

**Staff Meeting Bulletin
Hospitals of the . . .
University of Minnesota**

Thyroiditis

STAFF MEETING BULLETIN
HOSPITALS OF THE . . .
UNIVERSITY OF MINNESOTA

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Published for the General Staff Meeting each week
during the school year, October to May, inclusive.

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William A. O'Brien, M.D.

I. LAST WEEK

Date: November 5, 1936

Place: Recreation Room
Nurses' Hall

Time: 12:15 to 1:25 P.M.

Program: Movie: "Brittany"

Abstract: Urogenital
Tuberculosis

Case Reports: Urogenital
Tuberculosis

Present: 125

Discussion: A. K. Doss
C. D. Creevy
T. J. Kinsella
G. J. Thomas
L. G. Rigler
O. H. Wangensteen

Gertrude Gunn
Record Librarian

II. MOVIE

Title: Oxygen Therapy - Care of
Apparatus

Released by: Linde Air Products
Company

III. ABSTRACTTHYROIDITIS

Charles E. Rea

OUTLINE

Introduction
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Types

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Tuberculosis
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Ecchinococcus

Non-Specific (Riedel)Introduction

Terminology
Incidence
Onset
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Etiology

Previous goiter

Pathology

Gross
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Fibrotic

Physiology

Myxedema
Anemia
Pituitary changes
Diabetes

Symptoms and Diagnosis

Local
General

Treatment

Operation

* * * * *

Introduction

Infections of the thyroid gland are rare but occur just as do infections elsewhere in the body. The infected gland may have been normal or the site of a previous pathologic lesion. Wallis states that hyperplastic and colloid goiters are more likely to develop inflammatory lesions than a normal gland. If the inflammation develops in a normal gland, it is called thyroiditis; if it develops in a goitrous thyroid, it is called strumitis. Infections of the thyroid are classified as acute and chronic.

Acute Thyroiditis

In acute thyroiditis, all or part of the gland may be involved and the process may be purulent or non-purulent. If the thyroid has been previously normal, the inflammation is more likely to be non-purulent. If degenerative lesions are present as cysts or encapsulated areas of degenerated parenchyma, these act as locus minoris resistentiae for invading pus-producing organisms.

Etiology

It is most common between the 2nd and 4th decades. The process may be primary, the result of direct bacterial invasion, or secondary following some pre-existing disease, pneumonia, otitis media, etc. Demme and Brisson have reported thyroiditis following epidemics of measles. Acute thyroiditis commonly follows infection of the respiratory tract. The organisms most commonly cultured are staphy-

lococcus albus and aureus, streptococci and colon bacilli. Clinical enlargement of the thyroid during acute infectious diseases have been described but in these true inflammatory changes are not found. Alcohol, phosphorus and iodine have been accused of causing toxic thyroiditis.

Pathology

The process may be confined to a part or all of the gland. The acini are filled with desquamated epithelial cells and the remaining colloid is vacuolated, more viscid and in places has a shreddy, granular appearance. Polymorphonuclears in large numbers invade and surround the acini; small round cells are also present. In some cases, foreign body giant cells are seen. There is dilation of the blood and lymph vessels. If the inflammation continues over any length of time, connective tissue is formed and the size of the gland as a whole is increased. Thrombosis of the intraglandular arteries and veins may occur which sometimes leads to necrosis of an entire lobe. (The intraglandular arteries of the thyroid are mainly end arteries.) The process may go on to suppuration and abscess formation. Bevan reports the case of a man, 63 years of age, in whom complete necrosis of the entire right lobe of the thyroid was associated with acute thyroiditis. The process may extend through the capsule obliterating normal fascial planes; however, most authors report a rather sharp line of demarcation between acutely inflamed and even necrotic thyroid gland tissue and immediately adjacent tissue.

Signs and Symptoms

The signs and symptoms vary with the severity of the infection and the presence or absence of a previous lesion of the thyroid. In acute thyroiditis, the temperature is usually elevated and the patient complains of nausea, vomiting, chills, headache, general malaise, etc. There may be respiratory difficulty due to compression of the trachea. Bilby reports 3 cases where this tracheal obstruction was thought at first to originate from some lesion inside the throat

rather than by compression from without. The fascia and pre-glandular muscles may obscure the swelling until a relatively late stage in the disease. One sign which is considered almost pathognomonic is the stony-hard induration of the involved part of the gland. This is thought to be due to hyperemia, edema and infiltration of the parenchyma within a tight inelastic capsule. In malignant disease and Riedel's struma, a similar stony-hardness may be detected but here the differential diagnosis may be made from the history.

