PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH

TWENTY-THIRD ANNUAL MEETING

Held in New York, April 16, 1930

The Council met on April 15th at the Hotel Pennsylvania at 9.40 P.M.

Present: Drs. Bell, Little, MacNeal, Mallory, Simpson, Woglom and Wood, and Mr. Marsh.

Absent: Drs. Ewing and Warthin.

Unfinished Business: None.

New Business: The report of the Treasurer was read and accepted.

Membership: The following applicant was elected to membership: Dr. Joseph C. Aub. Dr. John James Ower, having been invited by the Council to join the Association, and having accepted the invitation, had been admitted by the Secretary according to authority given him by the Council, during the past year.

Resignations: None.

Deaths: The Council expressed sorrow at hearing of the deaths of Dr. Harry T. Marshall and Dr. R. W. Bolling. The Secretary was instructed to write letters of condolence to Mrs. Marshall and Mrs. Bolling.

The following officers were elected to serve for the ensuing year:

President, Dr. C. C. Little.

Vice-President, Dr. Francis C. Wood.

Secretary-Treasurer, Dr. Wm. H. Woglom (re-elected).

Dr. G. H. A. Clowes was elected to the Council to replace Dr. Francis C. Wood, who retires by reason of the fulfilment of his term of office.

The members of the Council and their years of retirement are as follows:

Dr. Burton T. Simpson, 1931	Dr. E. T. Bell, 1934
Dr. Ward J. MacNeal, 1932	Dr. Aldred S. Warthin, 1935
Mr. Millard C. Marsh, 1933	Dr. James Ewing, 1936

Dr. G. H. A. Clowes, 1937

It was moved and seconded that the Treasurer be authorized to pay to Dr. Alwin M. Pappenheimer fifty dollars, this sum representing the Association's share of the luncheon expenses. (This check was re-

turned a few days later by Dr. Pappenheimer, with the statement that the expenses for the luncheon had been met out of the University Entertainment Fund.)

It was moved by Dr. Simpson and seconded by Dr, Little that the Council ask the proposed "American Journal of Cancer" to carry on its title page the statement that it is the official organ of the American Association for Cancer Research. This motion was carried and it was suggested that Dr. Wood transmit this request to the proper authorities.

It was moved by Dr. Simpson and seconded by Dr. Bell that the Secretary be authorized to reject any papers that do not seem worthy of presentation before the Association, and to limit the number of papers to the time available. It was felt that more than the ten minutes which has hitherto been allowed should be at the disposal of each author for the presentation of his paper. This motion was carried and the Secretary was instructed to have printed cards prepared, on which the author of a proposed paper shall be asked to state briefly the content of his communication, and the probable time required for its presentation.

It was moved by Dr. Bell and seconded by Dr. Simpson that the President in future open the general meeting with a twenty minute address.

There being no further business, the Council adjourned at 10.30 P.M.

WM. H. WOGLOM, M.D.,
Secretary.

GENERAL MEETING

The general meeting was called to order on April 16, 1930, in Amphitheatre A, College of Physicians and Surgeons, 630 West 168th Street, New York, by Dr. F. B. Mallory, the President.

The minutes of the Council Meeting of April 15, 1930, were read.

As there was no discussion, the Association proceeded with its scientific program.

WM. H. WOGLOM, M.D.,
Secretary.

THE CYTOLOGY OF LYMPHO-SARCOMA, HODGKIN'S DISEASE, AND LYMPHATIC LEUKEMIA

William Carpenter MacCarthy (Rochester, Minn.):

(See Journal of Cancer Research, 1930, xiv, 394.)

DISCUSSION

Dr. G. R. Callender (Washington, D. C.): I was unfortunate in not hearing the first words of the paper, but I judge that those prominent nucleoli in the neoplastic type of cell are rather constantly present. Is that right? What stain do you use?

Dr. MacCarthy: Unna's polychrome methylene blue, but you can also see them with hematoxylin.

Dr. Callender: It is my belief that in stained, fixed preparations neoplastic cells which do not have prominent nucleoli are present. Sometimes, particularly in the large cell types, nucleoli are prominent. In differentiating between the reticulum cell type of tumor and the lympho-epithelioma that is one of the distinguishing characteristics between them; I look for the absence of nucleoli rather than their presence in these lymphatic tumors.

