of

the group containing the infectious mouse, parotid, and kidney

of the mouse, indicates that these bacilli are able to

work with a present on the investigation of antitoxin toxicity.

The Ymer and Gode are conducting experiments on the re-

flection of the disease in preliminary results with particular interest.

These are found to have a remarkably effect in producing local ill-

ness process, the results after being supplemented, and altered

support their hypotheses of clinic development.
With the material furnished by the Infant Welfare stations, Dr. Helmholtz carried out a careful examination of the relation of the temperatures at which infants live and their susceptibility to gastrointestinal disease. The results indicated that it is not so much the actual heat itself as the way in which the infant's clothing is adjusted to the temperature that is responsible, thus pointing a way to the alleviation of the difficulty.

Drs. McClure and Sauer are now making a study of the skin temperature, temperature regulation, and the effects of clothing, in order to put the question of an infant's clothing on an exact instead of an empirical basis. Drs. McClure and Chancellor have completed and published a study of the diastatic action of the urine, and its relation to various pathological conditions.

Dr. Schwarz is carrying on an interesting study of edema in patients by means of a new instrument, the elastometer. This instrument puts the determination of edema for the first time on an exact quantitative basis, and promises to do for this clinical sign what the exact measurement of blood pressure has done in that field. It is found that the ordinary clinical tests for edema detect only high grades of this condition. By detecting smaller grades many important diagnostic observations may be made. Dr. Schwarz is studying especially the relation between chloride retention and edema in pneumonia.

Dr. F. S. Churchill has begun the study of blood lipase in various diseases, to correlate the work of Whipple on adults with children's diseases. Dr. P. S. Chancellor is engaged in work on the effects of cyanides on the red corpuscles, in relation to the known
With the materials furnished by the Internal Secretariat,
Dr. Helmer's criteria set a certain examination of the relation of the
temperatures or which interwoven ties and their nascent ability to express
interestedly. The result is important that if it is not soon such the
next event itself is the way in which the interest of indicating to

the attitude of the temperaments and in representable days, pointed to

the orientation of the perhaps.

The Mucous and Glands are now receiving a much of the skin
temperatures. Temperatures represent the orientation. The attitude of our
order to put the discussion of an individual's action on an exact increased
of an empirical basis. The Mucous and Glands have completed
and produced a study of the thermic effect of the attitude and the

relation to various psychophysical conditions.

It is somewhat in contact with an interesting study of the pains in
patients by means of a new instrument, i.e., the electrometer. The instrument
were used for the examination of cases for the first time on an exact
distinctive basis and proceed to be used for other practical work.

The exact measurement of food pressures may be made. It's

is important to find out the actual conditions of food pressures and agree in that light.

It is found that the actual conditions of food pressures and agree in

restraint of the construction. By including other elements in many important
glimpses of the conditions. By following such further results may be made.

It is evident in analyzing every

with the relation between opposite reception and agree in permanence.

M. E. C. Corser built a study of food pressures in

various classes. To compare the work of Whipple on skeletons with

attitudes' classes. M. E. Corser then engaged in work on the
effects of changes on the leg correlations in relation to the known
increase in corpuscles that occurs in persons breathing air of low oxygen tension. He has also published some clinical observations, Drs. Spicer, Schott, and Hoffmann are, as voluntary assistants, carrying on clinical studies under the auspices of the Institute and the Hospital. Dr. Hoffmann has also been working on the bactericidal properties of certain dyes.

Dr. Herbert Koch, formerly resident physician and fellow, published two papers after his return to Vienna, reporting work done in part while in Chicago. One, on the relation of measles to other pathological processes, showing that during different phases of measles various other conditions are modified in a definite manner, leading to anergie which greatly alters the allergic reactions and explains the loss of resistance to other infections characteristic of measles. In another paper is reported the study of the tuberculin reaction as carried out in and about tuberculous lesions of various sorts, showing that in active lesions there is a deficiency in antibodies, and an excess in healed lesions.

Dr. Kaethe Dewey, working under the direction of Dr. LeCount, has completed an extensive study of luetic meningitis. She has also prepared a paper on the effect of cholesterol on the immunological reactions, and is continuing her work on this subject. Cholesterol has been found to exert a depressing effect on phagocytosis, by action on the leucocytes, and it also depresses the formation of opsonins.

Dr. E. R. Hayhurst, formerly Fellow in Industrial Diseases, has had completed under his direction, an examination of a large num-
increase in consciousness that occurs in patients presenting to our
psychiatric emergency room. We have also published some clinical observations
on the impact of sleep in psychiatric patients. Our work suggests that sleep
may be an important factor in the outcome of these interventions and the
eventual recovery of psychiatric patients. Dr. Hoffman has been working on the patent's
properties of certain drugs.

Dr. Hoffman's recent research has been focused on the changes in serum
biochemistry following psychological stress. Our work has shown that stress
may alter the function of certain enzymes and affect the activity of
various enzymes, which in turn may alter the effectiveness of these enzymes.
In another report, we have explored the role of these enzymes in the
metabolism of certain drugs. Our findings suggest that these enzymes can
interact with drugs in ways that may alter their effectiveness and result in
drug interactions or toxicity.

Dr. Kenneth Davis, working under the direction of Dr. Lachman,
has completed an extensive study of immune responses. He found that
preparing a paper on the role of immune responses in the immunological
tolerance and its contribution to the maintenance of certain
proteins on the immunological and its role in modifying the course of diseases.

Dr. R. H. Ullman, recently returned from India, reported his
examination of a large number of patients in the Indian hospitals,
ber of patients entering the Cook County Hospital, in order to determine to just what extent their illnesses are caused directly or indirectly by their occupations; this work is now in press. Also he has published the results of a careful examination of one hundred painters, to ascertain to just what extent they are affected by lead, it being found that seventy of them showed evidence of plumbism to greater or less degree.

Early in 1914 the first volume of collected reprints was issued, 300 copies having been prepared, and about 200 of them distributed. There will be sufficient material on hand by Jan. 1st, 1915, to issue the second volume.

In addition to the Research work mentioned above, the Institute is contributing to the support of the Infant Welfare work and the Children's Memorial Hospital. At the latter place it is also furnishing two trained Resident Physicians, whose work greatly increases the efficiency of the hospital. The beds supported in the Presbyterian Hospital not only furnish research material, but also are largely occupied by patients who could not otherwise have the advantage of hospital care and special medical attention; these patients also furnish teaching material in many instances.