Pain and tenderness on palpation or in swallowing are noted. The patient tends to hold his head in a flexed position. Often there is a cough and hoarseness due to an associated laryngitis. Pre-existing cysts often become larger, firm and painful.

Treatment

Mild cases of acute thyroiditis clear up under conservative therapy (hot packs, forcing fluid, sedatives, etc.).

In acute thyroiditis where the temperature and pulse are persistently elevated, the pain, tenderness and swelling are increasing, and conservative therapy has not been controlling the process, the gland should be exposed through a small incision under local anesthesia over the most tender spot, and an incision of the gland itself or aspiration performed. If no pus is obtained and no necrosis seen, some authors advocate incising the capsule at various levels to prevent necrosis which might result from pressure. If the gland is necrotic, the affected lobe should be removed. General systemic treatment as bed rest and forcing fluids should be carried out.

Complications

Acute thyroiditis may result in septicemia. A localized abscess may rupture into the trachea, pleura, mediastinum or large vessels. Kocher reported that most commonly such abscesses open externally and a fistula results. The whole gland may slough. Pronounced fibrosis

may result in a chronic thyroiditis. Hypothyroidism may follow acute thyroiditis due to destruction of too much tissue. A mild hyperthyroidism may develop during the early stages of the acute infection.

Chronic Thyroiditis

Chronic thyroiditis may follow acute thyroiditis and may be specific or non-specific.

A. Specific chronic thyroiditis

1. Tuberculous

Tuberculous thyroiditis is rarely primary. In tuberculous patients, it occurs in 3.6% (Hegar) to 10% (Fraenkel) of cases. Most commonly, it is seen in the miliary type. Clinically, the changes in the thyroid are so small as to escape detection. There is a nodular form termed struma tuberculosa. Theodore Kocher in 3,200 goiters found only one instance of tuberculosis. Signs of thyroiditis in a patient with tuberculosis should make one suspicious of tuberculous thyroiditis. The diagnosis will be verified only by microscopic sections.

2. Syphilis

An enlargement of the thyroid is said to occur in the early stages of syphilis. Engel-Remens says that the incidence is higher in women than in men and occurs in about 50% of syphilitic infections. Nothing is known of the histologic picture.

Gummata have been reported by Davis as occurring in the thyroid. The signs and symptoms are similar to other forms of thyroiditis. The Wassermann reaction may or may not be helpful. The treatment is specific therapy.

3. Actinomycosis

Koehler reports a case of actinomycosis of the thyroid followed by hypothyroidism.

4. Ecchinococcus

According to von Ersetberg, only 21 cases have been reported in the literature. Meinert reports the case of a patient who allowed a dog to lick the wound in his neck.

B. Non-specific Chronic Thyroiditis

1. This form was first described by Riedel in 1896. It is of rare occurrence and is generally diagnosed as carcinoma before operation. Because of the ligneous or woody appearance, it is also called woody thyroiditis or strumitis. The onset is insidious and the course long and chronic. The incidence is greater in women than men. The majority of cases appear between the 3d and 6th decades.

(a) Etiology

No specific etiology is known. De Quervain and Kocher believe that many cases follow infections of the respiratory and gastro-intestinal tract. These same authors stress possible hormonal factors since so many cases occur in women. Wallis states that 76% of cases give a history of pre-existing goiter. Cases after strangulation, injury of the neck, etc. have been reported.