Dr. Michael Levine (New York): In staining with methylene blue the chromatin in these neoplastic cells is not brought out very well. That perhaps may be associated with the presence of chromatin material surrounding these "large" nucleoli. Is that assumption correct?

Dr. MacCarthy (closing the discussion): In reply to Dr. Callender's question of the absence of nucleoli I will say that they are certainly present in the fresh tissues; they are large and quite constant. Perhaps I see the nucleoli more frequently than other people working with stained, fixed tissues because our fresh cells are always 15 to 20 microns in diameter. The whole cell is preserved and is translucent. Fixed and embedded cells when cut 3 to 5 microns are seen in planes all of which do not pass through the nucleoli. Hence their absence.

I can answer the second question in this way: In a fresh unfixed and unembedded cell, stained with Unna's polychrome methylene blue, the nucleolus alone takes the stain. I know of no chromatin material in the cell that is not stained by this method. Even the chromosomes of mitotic figures are more beautiful than by any other method.

3. TUMORS IN CAPTIVE PRIMATES WITH A DESCRIPTION OF A GIANT CELL TUMOR IN A CHACMA BABOON: PAPIO PORCARIUS

H. L. Ratcliffe (by invitation), (Philadelphia):
(See Journal of Cancer Research, 1930, xiv, 453.)

DISCUSSION

Dr. Halsey J. Bagg (New York): May I congratulate Dr. Ratcliffe on this particular rare bird? I have recently had occasion to go over

this field in detail, and the literature on the spontaneous tumors in the lower primates has shown that there have been reported five tumors from Philadelphia, two from London, and this one of Dr. Ratcliffe's will make the sixth from Philadelphia. That is as far as I have been able to go in locating malignant tumors in primates other than in man. A year ago I obtained at the Memorial Hospital a monkey (M. rhesus) from an animal dealer. Its tumor I have in my hand, with its X-ray plates, and photographs of the living animal. Dr. Ewing examined a small piece of tissue removed from the tumor, and from this tissue a diagnosis of myxosarcoma was made. This was a tumor from the the lower jaw of an adult female monkey. Dr. Herendeen of the Memorial Staff studied X-ray plates of the tumor and the lungs. He noted metastases in the right lung. The tumor received X-ray irradiation. There was an initial increase in size of the tumor which followed the treatment, followed by a decrease in size, with a breaking down of the tumor on the surface, necrosis and infection. The X-ray plates showed that the tumor was an osteogenic sarcoma.

Dr. F. B. Mallory (Boston): Did you find multiple mitoses going with the tumor giant cells, and not with the foreign body ones?

Dr. Ratcliffe: In the biopsy specimen I thought I found mitoses, but I was unable to make out the individual chromosomes. They were what appeared to be mitoses probably in the metaphase, but it was impossible to resolve the chromosomes individually.

Dr. Mallory: There seemed to be both types of giant cells, and I suppose Codman would put it down as an osteogenic sarcoma plus plenty of foreign body giant cells which are often present also in this same type of tumor.

4. The Age and Sex Distribution and Incidence of Neoplastic Diseases at the Memorial Hospital, New York City

George T. Pack and Robert G. LeFevre (New York):
(See Journal of Cancer Research, 1930, xiv, 167.)

Discussion

Dr. Robert G. LeFevre (New York): In addition to what Dr. Pack has told you, I would like to point out some interesting findings. We had 19 cases of carcinoma of the kidney, which represents 0.385 per cent of the tumors of the genito-urinary system. These are seldom found before the fifth decade of life; our youngest patient was 22. We has 453 cases of carinoma of the urinary bladder, which represents 9.2

per cent of all the tumors of the genito-urinary system. 77.8 per cent were found in males, and 22.2 per cent in females. The average age was 57 years. This was seven years older than the average age for patients with benign papillomas of the bladder. We had 161 carcinomas of the ovary, which comprised 3.27 per cent of all the tumors of the genito-urinary system, and 1.88 per cent of all the malignant tumors in females. The average age was 45 years; single women were on the average 12 years older than the married women with ovarian carcinoma. There were 2134 cases of carcinoma of the cervix uteri, representing 11.16 per cent of all admissions to the Hospital in a twelve year period. This represents 24.94 per cent of all cancers in females, and 45.33 per cent of all tumors of the genito-urinary system. Seventy-five, or 3.5 per cent of the cervical cancers were in single women, therefore we can say that epidermoid cancer of the cervix in unmarried women is uncommon, and when it does occur, the same factors of irritation and injury are present as occur in married women. The average age was 49 years; the youngest patient in this group was 20 years old. We had 233 cases of carcinoma of the body of the uterus, comprising 1.22 per cent of admissions to the Hospital, 2.61 per cent of all the cancers in females, and 1.41 per cent of all the cancers in both sexes. Carcinoma of the body of the uterus was just about as common in single as in married women. Its greatest incidence was between 55 and 59 years of age, and our youngest patient was 19 years old. The comparative frequency of corpus and cervical carcinomas in our group was 1 to 8.16.