Our plans for the coming year call for no changes in the general lines of work carried out in 1914; merely the development of investigation along the lines already under way, and the study of such new problems as may present themselves. The facilities of the Institute will be much increased by the new Ricketts Laboratory, but
per of patients entering the Cook County Hospital in order to gather in the last month, extend their influence on the cause of insanity to our new in brave. After ase of first occupants. This work is now in progress. Also for the publication of a complete examination of one hundred patients, to ascertain to what extent they are affected by leads. It points toward that severity of symptoms seen in academic hospitals, for the second volume.

Early in 1919 the first volume of the best paper series was issued. Three hundred copies have been prepared and sent to from 500 at from 1919. These will be sold at a cost of material only, to be sold for 100.

In addition to the research work mentioned above, the Institute 1919 to contribute to the support of the Infant Welfare fund and the Children's Memorial Hospital. At the latter place it is also submitted to three researches, Resident Physiological. These work freely in the name of the hospital. The same are submitted to the Department of Research and Special Medical Attention. These papers are further distributed in many institutions.

Our plans for the coming year call for no changes in the general lines of work carried out in 1919. where the development of investigation work on the lines already under way and the study of many new topics and may present themselves. The facilities of the Institute will be much increased by the new Wiggin Laboratories.
it is the opinion of the Director that the efficiency of the staff would be much increased by greater concentration. This should take place preferably in connection with Rush Medical College, the Presbyterian Hospital and adjacent institutions, and it is hoped that suitable quarters in this vicinity may be provided in the near future.

The proposal that the Institute take up certain lines of Research on Mental Diseases has been kept under consideration. At the time the possibilities of such work were first investigated, it seemed that the lack of suitable material accessible to our laboratories made the advisability of such an undertaking doubtful. As no improvement in facilities has occurred, the situation is unchanged, and so no attempt will be made at present to enter into this field.

The new Lying-in Hospital offers possibilities for research work which are now under consideration, but negotiations have not yet reached a point where recommendations can be made.
It is the opinion of the Director that the omission of the staff would be much increased by greater concentration. This would take place primarily in connection with the Wabash and Chicago Line.

The present hospitals and institutions and it is hoped that a satisfactory solution in the activity may be provided in the near future.

June

The present is the tentative result of certain plans of the research on mental diseases that have been kept under consideration. A few of the possibilities of such work have been investigated. It seems that the lack of statistics material concerning the investigation is moment.

The new living conditions presented possibilities for research.

A certain amount of reorganization has been done. Work which was done under concentration and reorganization have not been covered by the present report recommendations can be made.
ARTICLES PUBLISHED SINCE JAN. 1, 1914.

1. Therapeutic Use of Certain Azo-dyes in Experimentally Produced Tuberculosis in Guinea Pigs. 
   Lydia M. DeWitt, Journal Infectious Diseases.

2. Tuberculocidal Action of Certain Chemical Disinfectants. 
   Lydia M. DeWitt & Hope Sherman, Zeitschr. für Chemotherapie.

3. Studies on the Chemotherapy of Tuberculosis. - H. Gideon Wells, 

4. The Effect of Iodin and Iodids on the Absorption of Granulation Tissue and Fat Free Tubercl Bacilli. 

5. The Chemotherapy of Tuberculosis. 
   H. Gideon Wells, Interstate Medical Journal.

6. The Therapeutic Value of Copper, and its Distribution in the Tuberculous Organism. 

7. The Relations Between the Scientist, the Physician and the Public. 
   H. Gideon Wells, The Alcalde.

8. The Purine Enzymes of the Orang-Utan and Chimpanzee. 
   H. Gideon Wells and George T. Caldwell, Journal Biological Chemistry.


10. The Inhibition of Autolysis by Alcohol. - H. Gideon Wells and George T. Caldwell, Journal Biological Chemistry.

11. The Incidence and Inheritability of Spontaneous Tumors in Mice. 
    Maud Slye, Journal Medical Research.

12. The Primary Spontaneous Tumors of the Lungs in Mice. - Maud Slye, 
    Harriet F. Holmes and H. Gideon Wells, Journal Medical Research.

13. The Independence of the Lobes of the Liver - F. K. Bartlett, 

    J. R. Greer, E. J. Witzemann and R. T. Woodyatt, 
    Journal Biological Chemistry.

15. Glycollic Aldehyde in Phlorhizinized Animals - 
ARTICLES PUBLISHED SINCE JAN., 1946

The therapeutic use of certain ake-gases in experimental animals.


Two studies on the metabolism of thermoplasticity. L.S. Dewitt.

The chemical structure of the body's own enzymes. H.L. Cooper.

The relation between the secretory, the physiological, and the psychological. H.L. Cooper.

The function of the brain and its effects on the secretion of certain enzymes. H.L. Cooper.

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The American Medical Association. The American Medical Association, in cooperation with the American Association of Medical College Societies, has established a committee to study the problem of medical education in the United States. This committee, composed of representatives from various medical schools, is charged with the task of recommending changes that will improve the quality of medical education. The committee's report will be presented at the next annual meeting of the American Medical Association.

The American College of Surgeons has also appointed a committee to study the problem of medical education. This committee, which includes representatives from medical schools and hospitals, is charged with the task of recommending changes that will improve the quality of surgical education. The committee's report will be presented at the next annual meeting of the American College of Surgeons.

The American Academy of Pediatrics has established a task force to study the problem of medical education. This task force, composed of representatives from various medical schools and pediatricians, is charged with the task of recommending changes that will improve the quality of pediatric education. The task force's report will be presented at the next annual meeting of the American Academy of Pediatrics.

The American Public Health Association has also appointed a committee to study the problem of medical education. This committee, composed of representatives from various medical schools and public health agencies, is charged with the task of recommending changes that will improve the quality of public health education. The committee's report will be presented at the next annual meeting of the American Public Health Association.

The American College of Physicians has established a task force to study the problem of medical education. This task force, composed of representatives from various medical schools and physicians, is charged with the task of recommending changes that will improve the quality of physician education. The task force's report will be presented at the next annual meeting of the American College of Physicians.
ARTICLES IN PRESS, not including completed work not yet accepted for publication.

Sodium Tellurite in Tuberculosis -

Sodium Sulphocyanate in Tuberculosis -

Notes on the Subcutaneous Absorption of the Quantitative Estimation of Cholesterol.

Syphilitic Meningitis.

A Study of Narcotic Drugs in Phlorrhizinized Dogs.

The Resistance of Young Pups to Chloroform Poisoning in its Relation to Liver Glycogen.

Parapneumonic Empyema in Children.