(b) Pathology

The thyroid is diffusely and symmetrically enlarged. The gland has a stony-hard texture. There are fibrous adhesions between the capsule and adjacent structures. The capsule is greatly thickened. The cut surface of the gland presents a lobulated appearance with small irregular opaque areas between thin translucent lines of fibrous tissue. No colloid is visible. The microscopic appearance varies with the course of the disease. Most authors recognize two forms: the cellular and the fibrotic. The latter is probably a later stage of the first. Wallis studied 100 cases of chronic thyroiditis in De Quervain's clinic. He found lymphocytes present in 100% of the cases, plasma cells 52%, eosinophils 48%, polymorphonuclears 13%, giant cells 13%,

and lymphoid follicles 3%. In the early stages, according to Hashimoto, the parenchymal portion of the thyroid gland is thickly studded with lymph follicles, containing many active germ centers, and as pointed out by Ewing. There may be such pronounced activity of the reticular cells as to suggest lymphosarcoma. In the later stages, according to Riedel, the microscopic picture shows a predominance of fibrous tissue in large fasciculi which apparently spring from the capsule and traverse the gland in interlocking bands. In some of these, elongated nuclei can be seen, but in the majority there is evidence of hyalinization and even calcification. Remnants and all stages of atrophy of the thyroid acini and epithelium can be found in the fibrous tissue. Here and there, diffuse and circumscribed collections of lymphocytes can be seen. The thyroid parenchyma is found in greatest abundance immediately beneath the capsule and many of the acini contain colloid. In these regions, a faint trace of lobulation is seen. In some sections, the acini become hypertrophied and take on a papillomatous appearance.

(c) Physiology

(1) Many patients with thyroiditis have myxedema, especially postoperatively.

(2) Many have an anemia. Jaffe in the course of routine examination of the thyroid at necropsy has occasionally observed an extensive lymphocytic infiltration of the organ which resembles closely the changes encountered in the so-called "Hashimoto goiter," except that the gland was not enlarged but was either of normal size or smaller than normal. The changes were restricted to elderly women. In the majority of these cases, there were no evidences of a disturbed function of the thyroid or a depression of the blood formation, and the patients had died from some other disease. In a syphilitic woman with aortitis and meningo-encephalitis, practically the entire parenchyma had been replaced by lymphatic tissue and there were definite evidences of myxedema. The hemoglobin content was moderately dimin-

ished while the number of red blood cells was only slightly below normal. In two other cases, both of which were elderly women, the lymphocytic infiltration of the thyroid had resulted in the complete replacement of the thyroid by dense scar tissue. During life, these two cases did not show any evidences of myxedema, but there was present an extreme weakness and severe anemia which did not respond to the usual antianemic treatment. Clinically, the nature of the anemia remained obscure. At necropsy, the sclerosis of the thyroid was the most outstanding finding. In one case, the bone marrow proved to be fairly active, but there was considerable hemosiderosis of the liver and the spleen, indicating either an excessive blood destruction or a disturbance in the utilization of the iron. In the other case, the bone marrow was aplastic and showed a lymphocytic plasma cellular reaction to a complicating lobar pneumonia.

Whether the marked anemia of the two cases is directly related to the disappearance of the parenchyma of the thyroid or is the hematological expression of the diminished vitality of all the organs cannot be decided on the basis of the necropsy observations. It is well known, however, that patients with myxedema often are anemic, and the anemia sometimes resembles pernicious anemia. In some instances, myxedema is found to be associated with true pernicious anemia. Complete removal of the thyroid in rabbits is followed by a moderate macrocytic anemia which remains stationary. Administration of thyroid preparations improves this anemia. Injections of thyroxin into normal rats produce an increase of the reticulocytes of the peripheral blood and a hyperplasia of the erythropoietic tissue of the bone marrow. Jaffe believes that in unexplained anemias of elderly women a grave alteration of the thyroid should be taken into consideration.

(3) Enlargement of the anterior lobe of the pituitary occurs after destruction or removal of the thyroid. The younger the animal, the greater the enlargement.

(4) Some patients with a chronic thyroiditis have diabetes. It

is doubtful if this incidence is greater than normal. Certainly diabetes associated with cretinism is very rare (Greenwald, Colles and Wilder).

(d) Symptoms and Diagnosis

Few or no symptoms referable to the thyroid gland may be present. Myxedema or an obscure anemia may be the outstanding signs. In order of frequency, the following symptoms may be present: swelling, pain, dyspnea, dysphagia, hoarseness, etc. About 15% of the cases reported by Wallis were hyperthyroid. The lack of acute symptoms differentiates the chronic from acute thyroiditis. The lack of immobility and metastasis differentiates it from malignant struma. Chronic thyroiditis tends to be more diffuse than the malignant form. All three forms, acute, chronic and malignant struma, are stony-hard.