Dr. Frank B. Mallory (Boston): The most striking feature to me was the small proportion of cancers in the mouth and lips in the women as compared with the men. It will be interesting to see if in the next decade, now that women have taken up smoking, there will be an increase in cancers in this location in women, because it is alleged that smoking and the heat therefrom have a bearing on that question.

5. Sarcomatous Hodgkin's

Aldred S. Warthin (Ann Arbor):
(To appear later in the Journal of Cancer Research.)

Discussion

Dr. E. T. Bell (Minneapolis): I would like to ask Dr. Warthin if he will tell us the histological criteria for the diagnosis of Hodgkin's disease, and whether he thinks it is necessary to have Dorothy Reed cells present. My own feeling is that fibrosis of the nodes is a more import-

ant diagnostic feature than the Dorothy Reed cells. I would like to have Dr. Warthin's opinion also as to whether there is any practical value in trying to separate lymphosarcomas which are multiple, all over the body, from Hodgkin's disease. My experience seems to put them together. I have under observation a patient that has lived for seventeen years with Hodgkin's disease. This was an entirely typical case in every respect, with Dorothy Reed cells and eosinophiles. We had three biopsies in that time. The patient was treated with radiation, and is in good health at the present time.

Dr. Herbert Fox (Philadelphia): I would like to ask Dr. Warthin if he does not credit the action of X-ray therapy as of any significance in the separation of the groups which he classes as lymphosarcoma and the Hodgkin's type. According to our observations, the bone marrow in the group we call Hodgkin's disease is definitely more labile; the neutrophiles are more definitely involved than they are during the X-ray treatment of the group we call lymphosarcoma. Indeed, one of the criteria we use in these borderline cases is the lability of the white cells of the blood. In the group we call lymphosarcoma there may be changes in the picture, which is not the case in the group in the nodes which we call Hodgkin's disease. Also I ask if Dr. Warthin gives no credit to the change in the picture within the gland after X-ray treatment in Hodgkin's disease versus lymphosarcoma. Certainly the fibrosis, the destruction of the reticulo-endothelial group of cells in Hodgkin's disease, is more definite than in lymphosarcoma, in which the necrosis of the cell, the irregularity of the cell, the irregularly distributed mitoses following X-ray are different than in Hodgkin's disease.

Dr. G. R. Callender (Washington, D. C.): I have often in the study of these apparently sarcomatous groups thought it was an error to term as lymphosarcoma a lymph node showing larger cells than the lymphocyte, with abundant reticulum associated intimately with the cells, and it has seemed to me one can call this a reticulum cell sarcoma rather than a lymphosarcoma, although the cells are closely related. Does Dr. Warthin consider both the small cell and the reticulum cell types as neoplastic? One other thing,—do not some of these tumors start off as a sarcomatous type of growth, rather than begin as the so-called slow-growing or sclerosing Hodgkin's disease, and show gradual transformation?

Dr. Warthin (closing the discussion): In answer to Dr. Bell's question, I never make a diagnosis of Hodgkin's disease without Dorothy Reed Cells and eosinophiles, and the peculiar reticular prolifera-

tion in the sinuses. As far as fibrosis is concerned, it does not occur in all cases of Hodgkin's, but it does in some. I would not use the occurrence of fibrosis as a diagnostic point.

I am extremely interested in hearing of your seventeen year old case of Hodgkin's disease, because I know of no case which has lived that long, which was a true Hodgkin's.

I think there is a practical advantage in differentiating Hodgkin's from sarcoma. In my experience the Hodgkin's cases are rapidly malignant. Lymphosarcomas under radiation can be made to live for 9, 13, and 17 years in my experience, and other cases have been reported for seven and eight years. I think there is a very marked practical advantage in making the differential diagnosis in the beginning as far as the expectancy of life is concerned.