Respectfully submitted,

H. Gideon Wells,
Director.
in Press for publication

- Botulinum Tetanus in Transportation
  H. L. G. Cooper, Central Institute, Disease
- Botulinum and other Intestinal Diseases
  H. L. G. Cooper, Central Institute, Disease
- Notes on the Prevention of Tetanus in the Dentifrice Industry
  H. L. G. Cooper, Central Institute, Disease
- The Effect of Ourzen on Experimental Medicine
  H. L. G. Cooper, Central Institute, Disease
- Equilibrium in Meningitis
  E. H. LeGassick's: A New Disease
  Halting Intestinal Disease
- A Study of the Effects of Ourzen in Preventing Disease
  W. D. S. Lanum & R. T. Woodhouse, Central Institute, Disease
- The Resistance of Young Rats to Cephalosporin Phenol in the Rats
  H. L. G. Cooper, Central Institute, Disease
- Peritoneal Meningitis in Mice
  H. L. G. Cooper, Central Institute

Respectfully submitted

H. G. Cross, M.D.
Chicago, December 11, 1915.

President H. P. Judson,
University of Chicago.

My dear President Judson:

In view of the close relation of the work of the Sprague Institute to the University, I am sending you herewith a copy of my annual report on the research work of the Institute as prepared for the Advisory Council.

During the current year the Institute has spent approximately $15,000 in research in the University, and we greatly appreciate the liberal attitude of the University towards our work and especially its generosity in providing such excellent quarters for Miss Slye's work on cancer. I hope that the quality and quantity of our work will justify the cordial attitude of the University to it,

Yours very truly,

[N. Sidman Wells]
Director.
Chicago, December 11, 1955

Prezident H. P. Judson,
University of Chicago

My dear President Judson:

In view of the close relation of the work of the Urologic Institute to the University, I am sending you a report on the research work of the Institute as prepared for the American Cancer Society.

During the current year the Institute has been able to:

- workout 7,500 in research in the University, and we expect to
- embrace the highest attainable in the University, and we expect to
- have the highest attainable in the University, and we expect to
- have the highest attainable in the University, and we expect to
- have the highest attainable in the University, and we expect to

Yours very truly,

[Signature]

Director
December 16, 1918

Dear Dr. Wells:

Thank you for your favor of the 14th inst.

Enclosed is a copy of your manuscript report. It is very interesting. I am glad that we have been able to obtain facilities for the work at the Institute. Research coining more applicable for the University to go on.

Very truly yours,

H. E. A. Wells

The University of Chicago
Chicago, December 15, 1915

Dear Dr. Wells:

Thank you for your favor of the 11th inst. enclosing a copy of your annual report. It is very interesting. I am glad that we have been able to offer facilities for the work of the Institute. Nothing could be more appropriate for the University to do.

Very truly yours,

H.F.J. = L.

Dr. H. G. Wells,
The University of Chicago.
ANNUAL REPORT OF THE DIRECTOR TO THE ADVISORY COUNCIL
OF THE OTHO S. A. SPRAGUE MEMORIAL INSTITUTE.

December 3, 1915.

The work at the University of Chicago has been greatly fa-
cilitated since Jan. 1, 1915, by being housed in the new Howard Taylor
Ricketts Laboratory, which provides excellent conditions for all
types of investigations. Here our chief efforts have been, as pre-
viously, in the systematic study of Biochemistry and Chemotherapy
of Tuberculosis, a problem which can be pushed along slowly on account
of the chronic character of the disease in experimental animals.

Dr. Corper and Arkin have completed their work on arsenic compounds
in tuberculosis, finding that arsenic has but little germicidal ef-
fect on B. tuberculosis, at least in the several compounds they exam-
ined; neither did these have any beneficial effect on the disease in
animals. Arsenic does not show any demonstrable tendency to accumu-
late in tuberculous tissues. Sodium stannate was also found ineffect-
tive. Dr. Corper has taken the position of Director of the labora-
tories of the new Municipal Tuberculosis Sanitarium, but retains his
membership on the staff of the Institute and is cooperating with us
in Tuberculosis work, an arrangement which assures us of adequate
clinical material and facilities whenever the development of our
work requires.

Dr. DeWitt and Miss Sherman have completed a careful study
of the bactericidal action of copper, concerning which there is much
confusion and a paucity of reliable observations in the literature.
The work of the Committee of Chosen was begun during the

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importance, particularly in the foreign and colonial countries. The

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The various attempts at the increase in the export industry.
Their results indicate that the effect of copper compounds varies greatly with different species of bacteria, that they are remarkably ineffective even in strong concentrations when the exposure is brief, but extremely effective even in most dilute solutions when acting for a long time. These observations help to clear up the confusion in the literature and to give us a more definite basis for our future work. So far no useful results have been obtained with copper compounds in tuberculous animals, but there are possibilities that make it desirable to continue investigations with derivatives of this metal. More encouraging observations have been made with certain mercury-dye compounds, which are being followed out. Two assistant chemists from the Department of Chemistry are giving part time service in preparing new compounds and analyzing tissues. Compounds of gold, cadmium, and other metals, are being developed and studied. An incidental study of the influence of pneumococcus infections on susceptibility to tuberculosis is being conducted by Miss Sherman. Mr. Huber is continuing his study of the pharmacology and toxicology of copper salts of amino acids. Mr. Caldwell is still engaged in his study of the chemical composition of tuberculous tissues as contrasted with normal tissues.

Dr. Julian M. Lewis, who recently received his Ph.D. from the University, has continued his study of the routes of absorption of foreign sera. While engaged in this work he made the observation that the injection of a relatively large dose of a foreign protein with or shortly after the usual small sensitizing dose of some other protein, will interfere greatly with or prevent completely the ana-
In order to improve the quality of public education, the government has implemented various policies to increase school enrolment and improve educational outcomes. These initiatives have been implemented in collaboration with local communities to ensure that the changes are culturally relevant and acceptable. The government has also been proactive in upgrading infrastructure and providing necessary resources to support educational programs. However, challenges persist, especially in rural areas where access to quality education is limited.
phyllaxis reaction. This phenomenon was studied extensively and reported on by him. Dr. Lewis has had excellent training in the methods of experimental physiology, and as we have much need for this sort of work, he has been added to our staff on a half time basis until he completes his medical studies. He is at present repeating certain studies on the effects of interference with the blood supply of joints to obtain data wished by Dr. Billings in his work. A paper on the occurrence of epinephrine in fetal adrenals is nearly completed.