(e) Treatment

The usual treatment given by most authors is partial resection of the gland. If the gland is small, there are no obstructive symptoms or myxedema and probably no treatment is indicated. It is usually impossible to differentiate chronic thyroiditis from carcinoma of the thyroid before operation, however. In fact, the diagnosis is rarely made before microscopic examination.

Impressions

1. The etiology, pathology, signs and symptoms, treatment and complication of acute thyroiditis are reviewed.
2. Chronic thyroiditis may be of specific or non-specific etiology. The specific forms are mostly pathologic curiosities.
3. The idiopathic chronic thyroiditis is divided histologically into two forms: the cellular and the fibrotic. The latter is probably a later stage of the former.

4. The possible relationship between blood formation and the thyroid in cases of thyroid disease is considered.
5. The diagnosis of chronic thyroiditis is rarely made before microscopic examination.

1920 - Thyroid apparently normal in size.

Appendectomy with recurrence of goiter

1922 - Appendectomy (acute?) following which thyroid again enlarged.

Thyroidectomy

6-17-32 - Thyroid removed because of pressure on trachea causing dyspnea. Excellent result.

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Die Chronische zur Bildung eisenharter Tumoren fuhrende.
Entzundung der Schilddruse verhandl. d. deutsch. gesellsch of Chir. 25: 101, 1896.
5. de Quervain, F.
Die akute, nicht eiterige Thyroiditis.
Mitt. a. d. grenzgeb. d. Med. u. Chir. 2: 1, 1904.

Nervous Breakdown

1932

Nervous breakdown. In bed for 2 weeks. Tachycardia, painful joints, sweating. Nauseated and distressed by Lugol's solution. Basal metabolism rate said to be high.

1933 - Thyroid increasing in size.

Hysterectomy

2-27-34 - Hysterectomy for myomatous uterus. Had backache, vaginal discharge and metrorrhagia.

1934 - Gynecological complaints continue. Receiving treatment for discharge and pain.

Goiter Clinic

3- 5-36 - Thyroid enlarging for 2 months. Slight tachycardia. No other signs.

Basal rate

3-11-36 - Basal metabolism rate, -6%.

Pressure signs

4-27-36 - Enlargement progressive. Now has symptoms of pressure on trachea.

Operation

6- 3-36 - Many adhesions present. No other abnormal findings recorded. X-ray of chest before operation - negative.

IV. CASE REPORTS

1. - 35 years of age.
Hosp. No. 623840.

Admitted 2-26-34, discharged 3-12-34 (14 days). Readmitted 5-30-36 and discharged 6-10-36 (11 days).

Adolescent goiter

1914 - Had goiter at about onset of menstruation; gradually receded.

Thyroiditis

Pathological examination: Left thyroid lobe - 40 grams, contains a single adenoma .9 cm. in size. Microscopic - the thyroid parenchyma is extensively replaced by lymphocytes. A few follicles are present. In areas, the thyroid tissue is almost all gone. Very little fibrous tissue present. Conclusion - thyroiditis.

Improvement

7-8-36 - Says she is markedly improved.

* * * * *

2. _____

43 years of age.
Hosp. No. 606504.

First seen in dispensary on 5-3-32. Admitted 3-16-33 and discharged 3-17-33 (1 day). Readmitted 3-27-33, discharged 3-29-33 (2 days). Readmitted 6-27-36, discharged 7-13-36 (16 days). Followed in dispensary in the intervals.

Neurasthenia?

1932 - Complaining of frequency, pain in back and legs, dysmenorrhea, weakness, constipation and abdominal pain. Examinations all essentially negative. Symptomatic treatment.

Urinary difficulty

3-16-33 - Cystoscopy and meatotomy for constricted ureteral orifice. Pyelograms negative.

3-27-33 - Returned because of hematuria - from the cut meatus. Treated conservatively and promptly improved.

Neurosis?

1934 - Frequently seen because of "rheumatism," "neuritis," weak back, pains in hands and feet.

1935 - No change.

Under observation of various clinics.

Improved during the summers.

