

GENERAL STAFF MEETING
UNIVERSITY HOSPITALS

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SUBACUTE BACTERIAL ENDOCARDITIS

References: Clawson, B.J., Arch. Int. Med. XXXIII, 157-184 (Feb.) 1924 and Bell, Textbook of Pathology (1930) 15

Fox, M., Arch. of Path. 10, 402-406 (Sept)'30 15-16

Winkelman, N.W. and Eckel, J.L., Arch. Neuro. & Psych. 23, 1161-1182 (June) 1930 16

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ANNOUNCEMENTS

Clinical Pathological Conference

will not be held Friday,
April 34d (Good Friday).

Hennepin County: Medical Society
and next Staff meeting
(combined) will be held at Society
headquarters, 20th floor Medical
Arts Bldg., Monday evening,
April 6th. Program: business meet-
ing starting at 7:30 P.M., confer-
ence follows (approximately 1 hour),
then talk - Present trends of
medical education and medical
economics (N.O.Pearce). Probable
contents of bulletin: announcements,
mortality report, University Hospi-
tal calendar - spring quarter -
(schedule of activities which might
interest outside physicians), short
abstract on purpose and technique
of staff meetings, report of mul-
tiple myeloma and bowel obstruction
(amyloid), carcinoma of antrum
with multiple metastases literature,
abstracts, multiple myeloma and
extracerebral metastases of tumors
arising in this region. Everyone
urged to be present. Desirous of
making good showing and acquainting
profession with some of our activi-
ties. Usual bulletin will be
printed and made available for all.
Don't forget the Time, the Place,
and Date. We are counting on you
to be there.

Washington University: have a
monthly feature in Journal of
Missouri State Medical Association
entitled: "Washington University
Clinics." December 1930 issue has
one on Pathological Calcification
by David T. Barr. Title indicates
it was presented before St. Louis
Society of Internal Medicine and
from department of Medicine, Wash-
ington University, Barnes Hospital.
Thirteen references given, illus-
trations shown from textbooks, ori-
ginal articles, and small amount of
own material. Article is semi-
fundamental in nature and has a
distinct clinical trend. Contributions
from Washington University appear
monthly. Reprints are obtained

bound in volumes and sent to various
medical departments and libraries.
Idea is very good and if space could be
used in Minnesota Medicine, it would be
one contribution a month (about once a
year for each man, if every department
cooperated.)

4. Moved: X-ray Department is moved.
New and luxurious quarters
on fifth floor Service building
(X-ray 5) are open for your inspec-
tion after this meeting. Dr. Rigler
requests that everyone come up (we
will stop 10 minutes ahead of time)
so that he may explain new system.
We congratulate the "all-seeing one"
for obtaining his objective. Fol-
lowing the inspection of the quar-
ters, barium highballs and lipiodol
cocktails will be served.
5. Nurses: of State met March 30, 31,
April 1 (short courses).
Cancer demonstrations (3) to acquaint
and stimulate most worthy allies in
cancer campaign. To be followed by
weekly demonstrations to Twin City
groups - nurses and social workers.
6. Consult April issue of Minnesota
Medicine for program of
Minnesota State Medical Association.
Letter to clinicians giving time,
place, subject, chairman, and in-
structions as to patients. Lantern
slide and nursing service in each
room.
7. Ewing: Bull. Amer. Soc. for the
Control of Cancer XIII,
March 1931.
"I believe there should
be 5 or 6 of these cancer institutes
in this country, of the ten million
dollar standard. They should be lo-
cated in Boston; in New York; in
Baltimore; possibly in Washington -
if we might hope for such a thing -
under the Government; in New Orleans;
in San Francisco; in Minneapolis;
and in Chicago. They should be stra-
tegetically placed to be centers of in-
fluence aiding the smaller institu-
tions, the cancer hospitals, and
general hospitals in the control of
this whole work; and I see no plausi-
ble reason why that should not be
accomplished in this country."

8. Non-Protein Nitrogen will be done instead of Blood Urea Nitrogen. Reason more accurate in high values. Normal to 50 (occasionally); 35 (frequently); 25 (usual).

9. Radio:
Program for April, 1931.
April 1st - Health Education (third anniversary); 8th - High blood pressure; 15th - Health in the home; 22nd - Nervous exhaustion; 29th - Cancer of kidney. Station WCCO.
Time: Wednesday, 11:15 A.M.

II. CASE REPORT

CARCINOMA OF BREAST.

The case is that of a white male 73, admitted March 16, discharged 9th day.

INJURY

March 1930 - was injured by being forced against a machine in a steel mill, striking chest immediately over left mammary region. No gross injury apparent at time. Slightly tender, minimal discoloration.

TUMOR

April 1930 - Soreness in left breast. Examination disclosed small, firm, tender mass about size of bean. This increased constantly in size without much change in degree of tenderness.

NIPPLE

January 1931 - Nipple is becoming larger, firmer, and at times a watery discharge exudes.

NODES

February 1931 - swelling and tenderness in left axilla which has progressively increased.

HOSPITAL

March 16, 1931 - Admitted to University Hospitals. No weight loss. Worked up to last 2 days. No cough or expectoration. Appetite good. Sleeps well.

PAST

Operated for hernia on right side

about 12 years ago. Injured left cheek (fracture) 20 years ago. Family history negative. No history of malignancy.

PHYSICAL

Well developed, well nourished, elderly white male, well preserved for stated age, lying quietly in bed. Head: divergent strabisms upper and lateral of right eye. Vision poorer in right than left. Bilateral corneal opacity, most marked on right. Marked dental caries and absence of many teeth. Gingivitis. Throat: Tonsils enlarged and reddened. Throat injected. Nodes: flat, firm, painless enlargement in each supraclavicular fossae. Numerous round, shot like nodes anterior and posterior to left sternocleidomastoid muscle. There are large nodes in left axilla, smaller ones in right. Moderate bilateral inguinal adenopathy. Chest: hypersthenic. Lungs resonant. Breath and voice sounds normal. Occasional moist, crackling rales in bases, especially right. Heart: normal. Abdomen: scar 15 cm. in length in inguinal region. No tenderness, masses or rigidity. Genitalia: left testicle about 1-3/4 the size of right. Feels firm, irregular in outline, opaque to light. Rectal: prostate normal. Extremities: no edema. Amputation of right forefinger at end of first phalanx. Reflexes: normal. B.P. 130/90. Pulse 80.