The experimental production of fat embolism through operation on bones is being studied by Messrs. Huber and Caldwell at the request of Dr. E. H. Ryerson, with particular reference to orthopedic operations. They have developed methods for quantitative study of fat embolism and hope to ascertain the best procedures to eliminate or minimize the danger of this serious accident of bone surgery.

Dr. Aaron Arkin, now Professor of Pathology at West Virginia University, has published a continuation of his studies on the influence of oxidizing substances on the formation of immune bodies, indicating that they stimulate such formation.

The director has been largely occupied with the administrative duties of his position and his University work, and has carried out the histological study of Miss Slye's tumor material. Most of his personal research work of late has been along lines not related to the fields of study of the Institute, and perhaps to be considered as under the auspices of the University. Having resigned his position of Assistant Dean of Medical Work at the University, he will
have more time available for the Institute in the future.

Our facilities for work in cancer have been much improved through the generosity of the University of Chicago, which has turned over for our use the two-flat building at 5836 Drexel Ave., adjacent to the building formerly used by us. This splendidly lighted and ventilated building greatly improves the hygienic conditions, which were very bad in the old quarters, and the effects on both the staff and the mice are already observable. Miss Slye has continued developing the lines of study already reported on, and has published two papers during the year dealing with the results. These demonstrate beyond question that cancer in mice is influenced by heredity exactly as any other inheritable quality, such as coat color, and that at will it can be introduced into a strain, or removed from a strain by proper breeding. Further data are being collected on this phase of the work, which will serve to place all published conclusions on a basis so broad that they will be unquestionable. The observations on this great stock of mice also have served to establish the fundamental identity of the spontaneous tumors of mice and man, and groups of special types of tumor are being studied by Miss Holmes and Dr. Wells, with particular reference to this point. A paper has been published this year on the primary liver tumors of mice. An idea of Miss Slye's achievements in tumor breeding can be obtained from the fact that we were able to report on twenty-eight such tumors, whereas the entire literature on mouse tumors contains the report of but one other case. This illustrates also a feature disclosed by Miss Slye's work, namely, the family tendency of tumors
have made the arrangements for the interpolation in the future.

Can you tell me the work in progress since your last update?

According to the recent reports, the current progress is as follows:

- The engineering department has completed the conceptual design phase for the new project.
- The procurement team has initiated the process to select vendors for the key components.
- The construction team has started the site preparation work, clearing and leveling the land.

These are the key milestones achieved so far. We are on track to meet the project timeline.

Please let me know if you have any concerns or if there are adjustments needed in the plan.

Thank you for your attention to this matter.

Best regards,
[Your Name]
of different histological type or of different organs or tissues.
Nearly all these liver tumors have occurred in the offspring of a
certain strain, which accounts for their relatively great number in
this material. Other types of tumor have been found also to occur
particularly in certain families. Incidentally it has been observed
that when, through breeding, cancer is introduced into a stock, it
tends to appear first as sarcoma and later as carcinoma. Also, in
mice of highly cancerous heredity, it is common to find a mouse with
several independent primary tumors at one time. As the breeding is
continued, these and other facts appear more and more conspicuously
and with much greater certainty. The accumulated data also bring
additional demonstration of the total absence of contagion of cancer,
abundantly controlled by experiments set up to prove this point, and
emphasize the wide divergence in behavior of cancer and any of the
known infectious diseases, especially in its greater tendency to at-
tack strong, well nourished individuals, and to spare or develop
more slowly in those weakened by malnutrition, over-breeding, or
other means. An interesting observation is that the numerous instance
of tumor of the testicle have been observed chiefly in those mice
which have not been allowed to breed.

The lines along which this work will be continued may be
briefly summarized as follows:

Completing the history and development of certain strains
either unreported as yet or incompletely reported, with the object
of providing further evidence on the general problems of heredity
in cancer. Added data are also needed to determine positively to
what extent cancer heredity follows the Mendelian proportions.
Breeding out strains which in intricacy of hybridization resemble the ordinary human ancestry. Such strains have been developed and are now being followed out.

Hereditary relationship of sarcoma and carcinoma is being studied, especially through two strains derived from a male with lung tumor bred alternately with a mouse with carcinoma and a mouse with sarcoma.

The influence of heredity on the age at which cancer occurs and the rate of cancer growth is being studied.

Additional data on organ relationships in cancer occurrence are being collected, there being already some striking illustrations of such relationship both in mice and man.

Stocks now having been developed in which the percentage of cancer incidence can be predicted quite accurately, it is possible to study several different problems related to the factors that modify this incidence, such as character of diet, quantity of diet, hygienic and environmental conditions, age and rate of breeding, fecundity and sterility, etc.

It must be borne in mind that in all this work only spontaneously occurring tumors are being considered, which are quite comparable to human cancer, whereas work done with inoculated and therefore artificial tumors cannot be so safely translated into human pathology.

Another important field of work opened up by Miss Elye's observations is with the leukemias and related diseases, which have been found to occur only in the cancer strains, and to behave in
educating our students about the dangers of participation in sects can be effective in preventing mental confusion and may require formal training. The influence of sects on the mind and mental processes was studied by several researchers. The results of these studies indicated that sects can be harmful in some instances, but in general they are not.
breeding as cancer. In this work the assistance of Prof. J. C. Simmonds of Northwestern University has been secured.

On May 3, 1915, Miss Slye was awarded the Howard Taylor Ricketts Prize for Medical Research by the University of Chicago. She has also been invited to address the Pan American Science Congress at Washington in January, 1916.

Our work at Rush Medical College continues along two main lines. (1) The clinical studies under Dr. Billings, carried out in part by our Fellow and in the beds maintained for the purpose by the Institute. (2) The systematic study of carbohydrate metabolism and related problems under the direction of Dr. Woodyatt.

In Dr. Billings' work some 300 cases of arthritis or related conditions have been investigated bacteriologically and clinically, most of them having been treated by vaccines, in some instances supplemented by immune serum. In many cases striking confirmation of Rosenow's work on selective affinity of streptococci has been obtained. The valuable material of this investigation has been compiled by our Fellow, Dr. Coleman, and is ready for analysis and report. Other types of focal infections have been studied by this same group, and Dr. Billings has reported on this work in his recent series of Lane lectures at the University of California. Several cases of Hodgkin's disease have been studied, and treated by vaccines and antisera in addition to the usual methods, apparently without results of great significance. As part of this work a study of the general problem of the immunological reactions of diphtheroid organisms was conducted by Dr. J. J. Moore, who also immunized a horse with organisms from cases
of Hodgkin's disease and prepared concentrated antisera for clinical use. He was unable to demonstrate specific antibodies for these diphtheroids in the blood of patients, although the horse serum gave strong complement fixation reactions. No pathogenicity was observed with organisms of this type, and the horse injected with enormous doses of living diphtheroids developed no evident lesions.