Goiter

2-26-36 - Goiter Clinic: thyroid enlarged and nodular; neck vessels engorged, probably from presence of the thyroid. Non-toxic.

Basal rate

3-4-36 - Basal metabolic rate, -14.

6-30-36 - Basal metabolic rate, -30.

X-ray of chest - negative.

Thyroidectomy

6-30-36 - Both lobes hard and friable. Carcinoma suspected.

Thyroiditis

Pathological examination: Left thyroid lobe - extremely firm, hard and woody on palpation. Pale yellow in color. Numerous areas of fibrosis throughout entire gland with no parenchyma which can be identified. Intense infiltration with lymphocytes through the entire gland. Diagnosis - thyroiditis.

* * * * *

3. A.L.

38 years of age, white female.
Hosp. No. 635966.

Admitted 3-11-28, 7-2-28, 9-10-28 and 7-27-36. Frequently seen in Dispensary.

Operations

1911 - Tonsillectomy and adenoidectomy.

1912 - Appendectomy and "something done to gallbladder."

1914 - Tonsillar tag removed.

1921 - Antrum operation.

1922 - Salpingectomy.

1927 - Antrum operation.

Nervous Breakdown

1919 - Due to overwork and sinusitis,

"has had many troubles."

Neurasthenia?

3-11-28 - Admitted to University of Minnesota Hospitals because of nervousness, tremor, increased appetite, constipation, palpitation and weakness. Basal metabolic rate (said once to have been +53%), +10% and 0%. Discharged with the diagnosis of neurasthenia.

Thyroidectomy

7-2-28 - Readmitted. Basal metabolic rate -5%, -8%. Thyroidectomy done after considerable debate.

Thyroiditis:

Pathological examination - showed marked lymphocytic and fibrous infiltration throughout the gland.

Myxedema

9-16-28 - Readmitted. Complained of extreme weakness in legs, back and arms; vertigo; headaches, increase in weight and pain in legs. Basal metabolic rate -25%. X-ray of heart - diffuse enlargement of all cardiac chambers of an appearance characteristic of a myxedema heart. Electrocardiogram - sinus arrhythmia. Blood pressure 96/70. Pulse rate 80. On thyroid extract, her basal metabolic rate fluctuated irregularly from -11 to +8%. Discharged with instructions to continue on thyroid extract.

Neurasthenia?

Basal metabolic rate as follows:
1-27-30, +12%; 9-19-30, +4%; 9-19-31, +5%.

A staff note states: "The endless recital of a multitude of complaints continues. Believe patient's symptoms will continue until her need for them is ended by the attainment of an environment with a normal share of life satisfactions, for lack of which the present symptoms suffice."

Arthritis

2-27-35 - Pains in joints, back, fingers, elbows and feet. Has taken

negligible amounts of thyroid extract. Basal metabolic rate -30%. Dose adjusted.

3-19-35 - Basal metabolic rate -10%;
3-1-36, +7%.

Ulcer

7-27-36 - Readmitted with new complaints suggesting peptic ulcer. X-ray: spasm of duodenal cap without demonstration of niche. Basal metabolic rate -6%. Numerous studies essentially negative. Placed on 6 feedings and alkalis with improvement. Discharged 9-15-36.

Notes

1. Not all cases with the pathological diagnosis of "thyroiditis" have this diagnosis on the "code sheet" for the cross-index.
2. The cases are not rare. There have been 3 since June 1936.
3. Is the marked neurotic feature of these 3 cases a coincidence?
4. Ten cases were reviewed from which the reported cases were chosen. No symptoms common to all (except as directed toward an enlarged thyroid) were present.
5. The history of a previous high basal rate was present in 2 cases.
6. None of the cases had any incident suggesting acute infection of the gland.