SURGICAL:

Hard, tumor mass in left breast, attached to skin with metastases to axilla and supraclavicular nodes.

LABORATORY

Urine: negative. Hb. 85%. WBCs 8,500. P 71, L 29, Group IV.

OPERATION

3-19-31 Mastectomy and removal of supraclavicular node for biopsy.

PATHOLOGICAL

Specimen consists of an elliptical piece of skin and nipple. Tissue measures 9 x 7 x 2-1/2 cm. Nipple is warty, brown and on manipulation is friable and granular. It protrudes in a cauliflower fashion (1.5 cm. in diameter). There is a slight "pig-skin" appearance around nipple, and slight

retraction of the base. Just beneath the nipple is a well defined, oval, hard tumor about 2-1/2 cm. in diameter. The mass cuts with increased resistance, has a concave surface, shows numerous yellowish points, and is not encapsulated (fuses with surrounding tissue).

MICROSCOPIC

Specimen #1 shows epithelial invasion of dense connective tissue and fat by cords of poorly differentiated cells. Tumor cells are deeply and irregularly stained, and vary in size and shape. Hyperchromatic nuclei and mitosis are seen. In general the picture is rather cellular. Specimen #2 consists of a small shotty node surrounded by fat and fibrous tissue. Node is 7 mm. in diameter and is hard. Sections show extensive infiltration with epithelial bands almost completely replacing lymphoid element. The capsule is broken down and infiltration is seen in the surrounding tissue. The tumor is made up of poorly differentiated types of cells and strands and slight attempt at glandular arrangement.

DIAGNOSIS

1. Scirrhus carcinoma
2. Metastases to supraclavicular and axillary nodes.

RADIATION

Following operation was given 1,966 mc. hours and advised to return for further treatment. Left hospital in good condition.

COMMENT

The history states that the lesion was preceded by trauma, and the tumor was discovered later (patient). Apparently delay was one year. Gross and microscopic appearance of tumor did not in any way differ from corresponding lesion in female breast (see Neal). There was pathological involvement of supraclavicular nodes and clinical involvement of axillary group. This precludes possibility of radical surg. treatment and radiation is therapy of choice. No delay after consulting physician who referred patient immediately. Delay to be charged to patient (education?). No record of x-ray examination of chest? Involvement may be present even though symptoms silent? Problem presented by single hard lump in male breast same as female. Because size and non-function of breast wide excision should be done (biopsy). Other findings: Wassermann negative. Lesion in testicle probably varicocele.

III. ABSTRACTS Diseases of Breast: Age and Sex factors with special reference to disease in male.

References:

1. Bell, E. T., Text Book of Pathology, Lea and Febiges, 1930.
2. Harrington, S. W., Carcinoma of the breast; J.A.M.A. 92, 208-213 (Jan.10) 1929.
3. Neal, M. P. and Simpson, B. T., Diseases of the male breast. Jour. Mo. State Med. Assn. 27, 565-570 (Dec.) 1930.

1. Classification (Minnesota)

A. Congenital Anomalies

- | | | |
|------------|---------------|----------------|
| 1. Amastia | 2. Polymastia | 3. Polythelia. |
|------------|---------------|----------------|

B. Acquired Anomalies

- | | | |
|---------------------------|-------------------------|------------------------|
| 1. Infantile hypertrophy. | 2. Virginal hypertrophy | 3. Gynecomastia (male) |
|---------------------------|-------------------------|------------------------|

C. Mastitis

- | | | |
|------------------------|----------------------------|--------------------|
| 1. Mastitis neonatorum | 2. Mastitis adolescentium. | 3. Acute mastitis. |
|------------------------|----------------------------|--------------------|

D. Cysts

1. Dermoid and sebaceous.
2. Retention cysts (galactocele)
3. Cystic disease
 - (a) single
 - (b) small multiple
 - (c) adenomatous

E. Tumors

1. Simple benign, e.g. lipoma.
2. Sarcoma (usual varieties)
3. Fibroadenoma (pericanalicular and intracanalicular)
4. Carcinoma (a) scirrhous (b) medullary (c) adeno (relatively benign)
 - (d) gelatinous
 - (e) Paget's
 - (f) en cuirasse (gross typing)

(II) Material

673 tumors of breast (Bell)

	Females		Males	
	Under 25 yrs.	Over 25 yrs.	Under 25 yrs.	Over 25 yrs.
Carcinoma	0	277	0	3
Fibroadenoma	45	94	1	0
Cystic disease	4	144	0	1
Chronic fibrous mastitis	9	45	5	6
Chronic exudative mastitis	1	18	0	0
Mastitis adolescentium	0	0	2	0
Lipoma	0	8	0	0
Sarcoma	0	5	0	0
Paget's Disease	0	2	0	0
Tuberculosis	0	2	0	0
Hemangio-endothelioma	1	0	0	0
Totals	60	595	8	10

Comment: Males 18 (2.67%), females 655 (97.33%), total 673. Chronic fibrous mastitis 11 (61.1%); Carcinoma 3 (16.6%); Mastitis adolescentium 2 (11.1%); Cystic disease 1 (5.5%); fibroadenoma 1 (5.5%). Male series too small for percentages, approximately benign 80%, malignant 20% (See Neal)

(III) Age Factor"Radical Amputation (1910 to 1923) Mayo"

Age, Years	With Glandular Involvement		Without Glandular Involvement		Total	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
15-19	--	--	1	0.15	1	0.04
20-24	2	0.14	1	0.15	3	0.14
25-29	18	1.34	10	1.34	28	1.34
30-34	55	4.10	50	6.73	105	5.04
35-39	142	10.58	57	7.68	199	9.53
40-44	223	16.62	111	14.96	334	15.05
45-49	266	19.83	132	17.78	398	18.10
50-54	212	15.80	125	16.84	337	15.17
55-59	169	12.60	105	14.15	274	12.15
60-64	143	10.66	60	8.08	203	9.74
65-69	62	4.62	40	5.39	102	4.89
70-74	32	2.38	36	4.85	68	3.25
75-79	15	1.11	11	1.48	26	1.24
80-84	2	0.14	3	0.40	5	0.24
Total	1341	64.37	742	36.62	2083	---

The age of the patient has little if any bearing on the presence or absence of lymphatic involvement. In this series the youngest patient was aged 17 and the oldest 84. The greatest age incidence in half decades occurred between 45 and 49 (20 per cent). Fifty-one per cent of the patients were between the ages of 17 and 50, and 49 per cent were between 50 and 84. Sixty-five per cent of the patients were between the ages of 40 and 59. This age incidence suggests that all tumors of the breast occurring after puberty should be regarded as possibly malignant.