Dr. H. B. Culver has worked under a Fellowship at Cook County Hospital, investigating the bacteriology of the normal prostate, and of the prostate in arthritis without other evident focus of infection, this work being supplementary to that carried out under Dr. Billings. Dr. Culver developed an excellent technique and was entirely successful in securing cultures representing the prostatic flora. Several arthritics were studied whose reactions showed conclusively that the organisms obtained were the cause of their joint troubles, and encouraging results were secured with specific vaccines. This work is now being prepared for publication. Dr. Culver resigned Oct. 1st to take a position in pathology at the University of Illinois. It is a pleasure to record the liberal support and opportunity given Dr. Culver's work by the authorities of Cook County Hospital and by the Resident Pathologist, Dr. Eissell.

Dr. Woodyatt has devised an apparatus for injecting into the veins of either animals or patients, regulated amounts of a solution at a constant rate, and thereby has opened up a large and enticing field for research, not only in carbohydrate metabolism but in other fields as well. Drs. Sansum and Wilder have been conducting much of the experimental work. It has been found that the normal sugar tolera-
ance for injected sugar is approximately the same in man and animals (0.8 to 0.9 gm. sugar per kilo per hour) this being a true measure of the ability of the body to handle sugar, which cannot be learned by oral demonstration. Extremely accurate estimations of this function can now be obtained, with ammifold clinical applications. Intravenous nutrition is also entirely feasible by this method. The laws of sugar destruction in hyperglycemia have been ascertained, and the maximum tolerance established. By injection of an excess of sugar the water excretion can be greatly increased, with accuracy and safety, indicating possible uses in the treatment of edema and various forms of intoxication. The utilization of this apparatus for intravenous feeding of marantic infants will be conducted at the Children's Memorial Hospital. Numerous animal experiments and clinical tests are being carried out as rapidly as possible.

The study of the metabolism of 3-carbon sugars has been continued, and the study of d-1 glyceric aldehyde prepared by Dr. Witschmann has been completed. This substance is converted completely into glucose in the animal body, and therefore cannot be utilized by the diabetic organism as a substitute for glucose. An improved method for rendering dogs free from glycogen has been devised, permitting much more exact studies of carbohydrate metabolism than was previously feasible, and important errors in the literature have been disclosed. So completely can total carbohydrate elimination be secured that it is possible to analyze food stuffs for their available carbohydrates by this method, with great accuracy, and, in some instances, better than by any other method.
In addition to the work of preparing special compounds for Dr. Woodyatt's experiments, Dr. Witzemann is carrying on investigations of the chemistry of oxidations of carbohydrates and the products of their disintegration, this having a bearing on carbohydrate metabolism.

Dr. Evarts Graham has resigned in order to secure better opportunities for surgical work than he could obtain in Chicago. His training in surgery, chemistry and experimental methods gave him a unique preparation for research, and we greatly regret that it was not possible for him to remain in the Institute. His latest published work is a most interesting and suggestive communication, in which it is shown that the anesthetics containing halides, such as chloroform, borneofm, etc., disintegrate in the body to liberate the halide acid and that the toxicity of these anesthetics is in direct ratio to the amount of such acids each liberates. Evidence was obtained to show that the prominent harmful effects of these anesthetics, such as necrosis of the liver, may be explained by this observation, and that the administration of alkalies prevents them. Following this publication, Dr. Graham, assisted by Dr. Frank Nuzum, has been studying the effects of anesthetics on the colloidal chemistry of tissues, especially the central nervous system. Apparently the anesthetized tissue greatly differs from normal in the degree to which it will take up various substances from the blood. This work will be published as far as carried out.

At the Children's Hospital our formerly overcrowded quarters have been greatly augmented by the liberality of Mr. Thomas B. Jones
In addition to the work of preparing special courses for
the students' advancement, the Department has
taken the opportunity to develop, in cooperation with
the Bureau of Education, a special course in education
on the subject of "The Principles of Administration of
Public Affairs." The course is designed to provide a
comprehensive understanding of public administration
and to prepare students for leadership roles in public service.

The purpose of this course is to provide students with a
thorough understanding of the principles and practices of
government, with a focus on the effective management of
educational institutions. The course covers a range of
topics, including the history of education, the role of
administrators, and the challenges facing modern
educational systems. Students will also have the
opportunity to engage in case studies and to develop
practical skills through hands-on projects.

The course is structured to provide a balanced
approach, combining theoretical knowledge with practical
applications. Students will be encouraged to think
critically and to develop their problem-solving skills.

The course has received positive feedback from both
students and educators, who appreciate the
 thorough and comprehensive approach to public
administration. The Department continues to
refine the course to ensure that it remains relevant and
effective in preparing students for leadership roles in
public service.
and the hospital authorities. Mr. Jones had had a portion of the basement made over into a laboratory at his own expense, giving us about twice the space formerly available. This new laboratory will be used for bacteriological work chiefly, while chemical investigations will be continued in the original laboratory. Continuing the policy of investigating the application of advances in medical and biological sciences to the problems of pediatrics, studies on a wide range of topics have been conducted.

Dr. Schwartz has prepared for publication two papers on the study of edema by the elastometer of Schade, these being the first reports of confirmation and application of Schade's original contribution. In the classes of cases in which this instrument can be used, it has been found to give most valuable information as to the water retention in the body, permitting retentions to be detected that would be otherwise overlooked, and giving useful quantitative results. There are large possibilities from the use of this method in general medicine, both for diagnosis and as a guide in treatment. As at present constructed it cannot always be used, especially in restless or delirious patients, and attempts are being made to modify the apparatus so that it may be more generally applicable. A study of the relation of chloride excretion to the water retention is also being carried out by means of the elastometer, and further investigations along this line have been planned.

Dr. Amberg is continuing his studies on the influence of oxidation, and of drugs modifying oxidation, on inflammatory processes. The very remarkable influence of oxygen-supplying chemicals
and the opinion of the District Council. The same has been incorporated into the Act and is now in force. It provides for the establishment of a Council with powers to make by-laws for the control and regulation of the Council's actions. The Act also provides for the appointment of a Chief Executive Officer to carry out the duties of the Council.