In regard to Dr. Fox's question, the action of X-ray upon Hodgkin's disease I have seen many times. I have seen cases that undergo a leukemic change, which two years before had been extensively radiated, and almost every lymph node was a mass of encapsulated caseous necrosis. We could hardly make a diagnosis of Hodgkin's except for a few small nodes which showed the Hodgkin's; all of them had been replaced during the two years by this myeloblastic proliferation. The caseous necrosis disappeared; the fibrosis disappeared, and we had these large fleshy glands which showed the myeloblastic change. There is a difference in the reaction to irradiation, according to the stage of differentiation of the cells of Hodgkin's and lymphosarcoma; this difference has no more diagnostic significance than in showing the difference in the degree of ent-differentiation.

In regard to Dr. Callender's question, I agree with him that some of these cases are sarcomatous from the very beginning, and the sarcomatous transformation we have followed out in repeated biopsy section. When a case four or five years before showed a typical Dorothy Reed cell type of Hodgkin's, with a tendency to fibrosis, and then the tumor three or four years later shows a diffuse malignant change, infiltration and metastases, I cannot believe anything but that there is a direct transformation. We have a large number of cases which we diagnose as sarcomatous Hodgkin's when they come in, that is, some cases are so cellular and atypical that they can be diagnosed as sarcomatous from the beginning.

6. An Histological Study of Salivary Gland Tumors

A. A. Thibaudeau and (by invitation) E. M. Burke (Buffalo):
(See Journal of Cancer Research, 1930, xiv, 440.)

7. Phosphorous Compounds in Tumor Tissue

Carl F. Cori and (by invitation) K. W. Buchwald (Buffalo):
(To appear later in the Journal of Cancer Research.)

Discussion

Dr. Joseph C. Aub (Boston): May I ask whether there is not less calcium in young tumors than there is in larger ones with necrosis?

Dr. Buchwald: It seems that those tumors which have the high calcium-phosphate content are older tumors than those with the lower content. Beebe and others found that tumors which were older had a higher calcium content.

8. Experimental Cancer in a Strain of Tumor Mice

M. C. Reinhard (Buffalo):
(To appear later in the Journal of Cancer Research.)

9. Some Further Studies on the Effect of Radiation on Blood Cholesterol in Malignant Disease

W. L. Mattick and M. C. Reinhard (Buffalo):
(See Journal of Cancer Research, 1930, xiv, 426.)

10. A Vacuum Tube Potentiometer for the Determination of the True E. M. F. of a High Resistance Cell

Russell J. Fosbinder (by invitation), (Philadelphia):

Abstract

The theory and construction of a single tube direct current amplifier capable of measuring the true electromotive force of a high resistance cell with an accuracy of ± .0001 V. are presented. The unknown source of potential, such as a glass pH cell together with a potentiometer are inserted in the grid circuit, the grid having a precision variable bias, which may be so adjusted that at "balance" no current flows through the cell. A galvanometer inserted in the plate circuit is employed as a null instrument. A comparison of pH values obtained for a series of phosphate buffers indicates that the glass electrode-potentiometer system is as accurate as the hydrogen electrode system. A constant temperature cell of new design permits the determination of the pH of fluids using a volume of approximately .05 – 0.1 cc.

11. A New Model Radium Emanation Plant

A. J. Allen (by invitation), (Philadelphia):
(See Journal of Cancer Research, 1930, xiv, 461.)

Discussion

Dr. *G. Failla* (New York): If you follow the radiological literature you find every once in a while a new type of emanation apparatus being described, but for some reason or other we never hear of that particular apparatus again after that. The reason is that there are a good many ways in which radium emanation can be collected from radium, but in trying to change a standard apparatus we introduce difficulties which more than compensate or are worse than those of the original design. In this particular case there are a number of ground glass joints, and the small height, which I think is going to give trouble in the end. We have tried using ground glass for some of the parts, and we also tried the plunger valves to stop the mercury from coming up and reduce the height of the apparatus, but if something goes wrong there is more trouble than if you have the regular height, and the mercury will go up by itself 30 inches above its level, and nothing happens. It seems to me that while the apparatus is very ingenious, Dr. Allen will have to modify it from time to time, to make it a satisfactory arrangement.