(IV) Sex Factor (Neal and Simpson.)

Material: 5,000 breast lesions in 46,744 specimens submitted to State Institute for study of malignant disease, Buffalo, N. Y. (1900 to 1925) and 314 breast specimens in 7,686 examinations in Department of Pathology of University of Missouri School of Medicine, Columbia, August 1, 1922 to March 22, 1930. In order to obtain uniform terminology, regrouping and classification of specimens has been made entirely by one of us (M.P.N.) who also checked, studied and restudied all male breast specimens.

Table I. Breast Hypertrophies, Inflammations, Cysts and Unclassified Cases Encountered in 5,314 Breast Specimens.

Diagnosis:	Number of Cases			Proportion Male to Female	On the Basis of 152 Male Breasts Examined	
	Total	Male	Female		Per Cent of Male Breasts	Group Per Cent
Hypertrophy	5	0	5	0:5	0.00	0.00
Mastitis:						
Acute (abscess, etc)	59	4	55	1:13.75	2.63	
Chronic	867	46	821	1:17.84	30.26	
Tuberculous	44	0	44	0:44	0.00	
Borderline, Chronic, sus- picious of malignancy	13	1	12	1:12	0.65	
Total Mastitis	983	51	932	1:18.27	33.55	33.55
Keloid	2	0	2	0:2	0.00	0.00
Cysts:						
Simple epithelial	43	1	42	1:42	0.65	
Papillomatous	20	0	20	0:20	0.00	
Galactocele	3	0	3	0:3	0.00	
Sebaceous	9	1	8	1:8	0.65	
Epidermoid	12	1	11	1:11	0.65	
Total Cysts	87	3	84	1:28	1.97	1.97
Paget's disease	12	0	12	0:12	0.00	0.00
Ungrouped	173	3	140	1:46.66	1.97	1.97

Table 2. Benign Tumors of Breast From the Group of 5,314 Breasts

Diagnosis	Number of Cases			Proportion Male to Female	On the Basis of 152 Male Breasts Exam. Per Cent of Group Male Breasts Per Cent	
	Total	Male	Female			
Benign tumors:						
Lipoma	28	6	22	1:3.66	3.94	
Fibroma	33	6	27	1:4.50	3.94	
Leiomyoma	3	0	3	0:3	0.00	
Adenoma and fibro-adenoma	1140	45	1095	1:24.33	29.60	
Fibro-adenoma cysticum	230	0	230	0:230	0.00	
Fibro-adenoma intracanalicular and pericanalicular	154	0	154	0:154	0.00	
Fibro-adenoma in supernumerary axillary breast	1	0	1	0:1	0.00	
Lymphangioma	2	1	1	1:1	0.65	
Hemangioma cavernosum	1	0	1	0:1	0.00	
Pigmented nevus	17	0	17	0:17	0.00	
Papilloma (skin)	18	1	17	1:17	0.65	
Adenoma sebaceum	1	1	0	1:0	0.65	
Total benign tumors	1628	60	1568	1:26.13	39.47	39.47

Table 3. Malignant Tumors of Breasts Among 5,314 Recorded Specimens

Malignant tumors - A.

Sarcoma:

Fibrosarcoma	22	4	18	1:4.50	2.63	
Lymphoblastic and lymphocytic	11	1	10	1:10	0.65	
Melanosarcoma	2	0	2	0:2	0.00	
Myosarcoma	1	1	0	0:2	0.00	
Liposarcoma	1	1	0	1:0	0.65	
Chondromyxosarcoma	1	1	0	1:0	0.65	
Total sarcomata	39	7	32	1:4.57	4.60	4.60

B. Carcinoma: 1. Skin type:

Melanocarcinoma	1	1	0	1:0	0.65	
Nevus cell carcinoma	2	1	1	1:1	0.65	
Basal cell carcinoma	11	1	10	1:10	0.65	
Squamous cell carcinoma	14	0	14	0:14	0.00	
Total skin carcinomata	28	3	25	1:8.33	1.97	1.97

2. Duct and glandular

cell carcinoma	2355	25	2330	1:93.2	16.44	16.44
C. Endotheliomata	2	0	2	0:2	0.00	0.00
Total malignant tumors	2424	35	2389	1:68.25	---	23.02

Comment: All types of nevus cell and melanotic tumors should be called malignant melanoma?

(V) Origin

Why do Breast diseases occur so uncommonly in males? Probably due to arrest in anatomical development at or before age of puberty. Comment:

In mice with high incidence of carcinoma of breast (in strain) castration of very young females results in atrophic breasts that do not become carcinomatous, indicating developmental factor is greater than inheritance of susceptibility (spontaneous tumors). No difference between male and female breasts between birth and puberty. Atrophy complete in male about 30th year? Both possess same morphological

elements but do not differentiate until puberty. Female breast is in constant state of flux. Some have likened it to thyroid gland in this respect. Stimuli come from pregnancy, involutinal atrophy following cessation of lactation, menopause, menstruation, infections incident to pregnancy, lactation and erotic changes (sex).