The Act contains a number of provisions relating to the establishment of a Council and the delegation of powers to it. It also contains provisions relating to the appointment of a Chief Executive Officer and the delegation of powers to him. The Act also contains provisions relating to the conduct of the affairs of the Council and the delegation of powers to the Chief Executive Officer.

The Act also contains provisions relating to the conduct of the affairs of the Council and the delegation of powers to the Chief Executive Officer. It also contains provisions relating to the conduct of the affairs of the Council and the delegation of powers to the Chief Executive Officer.
on local inflammations, especially the iodozo- and iodoxy-benzoates, warrant extensive study because of obvious therapeutic possibilities. Numerous unexpected results with control substances have opened up further lines of inquiry which are being followed. With Dr. Helmholtz the toxicity of the urine in various diseases is being studied, with especial relation to substances behaving like anaphylatoxins. In controlling experimental results the toxicity of potassium salts was investigated, and it was found that this was remarkably inhibited by sodium salts. The problems opened by this observation are being worked out.

As encouraging results in the treatment of pneumonia by specific sera have been reported from the Rockefeller Institute, the application of this work to the pneumonia of infancy is to be investigated. The developments of anti-pneumococcus therapy with ethylhydrocuprein and related substances are also to be followed in connection with the clinical material available.

Dr. Helmholtz has also completed a study of the bacteriology of the duodenal ulcer in infancy. The infectious nature of this disease little considered before Rosenow's investigations of duodenal ulcer in adults, was made probable by the observation that an epidemic of such cases was occurring in the patients received at the Children's Hospital. Bacteriological investigation showed the presence of streptococci in the blood and in the ulcers in these cases, and strains of cocci inducing gastro-intestinal lesions in animals were obtained, fully corroborating Rosenow's observations in adults. With the facilities of the new laboratory it is hoped that much more work of this
In 1937, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) began a series of experiments to determine the effects of various factors on the growth and development of eucalyptus species. These experiments were conducted on a large scale, with plants being grown in a variety of soils and climates. The results showed that eucalyptus species could thrive in a wide range of conditions, but that certain factors, such as soil type and moisture levels, had a significant impact on their growth.

In 1940, the results of these experiments were published in a report titled "Eucalyptus: A Study of Growth and Development". This report became a seminal work in the field of eucalyptus research and has been cited extensively in subsequent studies. It was the first comprehensive study of its kind, and it helped to establish the CSIRO as a leader in eucalyptus research.

Since then, the CSIRO has continued to conduct research on eucalyptus species, and has contributed significantly to our understanding of their growth and development. The results of this research have been applied in a variety of ways, from the development of new eucalyptus species to the improvement of existing ones.
character can be carried on in the future, as it gives promise of many useful contributions to pediatric knowledge. On account of the prevalence of acute pyelitis in the young, Dr. Minsk has begun a study of the bacteriology of the urine of infants, normal and otherwise. Bacteriologic studies of the cerebro-spinal fluid, especially in chorea and so-called "serous" meningitis, have also been begun. Dr. Schwartz has observed one case of typical pachymeningitis hemorrhagica interna, a disease of unknown etiology, in which the meningococcus was present, an observation that should stimulate further bacteriological study of this condition. An investigation of the permanganate reduction index of the cerebro-spinal fluid by Schwartz and Hoffmann has shown that this method yields results of considerable value in differential diagnosis. A study of the pleural contents in pneumonia has disclosed the fact that the so-called "parapneumonic empyema" is common in children, and as it clears up spontaneously, even when containing living bacteria, the usual rule to drain when pus is present in the pleura must be revised.

Dr. Helmholz has devised a method of obtaining access to the circulation in infants (a difficult matter by the usual venous puncture method used in adults) by puncture of the longitudinal sinus. This method works well, and with the growing use of intravenous methods of treatment and diagnosis, is of much practical importance. It has been successfully used for transfusion in cases of melena neonatorum. The new intravenous method of feeding devised by Dr. Woodyatt may be found applicable for the treatment of infantile marasmus, etc. through the longitudinal sinus, and will be investigated. By this
route material may also be obtained for studies on the chemistry of the blood in disease, which will be undertaken.

Dr. McClure and Sauer have continued their studies of the influence of clothing on loss of heat in children. Rubner has worked out this subject for adults, but there were previously no accurate data for infants, with whom the subject is of especial importance. Two papers on this subject have been prepared (one published) giving the exact data, and showing that under hot weather conditions it is perfectly possible for ordinary amounts of clothing to so interfere with heat loss as to lead to heat stasis and death. These studies raise the subject of infant clothing in summer from an empirical matter to one of exact knowledge. Dr. Sauer is continuing the study of the loss of moisture from the infant's body, and the influence of clothing thereon.

Some study of Dahlia as a selective germicidal agent in streptococci infections has been made, based on the observations of Simon on the specific destructive or inhibiting effect of this dye on streptococci in vitro, but the results with animal infections have not justified its intravenous clinical application.

Dr. W.H. McClure, after two years' service as resident, has accepted a position in pediatrics on the staff of the Iowa State University Hospital. The new resident is Dr. Mink of Johns Hopkins.

Dr. Gerdine, who served as a voluntary worker in our laboratory, has received an appointment as resident physician of the Pediatric Hospital of the University of California.

Dr. Kaethe W. Dewey, holding a Fellowship under the direction of Dr. E.R. LeCount, has resigned to take a research position in dental
pathology with Dr. M.L. Moorehead of the University of Illinois.
Since publishing with Dr. LeCount an extensive treatise on syphilitic meningitis, she has been engaged in a study of the effects of hypercholesterolemia, both on immunity reactions and on the tissues of the animals. It was found that cholesterol causes extensive changes in various tissues, notably the liver and kidneys, that it is excreted in the urine and bile, and that hypercholesterolemia may cause gall stones' formation independent of infection of the bile tracts. This last observation seems to be the first definite demonstration of the possibility of gall stones resulting from hypercholesterolemia, and is of much importance in the theory of their etiology.

Although the trustees made an appropriation for a Fellowship in Obstetrics at the Chicago Lying-In Hospital this position has not been filled. The large new hospital has not been completed, presumably because of war conditions, and it seemed inadvisable to try to start work in the small quarters at present available, unless we should find an exceptional man who could be expected to be able to overcome the adverse conditions. No such man having been found the Fellowship has been unoccupied, but should be held open.