Dr. Allen (closing the discussion): The apparatus has been working very nicely for the past month and a half, and there are no indications that it will not continue to do so. There is only one ground glass joint where air might enter into the system, and this is sealed with mercury, as are the stop-cocks in other systems as well as in this system. One important item is that of cost. It is possible to construct this apparatus for about one-tenth the price quoted on another model.

12. A Note on Cancer in Egypt

Frederick L. Hoffman (Newark):
(See Journal of Cancer Research, 1930, xiv, 444.)

13. The Chromosome Number in Cancer Tissue of Man, of Rodent, of Bird, and in Crown Gall Tissue of Plants

Michael Levine (New York):
(See Journal of Cancer Research, 1930, xiv, 400.)

14. A Review of the Experimental Evidence for Mutation Process During the Transplantation of Cancerous Tissue

Leonell C. Strong (Bar Harbor):
(To appear later in the Journal of Cancer Research.)

15. Single and Quadruple Inoculations of an Adeno-Carcinoma

John Bittner (by invitation), (Bar Harbor):
(See Journal of Cancer Research, 1930, xiv, 466.)

16. Factors Influencing the Incidence of Mammary Gland Tumors in an Inbred Strain of Mice

William S. Murray (Bar Harbor):
(See Journal of Cancer Research, 1930, xiv, 602.)

17. Hereditary Susceptibility in Mice to Leukemia Transmitted by Inoculation

E. C. MacDowell (Cold Spring Harbor), and *Maurice N. Richter* (New York), (both by invitation):
(See Journal of Cancer Research, 1930, xiv, 434.)

Discussion

Dr. C. C. Little (Bar Harbor): I should like to ask one or two questions. This is a very interesting paper which Dr. MacDowell has given, and seems to open up very unusual opportunities for continued research. I should like to ask the approximate age of the mice, and also whether there was any sign of increased virulence of the "I" leukemia in the F_1 hybrids which might in a way be compared to the increased growth rate which we occasionally see in inoculated tumors in the F_1 hybrid.

Dr. E. C. MacDowell: We tried to keep the age exclusively within the second month. In a few cases it went into the third month. Within these limits we have not been able to see any correlation with the age of the animal.

In reply to the second question, we have found no evidence of the F_1 hybrids being any more susceptible than the pure bred susceptible strain.

18. The Influence of Heredity Upon the Lung Tumor Incidence of Mice

Clara Lynch (New York):

(To appear later in the Journal of Cancer Research.)

19. Ovarian Transplants in Castrated Male Mice and Rats, and the Relation of This Procedure to Spontaneous Mammary Carcinoma in Such Animals

Halsey J. Bagg (New York):

(To appear later in the Journal of Cancer Research.)

Discussion

Dr. William S. Murray (Bar Harbor): It is very interesting that Dr. Bagg has been able to get these transplants to take. Two years ago I reported at a meeting of this Association an experiment conducted at Ann Arbor in which eleven males had grown tumor after the technic of castration and ovarian transplantation, but my experiments at that time were still young. We found later that 38 of the 210 castrated males developed these tumors. We felt at the time that success in this technic was simply a matter of inbreeding, and that the technic of the whole process was not at all difficult, as some of the earlier workers had thought. Dr. Bagg's work corroborates this feeling.

Dr. G. T. Cori (Buffalo): We are injecting a large series of mice of a high spontaneous cancer strain with anterior pituitary extract, but it is too soon to say whether or not the tumor appears at an earlier period than in the uninjected controls.

Dr. Burton T. Simpson (Buffalo): I should like to ask what is the age of the animals when they were castrated and the ovarian transplants made.

Dr. Halter (New York): They were very young, 16 to 18 days old.

Dr. Simpson: We have a strain of mice in which the females give 94 per cent of spontaneous mammary tumors. We have never observed a tumor in the male. You are probably familiar with Dr. Cori's work. Cori ovariectomized our mice, and he found that if this was done before the 20th day no spontaneous tumors would occur in the female. It is my belief that the ovarian extract develops the proper kind of tissue in the breast from which tumors may originate. If ovariectomy is performed after puberty the tumors occur, but not in such large numbers and at a later date. We have injected castrated males with potent ovarian extract, but have not succeeded in producing tumors. I believe the Dr. Bagg's success with ovarian transplants in castrated males bears out the theory that the ovarian secretion develops tissue in the breast from which tumors may arise.