Types: (1) (Neal) Mammary hypertrophy, gynecomastia, more an abnormality of morphology or physiologic function than disease. No surgical specimens. (2) Acute mastitis: generally rare. Trauma plays important role. May develop as descending infection complicating acute infectious diseases: pyemia, etc. Pseudo-cysts may form. Four cases showed tissue necrosis (acute suppurative inflammation). (3) Chronic mastitis (Bell), common disease of breast of young males usually due to trauma. Mass develops slowly to stationery size and persists indefinitely. Palpation reveals diffuse indurated non-adherent mass in one breast. Sometimes little pain. May be confused with gynecomastia. Microscopically shows dense fibrous tissue with no growth of glands. Chronic mastitis may follow acute mastitis or originate as localized sclerosing process, (diffuse or focal, single or multiple). Cysts rare. Often difficult to differentiate chronic mastitis from cystadenoma and superimposed chronic inflammation. (4) (Neal) Tuberculous mastitis. 12 reported male cases (1926). None in present series. 44 in 5,132 females. (5) Keloid. Males none, two females. (6) Paget's disease: None in males, 12 in females. (7) Cysts. Infrequent. Only 3 cysts found (males), only one in breast proper. Other two were of skin origin. (8) Ungrouped cases: 173. Sex not stated in many. 51 males mastitis and 3 cases of cysts. (54) 35.52% of diseases of male breast (inflammatory), about one-third. (9) Benign Tumors. (10) Lipoma: well circumscribed masses similar to same tumor elsewhere. Six males. One showed typical fat necrosis. (11) Fibroma: pure fibromas not common. Of six in males, all showed scant remnant of epithelial tissue. (Soft and hard). All well encapsulated. Probably should be classified as adenofibromata. (12) Adenoma and fibroadenoma: (forty-five). Karsner says they are distinctly unusual in male. Neal more frequent. Pure adenomas rare even in females. (Single or multiple, grow slowly, circumscribed, generally well encapsulated, firm or soft, freely moveable.) Group fuses with fibroadenoma and chronic mastitis. Probable that many cases diagnosed as tumors of this type, are in fact instances of chronic inflammatory change (emphasizing the statement that chronic mastitis is the most frequent tumor of the male breast. (13) Fibroadenoma cysticum. Fibroadenoma with cystic change. Nearly always multiple, small, although may be large. None in males emphasizing duct factor in development. (14) Intracanalicular pericanalicular fibroma: both types must be rare for neither form was found. (3% females). (15) Lymphangioma: one in male, another in female. Very uncommon. (16) Papilloma (skin) and adenoma sebaceum: one each in males. Really not breast tumors and do not differ from lesions elsewhere. 60 benign tumors, 39.47%. Outstanding features are high percentage of adenoma and fibroadenoma group? Absence of mixed types in fibroadenoma. Absence of cystic changes. (about one-third.) (17) Malignant Tumors. (18) Sarcoma: rare in male. Only 34 examples recorded in 1907. Spindle cell type usually recorded. Seven males, (4 spindle), one small round cell, one liposarcoma and one chondromyxosarcoma. (30% of malignant male breast tumors.) (19) Carcinoma: (a) skin origin (b) breast, proper origin. 55 malignant tumors of epithelial origin, 3 arose from skin (basal) and nevus cell carcinoma (malignant melanoma?). (c) Duct and glandular cell type carcinoma: from cells lining duct or acini (25 male) (16.44%) All of these conform to those seen in the female breast. (3) Endothelioma: typical benign tumors of vessel origin, the angiomata are to be found in the breast, so is their atypical malignant prototype the endotheliomata. Two females; none in males. One Minnesota.

Summary: 1. of 54,430 specimens examined, 5,314 breast lesions were encountered.
2. One hundred and fifty male breasts were submitted for examination, group comprising 2.86% of total number of breasts.
3. Fifty-one (33.55%) mastitis.

4. Three, 1.97%, cysts.
5. Fifty four (35.53%) inflammatory.
6. Sixty (39.47%) benign tumors (65.15% of all male breast tumors).
7. Thirty-five (23.02%) malignant tumors (36.84% of male neoplasms.)

Sarcoma 7, 4.6%, carcinoma (of skin origin) 3, 1.97%. Carcinoma of duct or acinus origin 25 (16.44%). 28 cases of carcinoma represent 80% of the male malignancies.

8. Ninety five (sum of 4 plus 5) or 62.5% true neoplasms.
9. Three (1.97%) ungrouped cases.

Conclusions:

1. Diseases of the breast may be classified as anomalies (congenital and acquired) mastitis, cysts, tumors (benign and malignant).
 2. Malignant tumors under 25 are very rare (0-673 Bell) (4-2083, Mayo).
 3. The age does not have much bearing on involvement of nodes (2/3 with, 1/3 without).
 4. Age limits reported 17-84. Greatest half decade incidence (45-49) 20%.
 5. Malignancy rather equally divided 17-50 (33 years), 51%; 50-84 (34 years) 49%. Eliminating few under 25 years gives slightly increased incidence under 50.
- Note: Constant threat at any age (25-84).
6. Incidence of male disease in routine pathological material (2.86% Buffalo and Columbia, 2.67% Minnesota) Approx. 2-3%.
 7. Disease occurs so infrequently in males because of failure of development.
 8. This factor is greater than inheritance in cancer mice (early castration and breast atrophy).
 9. Male disease occurred as follows: (152 cases Neal) mastitis (33.55%) cysts (1.97%) benign tumors (39.47%) malignant tumors (23.02%) (18 cases Bell) benign 80%, malignant 20% (approx.).
 10. Commonest benign condition in male breast (Minnesota) chronic fibrous mastitis; (Neal) mastitis and fibroadenoma, (fibroma).
 11. The report of so many fibroadenomata and fibromata is unusual (may be confused with mastitis).
 12. The commonest malignant tumor is carcinoma.
 13. Male breast tumors (malignant) do not differ in any way from female.

IV. CASE REPORT:

1. OLD HEALED VALVE DEFECT. Path. Henrikson.
2. SUBACUTE BACTERIAL ENDOCARDITIS.

The case is that of a white adult female 61 years old, admitted to University Hospitals 8-28-30 and died 3-13-31 (196 days).

No Sore Throat

PAST HISTORY

Measles, mumps, pertusius, chicken pos, in childhood. Never had sore throats.

CARCINOMA?