Our plans for the coming year call for no noteworthy change in the character or conditions of our efforts. The work already under way will be continued, and our organization is sufficiently inelastic to permit of work in special problems that may arise. Although the great improvements in laboratory facilities at the University of Chicago and the Children's Memorial Hospital have helped us greatly, we are still impressed with the fact that consolidation of
our forces would increase our efficiency. Consolidation, however, seems to be impossible until such time as the conditions of medical education in Chicago have been established on a definite and permanent basis. Until then it would seem best to continue as at present with a plastic organization, capable of being remodelled to take advantage of the hoped for changes when they are accomplished.

On account of the wishes of the trustees, the possibility of undertaking work on dementia praecox has been kept constantly in mind, and recently certain developments have made it possible that such work may be feasible in the near future. These developments are at present in too undeveloped a state for report and discussion.

Respectfully submitted,

H. Sidon Waller

Director of Medical Research.
ARTICLES PUBLISHED IN 1915 OR NOW IN PRESS.

1. Sodium Tellurite in Tuberculosis -

2. Sodium Sulfocyanate in Tuberculosis -

3. The Tuberculocidal Action of Arsenic Compounds and their Distribution in the Tuberculous Organisms -

4. The Bactericidal and Fungicidal Action of Copper Salts*-
Lydia M. DeWitt and Hope Sherman, Jour. Infec. Dis.

5. The Influence of an Oxidizing Substance (Iodoxybenzoate) on Immune Reactions -
Aaron Arkin, Jour. Infec. Dis.

6. The Inhibitory Action of Heterologous Protein Mixtures in Anaphylaxis -

7. The Incidence and Inheritability of Spontaneous Cancer in Mice, III,

8. Primary Spontaneous Tumors of the Liver in Mice -

9. Some Aspects of Purine Metabolism -
H. Gideon Wells, Hour. of Lab. & Clinical Medicine.

10. The Parallels between the Effects of Pancreas and those of Metallic Hydroxides on Sugars -

11. Narcotic Drugs in Phlorizinized Dogs -

12. Prolonged and Accurately Timed Intravenous Injections of Sugar -

13. The Use of Phlorizinized Dogs for Purposes of Food Analysis*-

14. The Behavior of d-l Glyceric Aldehyde in the Normal and Diabetic Organism*-

15. Hypertonic Salt and Alkali in the Treatment of Salvarsan Anuria -

16. A new Method of Preparation and some Interesting Transformations of Colloidal Manganese Dioxide -

17. The Role of Atmospheric Oxygen in the Oxidation of Glucose by Potassium Permanganate in the Presence of Varying Amounts of Alkali -


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18. Late Poisoning with Chloroform and Other Alkyl Halides in Relationship to the Halogen Acids formed by their Chemical Dissociation -

19. Clothing as a Factor in the Production of Heat Stasis -

20. The Influence of Clothing on the Surface Temperature of Infants -

21. The Longitudinal Sinus as the Place of Preference in Infancy for Intravenous Aspirations and Injections, including Transfusion -

22. Duodenal Ulcer in Infancy an Infectious Disease* -

23. Clinical Study of Edema by means of Klastometer -
A.B. Schwartz, Archives of Int. Med.

24. The Etiology of Pachymeningitis Hemorrhagica Interna in Infants* -

25. The Permanganate Reduction Index of the Cerebro-spinal Fluid* -

26. The Effect of Dihydroxy Acetone on Streptococcal Infections in Guinea Pigs* -

27. Studies with regard to Procedures Influencing Inflammation -


29. Parapneumonic Empyema in Children -

30. Two Cases of Parapneumonic Empyema in Children -

31. Immunological Reactions on Diphtheric Organisms* -

32. Syphilitic Meningitis -

33. Experimental Hypercholesterolemia* -

*Indicates articles now in press.
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THE WORK OF THE OTHO S. A. SPRAGUE MEMORIAL INSTITUTE DURING THE WAR

Immediately after America entered the war the Sprague Institute formally offered its services to the Government through the National Research Council, which services were accepted by the chairman of the committee on Medicine and Hygiene, Dr. V. C. Vaughan. The request was made that as far as possible the Institute be held together, with the research work continuing along the same lines as previously, in order to be ready whenever the Government should submit special problems to us, and this plan was followed for a time. As, however, the National Research Council did not soon become organized in such a way as to submit much work to the Institute, a few of the members found it desirable to undertake work directly for the army or the Government. The work of the Institute, therefore, consisted of that done in the laboratories of the Institute and that done by its members in various services of the army, and may best be indicated by describing the services of the various members and laboratories separately.

The Director, Dr. H. Gideon Wells, was appointed a member of the Medicine and Hygiene Committee of the National Research Council on January 25, 1917. In July, 1917, Dr. Wells was given leave of absence by the Trustees to accept a commission as Major in the American Red Cross, to serve as a member of the Commission to Roumania. In this capacity he was absent five months, during which time he travelled via Japan, Siberia and Russia to Roumania and helped organize the defense of the country against typhus and other epidemic diseases. A full report of this work was published in collaboration with Major R. G. Perkins of Cleveland in the Journal of the American Medical Association, March 16, 1918.

On returning to America he engaged in active propaganda work, describing the part played by Roumania in the war, its accomplishments, its needs and its rights, and also the work of the Red Cross in that country. On April 24, 1918, he was appointed a member of the Medical Advisory Council of the Gas Defense Section of the Chemical Warfare Service, U. S. A. In this capacity he attended regular meetings of the Council in Washington to advise on the problems of this branch of the service, and to plan for work to be done by the Sprague Institute in this field, discussed elsewhere in this report. In June, 1918, he was appointed Chairman of the Committee on Industrial Poisonings among Munitions Workers under the National Research Council, and helped to organize research work in this subject in the United States. To this committee, which had members representing the Ordnance Department of the Army, the Bureau of Labor and the Hygienic
Laboratory of the Public Health Service, were submitted problems and questions arising in connection with the poisoning of persons engaged in handling munitions, especially high explosives, or concerning the possibility of poisoning from compounds the manufacture of which was contemplated. The research work was carried on in several laboratories in this country, including the Sprague Institute, up to the time of the armistice. To further this work the Sprague Institute provided three Fellowships for field workers who studied the conditions in the munitions plants and investigated the effects of the chemicals on the employees. The appointees were Mrs. Isabelle Fogo, who worked at the Du Pont plant in Haskell, N. J.; Richard W. Te Linde, at Penniman, Va., and Norton Eversoll at Barksdale, Wis. Their observations will be included in the final report on this work.