V. GOSSIP

Astute representatives of American Medical Association approved commercial firms selling necessities and luxuries to the practicing physician, know the medical meetings worth

while in interest and attendance. A few years ago, the Annual Meeting of the Minnesota Medical Association was just another meeting to them. Today, it is on the select list if one is to judge by their prompt telegraphic replies to the opening invitation for bids for space at the 1937 meeting to be held in St. Paul next June. Able full-time medical secretary, Edward August Meyerding, runs the business side; a program committee, the medical side. Immediately following the annual meeting, the Board of Strategy files criticisms and suggestions for a bigger and better meeting next year, starts to plan in earnest in September. Each month thereafter, meetings are held to select the subjects for which the best informed men are drafted. For the coming meeting, handsome president-elect neurosurgeon Alfred Washington Adson, Mayo Clinic, and a group of advisers have been at work. With the assistance of general practitioners, specialists, educators and specially informed laymen, they have been laying out the framework for next year's program. One result is a day to be devoted to traumatic surgery with special emphasis on common injuries which result in prolonged disability. The selection is based on the findings of insurance companies' records. Other features; endowed lectureships, panel discussions, scientific moving pictures, symposia, clinical demonstrations, round-table conferences, scientific exhibits, scientific papers, question and answer periods, etc. Membership 1936 (2250). Attendance: 1932 (1724); 1933 (1741); 1934 (1519); 1935 (2734); 1936 (2688)....

.....Chief Surgeon William Thomas Coughlin of St. Louis University School of Medicine will be honored today in St. Louis for 25 years of successful teaching. Former students and associates will meet him at dinner, write a letter to him, forward their reprints of surgical subjects, make a contribution for a special library fund in his honor. Well known to all students and former students of St. Louis University for his teaching manner which strikes terror into the hearts of his victims, all love and respect him for his kindly off-teaching manner. Others remember his splendid surgical technique and the wearing of white rubber boots in the operating room. Like many other outstanding surgeons, he spent long years in

preparation in anatomy. Nineteen other 25-year men will be honored with him... ..The Homecoming Clinics, sponsored by the Alumni Association of the Medical School, were very successful. The group were entertained at a complimentary luncheon by the Hospital, heard Dean of Medical Sciences, Harold Shelley Diehl, deliver his address on the state of the medical school. New appointments were praised, more money for support was asked, and the manner of getting into the Medical School was discussed. More than 80 per cent of the present class have had more than two years of college preparation, although the University still admits on the two-year basis.....It will come as a surprise to many to know that Surgeon William Thomas Peyton has a private barber whom he visits on occasion.....Present Radio Station WLB will soon be a thing of the past. Under the old call letters, the new station will broadcast on a cleared channel with St. Olaf, daytimes only. The new transmitter and antenna will be located near the site of the present equipment. Plans call for thirty hours of broadcasting per week instead of seven. New features will be full-time course broadcasts through microphones installed in classrooms, more informative talks, more programs giving people of the state a better opportunity to know their University. Most of the important units on the campus will be wired for service, more radio talent of the faculty will be used.....

.....The 30th Anniversary of the Christmas Seal in the United States will be celebrated by the Minnesota Public Health Association at its Annual Dinner at the Nicollet Hotel, Friday, November 13, 1936 at 6:30 P.M..The speakers will be: Dr. Caroline Hedger, Chicago, Ill., Dr. Horto Casparis, Nashville, Tenn., and Miss Frances Brophy, New York City.....

.....The Minnesota Radiological Society will hold its annual meeting at the Nicollet Hotel, Minneapolis, on Saturday, November 14, 1936 at 5:00 P.M. The speakers will be E. A. Boyden, B. R. Kirklin, Walter Popp, E. T. Leddy, K. W. Stenstrom, C. A. Stevenson, Leo G. Rigler and M. B. Hanson.....The Minnesota Pathological Society will meet at the University of Minnesota, Institute of Anatomy, Tuesday, November 17, at 8:00 P.M. The speakers will be Frank J. Heck

and O. P. Jones.....Our guest today, Foster Kennedy, professor of clinical neurology at Cornell University, will address students and faculty of the Medical School at 2 P.M. today in the Medical Science Amphitheater.....

....Johannes K. (Joe) Moen writes from the Rockefeller Institute for Medical Research, that he is now happily married, and is planning on bringing his bride out for inspection next summer.....Our author today does not believe that anyone is interested in his graduation from Minnesota, graduate training in medicine, physiology, pathology, or surgery, that his mother's maiden name was O'Brien, that his brother is a famous young Minnesota artist, or that he will finish his training next year. We appreciate his contribution today, and if you are interested in his name you will find it on page 85.....Adios.