1903 - Repair of lacerated cervix following delivery. Physician told her she had carcinoma of cervix at time.

PREGNANCIES

1905 - Delivered last of 3 daughters. All living and well.

MENOPAUSE

1910 - Last menstrual period (age 41). No bleeding since.

CARDIAC

1920 - Developed "pounding of heart". Made her nervous. Consulted physician who gave her digitalis. Has been taking 8-14 gtt. ever since. Occasional sharp pain over precordium lasting 1-2 minutes and radiating to shoulder. Dental plate

to replace upper teeth.

RHEUMATISM

1928 - Developed "rheumatism", in left hip.

BLADDER?

7-4-30 - Family re-union. Overworked. Very tired and weak that evening and developed marked frequency, urgency and dysuria.

BED

7-31-30. - Weakness and fatigue had become so pronounced that she had to remain in bed. Consulted physician who told her she had bladder trouble - pus and bacteria in urine. Powders prescribed gave no relief. Anorexia developed. Began to lose weight.

SWEATS

8-15-30 - Woke up in cold sweat. Bedding very wet. No chills. Thereafter sweating was more marked and was present whenever she fell asleep. Felt flushed in afternoons and neighbors told her she looked as if she had fever.

HOSPITAL

8-29-30 - Entered University Hospitals. Had lost 26# since July 4th. Physical examination: Poorly nourished, anemic looking female with loose, dry skin, too weak to sit up. Teeth: Upper plate, lowers poor. Tonsils: atrophic. Lungs: Few transient rales and increased whispered voice at left apex. One spot bronchio-vesicular breathing in midchest right posteriorly. Bronchial breathing, right apex.

HEART

Enlarged. Apex beat in anterior axillary line in 5th interspace. Thrill over mitral area. Rate and rhythm regular. Harsh crescendo systolic murmur at apex transmitted to left. Hollow log sound over aortic area. Diastolic at left base. B.P. 120/78. P 92. Abdomen: Liver down 2 fingers. Tenderness generalized but more marked over bladder.

KIDNEY?

Tenderness on left side to Murphy percussion and on deep palpation. Extremities: slight pitting edema of both legs. Tenderness on pressure over both hips. Pelvic: small short cervix with stellate lacerations. Uterus small, hard, round and mobile. First degree retroversion. Some rough tissue on either side of vault. Rectal: negative. Impressions: Cardiac decompensation. 2. Double mitral with possible aortic involvement. 3. Possible endocarditis. 4. Possible cystitis and pyelitis. 5. Possible malignancy with metastasis to hip. 6. Possible old tuberculosis right apex. (Good!)

LABORATORY

Hb. 38%. WBCs 12,500, P 89, L 10, M 1. P.SP. 50 plus 15 is 65% 2 hours. B.U.N. 16.8.

BLOOD

Urine: 105 specimens examined. RBCs and WBCs in practically every specimen. Albumin varied from 0-4 plus, becoming more pronounced towards the last. Trace of sugar found twice. Specific gravity varied from 1005-1021. Few hyaline and granular casts found in only 5 specimens. Stools negative.

X-RAY

8-29-30 - 6' chest x-ray: Measurements transverse thoracic 25.3, m.l. 9.3, m.r. 5.5, total 14.5, longitudinal 16.5, arch 3.3. Enlargement and globular shape suggests aortic or hypertension type but not entirely characteristic.

K.U.B. Unusually large number of phleboliths in pelvis. Moderate degree of chronic hypertrophic arthritis.

8-31-30 - Urology consultation: Advise cystoscopy to exclude renal neoplasm, renal tuberculosis, polycystic kidney and pyelonephritis.

UROLOGY

9-2-30 - Cystoscopy and pyelogram: Bladder normal. Slight bilateral hydronephrosis and marked nephroptosis on left with kinking of ureter. Mild left renal infection. Temperature rises from normal in A.M. to 100.6 to 101.6 P.M. daily.

CHECK

9-3-30 - Sodium citrate gr. q.i.d. begun. No complaints. Heart: Diffuse precordial impulses. Accentuation of first tone at apex. 2nd tone inaudible. Loud, rough systolic at apex. Low pitched diastolic rumble along left border of sternum. Systolic thrill at apex but not at base. Rate 120. B.P. 100/60. P 2 greater than A 2. No edema. Abdomen tender. Liver palpable. Impressions: 1. Pyelonephritis or pyelocystitis. 2. Nephroptosis. 3. Double mitral lesion. 4. Aortic involvement?. Wassermann negative. Eyegrounds: Medial side of discs indistinct. Moderate arterial changes. No exudate or hemorrhages.

9-7-30 - Sod. citrate discontinued. Sod. phosphate gr. xx and urotropin gr. x q.i.d. Mineral oil oz. 1 daily.

LEUCORRHOEA

9-8-30 - Gynecological consultation: Pelvic floor competent. Corpus in 3rd degree retroversion, fixed. Cervix nearly absent on palpation and inspection. Muco-purulent discharge from os. Advise: hot douches. Boric douches begun b.i.d.

DISAGREE

9-11-30 - Catheterized specimen sent to State Board of Health for culture and search for B. coli. Staff note: Heart enlarged. Loud systolic at apex. P 2 not accentuated to that expected on pure mitral basis. Do not feel this is mitral type of heart. Functional murmur or myocarditis of unknown origin must be considered. Patient markedly improved but still runs fever.

NO

9-13-30 - Surgery consultation: (urology) for treatment of nephroptosis and hydronephrosis. Answer: Do not agree with diagnosis of hydronephrosis. Absence of kidney tenderness and any evidence of cystitis in previous cystoscopy argue against kidneys as focus. Suggest forcing of fluids and urinary antiseptics. Suggest seeking elsewhere for focus of infection. If it cannot be found, will re-cystoscope. Fluid intake and urine output for the past 10 days:

Intake	3700	800	3300	2900	2000	3000	1600	2200	1300	2100
Urine	1050	3000	2400	2200	400	700	800	700	700	1200

Fever continuing between 98.6-102 with afternoon elevation. Vaginal discharge stopped. Boric douches discontinued.