In October, 1918, the American Red Cross organized a Commission to the Balkan States, and Dr. Wells was asked to go with this commission as Director of Medical Affairs. Leave of absence was granted by the Trustees for this purpose, and Dr. Wells left Chicago October 25 on this assignment. He reached Paris on November 26, and undertook the task of organizing the medical relief work in those Balkan States where such work had not already been begun. The armistice having made entrance to Roumania possible, the American Red Cross War Council decided to send a separate commission to this, the largest of the Balkan States, and appointed Dr. Wells commissioner to Roumania with the rank of Lieutenant-Colonel. A unit of approximately sixty was organized, a 2,500 ton ship was secured from the Roumanian Government, loaded with supplies and equipment, and with the personnel of the Commission to Roumania, sailed from Toulon on February 8, 1918. Going by way of the Dardenelles the party reached Constanza, the Black Sea port of Roumania, on February 18, but this port could not be used because the bridge across the Danube had been blown up, and a wait of several days was necessary until an ice jam in the Danube River broke up. The port of Galatz on the Danube was reached February 25, from which port supplies and personnel were distributed over Roumania. Headquarters were established at Bucharest, from which the work in Roumania was administered. Cooperation was established with the Interallied Food Administration and the American Relief Administration, which also had their headquarters in Bucharest, so that all the relief work in Roumania was coordinated. On June 5, the work having then been fully organized and in full swing for some time, Dr. Wells was given permission to return to the United States to resume his work with the Sprague Institute and the University of Chicago, his place as head of the Roumanian Commission being taken by Lieut.Col. Henry W. Anderson, Commissioner to the Balkan States. He arrived in Chicago June 24, 1919.
In the absence of Dr. Wells from the country in 1918-1919 Dr. Ludvig Hektoen served as acting director of the Institute.

The laboratories at the University of Chicago carried on their regular work during the war, but at reduced speed to permit of the taking up of whatever problems were submitted to them by the Government. The first problem was an investigation of a food recommended as an emergency ration for the army, and submitted to us for an opinion by the National Research Council. Analyses were made by Drs. George T. Caldwell and E. F. Hirsch, the results indicating that this particular food has no advantages over other non-patented foods of similar composition and lower prices.

In the spring of 1918 there was a severe epidemic of measles in many of the army camps, often complicated by a virulent pleurisy with high mortality. At the request of the surgeon-general's office, the director visited some of these encampments and made arrangements to have investigated certain of the problems presented. This work was carried out by Dr. Lydia M. DeWitt and Dr. Julian H. Lewis. Later a special commission was formed to work on this subject and the results obtained in the Sprague Institute were transmitted to this commission and the work dropped for other problems.

Some of the features of the investigation on the toxicity of war explosives were carried out by Drs. Lewis and Hanke, especially with reference to urine tests. Their results will be included in a final report on work with these explosives.

Dr. Julian H. Lewis was commissioned a First Lieutenant, M. R. C., November 10, 1917, but in order to permit him to continue investigative work for the Government in our laboratories, he was not called into active service. In addition to carrying on the investigations on empyema and the toxicity of war explosives, previously mentioned, he conducted experiments on the intravenous injection of antitoxic and other foreign sera at slow rates to avoid danger of anaphylactic shock. Also on the possibilities of long continued intravenous injections of ethylhydrocuprein (optochin) in the treatment of pneumococcus infections. Both these investigations were made with particular reference to war medicine, and have been published as follows: “Slow Intravenous Injection of Antiserum to Prevent Acute Anaphylactic Shock,” Jour. A. M. A., February 1, 1919. “Effect of Continuous Intravenous Injections of Ethylhydrocuprein,” Archives Int. Med., November, 1918.

In the summer of 1918 Miss Slye began raising mice for use by the army laboratories. The early termination of the war prevented the production of many mice for this purpose, but by the time of the armistice a stock of breeders had been developed from which large numbers of mice could have been obtained if it had been necessary.

At the Laboratory for Clinical Research at Rush Medical College, work was also carried on with the toxic war explosives. The Director,
Dr. R. T. Woodyatt, during the six months following our entry into the war, remained in charge of the laboratory in compliance with the request of the director and trustees of the Sprague Institute that the organization be kept running and available to the Government for assignments of war research problems. No assignments being made at first, work was undertaken on experimental therapy of phosgene gas poisoning in dogs by intravenous administrations of salts, alkali, sugar and oxygen gas, with no practical results, and on the treatment of surgical shock. The animal experiments on shock were made in collaboration with Prof. Joseph Erlanger of Washington University, in St. Louis, and the results published. (Erlanger and Woodyatt: Continuous Intravenous Injection of Glucose in Shock, *Jour. Amer. Med. Assn.*, Oct. 27, 1917). Dr. Woodyatt was commissioned as Major, M. C., U. S. Army, February 6, 1918. His first assignment was to U. S. A. Base Hospital, Camp Cody, N. M., March 20. He reported for duty March 29, 1918, and served as Assistant Chief of Medical Service for three weeks, thereafter as Chief of Service until October 29, 1918, at the peak of the influenza epidemic at Camp Cody, when he was transferred to Base Hospital No. 134, mobilizing at Camp Wadsworth, S. C., for overseas service. He remained there as commanding officer until December 14, 1918. While at Camp Cody he published with Anthony Avata, Lieut., M. C., favorable results of treating facial erysipelas by a method of collodion circumscription (*Jour. A. M. A.*, Sept. 14, 1918). The armistice having been signed, Base Hospital No. 134 was shortly demobilized, and Major Woodyatt served thereafter as Chief of Medical Service, U. S. Army General Hospital No. 28, Fort Sheridan, Illinois, December 18, 1918, until discharged from service May 22, 1919.

Dr. Russell M. Wilder was a member of the Medical Reserve Corps before the war, and was called to service June 13, 1917, with the rank of captain, being sent to Ft. Benjamin Harrison, Indiana, December 31, at first assistant adjutant. He was transferred to the regular army and sent to France, arriving there January 7. He received a lieutenant's commission on January 12. He was located with Evacuation Hospital No. 2, Baccarat, Vosges Mountains, until September 1, 1918, when he was made Chief of Medical Clinic and Organizer of the Gas Hospital in Toul. From there he was sent on September 28 to take command of the temporary gas hospital in the field behind the Argonne lines. On October 27 he went to the headquarters of the Second Army in Toul, as medical gas officer of the Second Army. He served in this capacity until after the armistice was signed. He was in medical service from that time on until he was discharged.

The occurrence of “war edema” having been observed and studied in Roumania by Dr. Wells, and similar conditions being said to occur in the children of the poor of Chicago, especially since the increased cost of milk and other foods had led to a reduction in the nourishment