DIARRHOEA

9-15-30 - Complains of diarrhea and abdominal cramps. Sod. phosphate and urotropin stopped. Sod. bicarb. gr. xxx t.i.d. begun.

PAIN

9-16-30 - Pain along lower spine. Pyramidon gr. v.t.i.d.

9-20-30 - Pain in lower back. Hb. 60%. RBCs 3,940,000, WBCs 7,150.

B. COLI

9-22-30 - B. coli communis found in urine sent to State Board 9-11-30.

9-23-30 - No complaints except some nausea today. T 98-98.6, P 100.

9-25-30 - 4 glasses fruit juices daily. Comfortable.

9-30-30 - Sodium bicarbonate and fruit juices discontinued. Amm. chloride gr. xxx t.i.d. begun. No complaints.

DISCHARGE

10-1-30 - Considerable foul vaginal discharge.

10-2-30 - Large emesis after medication. Gynecological consultation: Pelvic floor lacerated. Uterus 1-2° retroverted. Normal size but not definitely outlined. Mucopurulent cervical discharge with normal snile atrophy of cervix. Vaginal smears taken (negative). Advised saline douches. Hot saline douches begun t.i.d. Tamp. has been below 100 for a week.

MITRAL

10-5-30 - Esophagogram: Shows displacement of esophagus posteriorly from enlarged left auricle.

SEPTIC

10-9-30 - Wassermann negative. Temp. septic type again the past week. No complaints.

10-12-30 - Fruit juices q.i.d. begun again. Complains of being weak and dizzy. Crying. Sees black spots before eyes. Was blind for a few minutes. Feels like she is falling in ditch. Had severe headache all morning. Amm. chloride discontinued.

NEGATIVE

10-13-30 - No complaints. Vena puncture for *B. melitensis* (test for typhoid, typhemia and undulant fever reported negative.)

10-14-30 - Hb. 60%. RBCs 3,820,000. WBCs 9,200. Reticulocytes 3%.

10-15-30 - Staff note: From history and physical findings mitral insufficiency on relative basis due to diffuse myocarditis? without any particular valvular involvement is supposition made. Urinary findings explained on *B. coli* basis chronic cystitis. Electrocardiogram: 1. Auricular fibrillation. 2. Sinus arrhythmia. 3. P-R interval varies. Blood culture of 10-13-30 negative for bacteria.

PETECHIA

10-17-30 - Intern's note: Patient states she is getting progressively weaker. Not able to sit up in chair as long as previously. Has marked palpitation and attacks of sharp pain on left side in region of the lower ribs both anteriorly and posteriorly. Gets "more gas on stomach" after eating. Physical examination: T 101.2. P 110. Numerous extra systoles. Loud rough systolic at apex. Short, snappy first sound, accentuated P2. Skin: warm, rough, dry and very pale. There are two recent petechial hemorrhages in the right conjunctiva behind the lower lid. None present on previous examination. Spleen: palpable, not tender. Suggestion made during staff rounds that this is subacute bacterial endocarditis.

10-18-30 - Douches discontinued.

BLOOD CULTURE

10-20-30 - Eye consultation: Same findings as previously. Second blood culture negative.

10-24-30 - Saline d. he once daily. No complaints.

10-29-30 - Dizziness at times. Very weak.

PETECHIAL

11-8-30 - Daily observation reveals few scattered petechiae over abdomen and chest. Sleeps well. Fair appetite. Temperature still septic in type ranging from 98 to 101.4 with afternoon elevation. Hb. 66%. RBCs 4,380,000. Retic. 1.2. Fruit juices discontinued. Amm. chloride gr. xxx b.i.d. begun.

11-12-30 - Douches discontinued. Complains of headache and nausea.

NEGATIVE CULTURE

11-17-30 - Third Blood culture negative. Hb. 71%. R 4,220,000. Retic. 1.5. P. 122. Patient thought she caught cold yesterday. Lungs negative. Heart as before. B.P. 100/58. Numerous extrasystoles. Gradually going down hill. Weight 95#.

11-20-30 - Amm. Chloride discontinued. Uncomfortable. Does not rest well.

SORE THROAT

11-22-30 - No new petechiae. Sore throat relieved by gargle. Amm. chloride discontinued. Fruit juices q.i.d. begun. P 160 once yesterday.

POSITIVE CULTURE

11-30-30 - No complaints. 4th blood culture showed staphylococci (contamination?).

BETTER?

12-3-30 - Staff note: No signs of focal nephritis? No positive blood culture. There is improving anemia. No caffee au lait color of skin. All this contradicts diagnosis of subacute bacterial endocarditis. Findings could very well be explained by B. coli pyelitis. Milk and cream between meals.

SPLEEN

12-5-30 - Mass in upper left quadrant. Cuff test gives petechiae on both arms. Culture of catheterized urine showed B. coli again.

12-12-30 - Hb. 70%. RBcs 4,010,000, Ret. 2%. Sod. bicarb. gr. xv t.i.d. for 5 days. High caloric diet begun.

12-15-30 - Caprokol (Hexylresorcinol?) gr. iii t.i.d. 5 days.

SURGERY

12-20-30 - Surgery consultation: removal of left kidney? Answer: Find no indications that symptoms are due to urinary infections in spite of positive urine cultures. Mass in left flank is almost certainly spleen. Suggest: 1. Water test. 2. P.S.P. 3. Barium enema to determine location of tumor (spleen or kidney?) Will re-cystoscope if desired. Unable to sit up because of weakness.

12-24-30 - X-ray: Considerable redundancy of colon. No evidence of intrinsic pathology.

PYELOGRAM

12-27-30 - Cystoscopy: Bladder and urethra normal. Indigo carmine delayed but good concentration. Pyelogram: Bilateral hydronephrosis of mild degree with slight secondary infection. Impossible to conceive that lesion in these kidneys can be responsible for clinical picture which this patient presents. Source of fever and disability should be sought elsewhere. Suggest trial course of neoparsphenamine.

TUBERCULOSIS

12-29-30 - Guinea pig inoculation of urine negative for tuberculosis. Elixir .Q.S. drams i, t.i.d. a.c.

12-31-30 - Ordered up 5 minutes b.i.d. increasing duration daily. Feels good but weak.

SPLEEN

1-9-31 - X-ray of G.I. Tract: No evidence of intrinsic pathology but stomach shows marked displacement by splenic enlargement. B.P. 100/60. Temperature practically normal for 3 weeks. Beginning to fibrillate and have precordial pain. Became regular on digitalis 2 cc. every 6 hours, then 1 cc. t.i.d. Patient very worried about her condition.

1-11-31 - Pain in side and chest. Given aspirin, pyramidon, amyl nitrate, ephalant, codeine and euphyllin during the day.

PLEURISY

1-12-31 - X-ray of chest: Very marked diaphragmatic pleurisy, left, with some congestion of left lung. Euphylline gr. iss t.i.d. Severe pain in left side. Narrow strip of dullness with rales over left base. WBCs 11,150. Possibility of splenic infarct or para-splenitis.

1-14-31 - Caprokol discontinued. Enema and cascara or mineral oil given occasionally.

POSITIVE BLOOD

1-21-31 - Pain and friction rub over spleen and lower chest. 5th blood culture shows short chain streptococci. Hb. 58%, WBCs 9,400. Very tired and weak.

1-30-31 - Pale and weak. Sleeps much of time. No complaints of pain in chest now. Temperature practically normal the past week. Diagnosis: Subacute bacterial endocarditis. B.P. 130/60. Strychnine drams 1 t.i.d. a.c. (?) 3 days. Fairly comfortable.

2-3-31 - Tr. digitalis 2 cc. t.i.d. Hot water douches daily. Drowsy and weak.

2-11-31 - Elix. I.Q.S. discontinued.

2-18-31 - Very weak. Constant weight loss. Dil. HCl drams 1 with meals t.i.d. Abdominal distress and nausea.

2-21-31 - Mass in left upper quadrant tender, hard and irregular. T normal. No petechia. Eats very little. Mineral oil discontinued.

2-23-31 - HCl discontinued.

BLEEDING

3-3-31 - Getting no medication now. Weak and nauseated. Numerous petechia over elbows, shoulder and areas of compression. Takes no nourishment and little fluid.

3-5-31 - Patient says she does not want to be touched. Cod. sul. gr. ss (H) Hands and knees covered with purpuric areas.

PLATELETS

3-6-31 - Tr. digitalis 2 cc. b.i.d. Responds poorly. Purpuric areas more profuse. Platelet count 101,000.

3-7-31 - Patient says she feels perfectly comfortable.

P.S.P.

3-8-31 - P.S.P. 1st, 30 cc., less than 5%, 2nd, 10 cc. less than 5%. 1,000 cc. 10% normal saline intravenously. Responds poorly.

3-9-31 - Rehberg test: 2.3 creatinine clearance. Tr. digitalis 1 cc. q.i.d. Listless.

B.U.N. 43.9. Creatinine 1.8. Hb. 35%, RBCs 2,640,000. WBCs 21,250.

3-10-31 - Nauseated. Cod. sulph. gr. iss for pain in joints.

3-12-31 - Accurate diagnosis still reserved, but subacute bacterial endocarditis with infected hydronephrosis is most likely. Pulse slow but irregular. Quiet and unresponsive. Involuntary. Responds when spoken to. Complains of considerable pain in joints on motion. Cod. sulph. gr. iss (H). 10:30 P.M.-Crying and still. 11:10 P.M. - Breathing more rapid and labored. Hands cyanotic and cold. 11:15 P.M.-Unable to feel pulse. 11:30 P.M.-Expired.

AUTOPSY

The body is that of a white adult female 170 cm. in length, weighing approximately 90#. Well developed but poorly nourished. Hypostasis is purplish and posterior. Rigor is present. There is edema extending slightly above the knees. Both hands are edematous, especially the left. No cyanosis or jaundice. The pupils are 3 mm. in diameter and equal. There are purplish hemorrhagic areas varying in size from 4 cm. to 1/2 cm in diameter over the nose, abdomen, and lower chest, the back, the arms and hands, forearms (extending about 2" above the elbows), the thighs, legs and feet. The skin over the abdomen is dry and scaly and very wrinkled.

On opening the PERITONEAL CAVITY the stomach was found to be lying below and to the left of the umbilicus. The APPENDIX goes upward and medial to the cecum, and is about 3 cm. long. On opening into the thorax the lungs were light, and pale with very little sign of anthracosis. The PERICARDIAL SAC was seen to contain a fair amount of fluid. No fluid in the pleural cavities. On opening the pericardial sac about 60 cc. clear, strawcolored fluid was found.

The left ventricle is seen to be distinctly enlarged. The lateral surface of the right ventricle is covered by a light yellowish, semitranslucent, soft, edematous appearing tissue along the course of the right coronary artery and its branches. The HEART weighs 320 grams. The wall of the right ventricle is flabby. The tricuspid valve is normal. The posterior leaflet of the mitral valve contains an irregular almond shaped thickening 3 x 2 x 1 cm. portions of which appear calcified. The posterior surface is very irregular due to capillary like outgrowths. The anterior leaflet is about 3 mm. thick and is covered by calcified plaques overlaid by translucent papillary projections 1-2 mm. in diameter. Some of the chords tendinous contained similar small tumor like projections. The aortic and pulmonary valves appear normal. The coronary arteries are free, very tortuous and show a moderate degree of sclerosis. The wall of the left ventricle averages about 1.5 cm. in thickness. There is a half dollar size raised, white wrinkled patch above the anterior leaflet of the mitral valve in the left auricle. The root of the aorta shows surprisingly slight signs of sclerosis.

The LEFT LUNG weighs 250 grams. the RIGHT 300 grams. They are soft, and fluffy and crepitate on palpation. On cross section there are a few small elevated patches, especially in the left lung.

The SPLEEN weighs 225 grams. The surface is adherent to the liver. A little below the central portion there is a tumor mass measuring 4 x 3 cm. on the external surface. It is elevated about 4 mm. above the surface of the spleen. The spleen strips away from the liver fairly easily and on cross section trabeculations are prominent. Tumor mass is well defined and extends in a triangular fashion with the apex inward 3 cm. from the surface. There is another similar tumor 1 cm. in diameter along the posterior margin. The anterior surface of the liver is streaked with greyish white areas beneath the costal margin. It extends 2 fingers beneath the costal margin in the midclavicular line, 4 cm. below the xiphoid midline. The surfaces made by cutting show dappling made by fine, brownish areas 1/2 mm. in diameter. The GALLBLADDER is slightly thickened and contains thick, dark bile and one cholesteral stone 2 x 1 cm. in diameter. The GASTRO-INTESTINAL TRACT is normal except for small hemorrhagic areas in the wall of the small intestine.

The PANCREAS weighs 75 grams and appears normal. The LEFT KIDNEY weighs 175 grams, the RIGHT 160. On cross section they appear firm and the capsules strip easily. There are tiny pin-point hem-areas peppered over surfaces giving a flea-bitten appearance. The ADRENALS are normal. The AORTA shows only slight sclerosis in the abdominal portion. Both OVARIES are cystic. The UTERUS is twice normal size and contains intramural fibroids in the fundus, anterior and posterior walls which shell out easily. One in the fundus the size of a large walnut. The others vary in size from pea to hazel nut. There is a hazel nut size phlebolith in the right broad ligament, and one in the left broad ligament. The cervical portion does not project into the vagina and shows purplish areas on the anterior lip.

The organs of the HEAD and NECK are not examined.

DIAGNOSIS:

1. Old healed valve defect (mitral)
2. Mitral insufficiency and stenosis.
3. Supraposed subacute mitral endocarditis (bacterial)
4. Hypertrophy of the left auricle and slightly of the right and left ventricles.
5. Moderate coronary sclerosis.
6. Serosus atrophy of the heart.

7. Chronic perihepatitis.
8. Infarcts of spleen (anemia).
9. Early terminal bronchopneumonia.
10. Cloudy swelling of the liver, kidneys and spleen.
11. Intramural uterine fibroids.
12. Cystic oophoritis.
13. Chronic cervicitis.
14. Phleboliths of uterine plexus.
15. Purpuric areas in epidermis and intestinal wall.
16. Slight pericardial effusion.
17. Edema of legs and hands.
18. Emaciation.
19. Gastropnoxis.
20. Chronic passive congestion of liver.
21. Old mural endocarditis (left auricle).
22. Glomerulonephritis (Kidney shows on section diffuse and embolic glomerulonephritis).

V. ABSTRACTS: Subacute Bacterial Endocarditis. Abstr. Henrikson & O'Brien

- A. Ref. Clauson, B. J., Arch. Int. Med. XXXIII, 157-184. (Feb.) 1924 and Bell -
Text Book of Pathology (1930).

1. Material: 72+ hearts.
2. Clinical: Insidious onset males 20 to 45 years (usually), septic temperature may be absent or low, signs of valvular heart disease embolism (67%) (petechiae, hematuria, infarcts of spleen, kidney and brain, secondary anemia, enlarged spleen, usually positive blood culture (streptococci).
3. Valves: 50% old rheumatic scars, more intense valvulitis than rheumatic, vegetation distribution same as above.
4. Vegetations: soft villous friable, readily break off (emboli), platelet thrombus, usually numerous cocci (none in leaflet), two-thirds of all cases show rheumatic lesions on same or other valves, mural lesions (40%) in both chiefly auricular.
5. Myocardium: Aschoff nodules about 45%, exudative inflammation (p.m.n.) Bracht-Wachter nodules (small abscesses with or without central necrosis or giant cells).
6. Joints: More often in rheumatic, frequently subacute (bacterial)
7. Relationship to rheumatic: more severe (may start as rheumatic) bacteria (non-specific) more easily demonstrated, joints, valves, myocardium, etc.
8. Recovery: probably rare, death (toxemia, cardiac failure, cerebral embolism, etc). Some vegetations heal (bacteria disappear, inflammation subsides). No organization but calcification before or after healing.

- B. Ref. Fox, H., Arch. of Path. 10, 402-406 (Sept.) 1930.

(The changes in the spleen in subacute bacterial endocarditis) 25 spleens from *S. viridans* cases.

1. Infarcts: 62% (upper pole) 2 suppuration (20%). 3. Average weight 414 gm. (250-320 more acute) 500-750 more chronic) disease greater factor in splenic enlargement than passive congestion. 4. Gross: enlarged purplish soft, usually perisplinitis and adhesions soft pulp, latter firm, purple to red. follicles and trabeculae not prominent. 5. Microscopic: early congestion, late hyperplasia of reticuloendothelium (not lymphatic) no marked intimal changes,

blood destruction (in old cases) frequent degeneration of germ centers, sometimes Bracht Wachter bodies?; occasional clasmatocytes, frequent eosinophiles and neutrophiles, appears like infectious process.

C. Ref. Winkelman, N. W. and Eckel, J. L. Arch. Neuro. and Psych. 23, 1161-1182 (June) 1930, (the brain in bacterial endocarditis)

Material: 13 cases (8 acute bacterial chiefly pneumococcus, 5 subacute-S. viridous).

Observations:

1. Multiple abscesses (1 of 5 subacute, 1 of acute)
2. Meningitis (0 of subacute, 4 of 8 acute)
3. Embolic lesions (organized) (3 of 5 subacute, 2 of 8 acute) (ischemic cell disease)
4. Toxic endarteritis (productive) all - authors have previously reported this in other toxemias. In 137 cerebral aneurisms (literature) 5(3.7%) were associated with endocarditis. Others 20%, authors - 1 case. Spinal cord was found in only one case.

SUMMARY:

1. Subacute endocarditis is found in about one third of all cardiac deaths due to infectious valve lesions (excluding syphilis).
2. Cases less than six weeks in duration are considered acute.
3. Chief clinical signs are sepsis, valvular heart defect, embolism, anemia, splenomegaly.
4. Age incidence chiefly from 15 to 50, usually 20 to 40, but may occur at any age (6 weeks to 70+ years)
5. Males predominate (subacute) females (acute) pelvic infections.
6. Embolism is frequent (67+%).
7. Spleen is usual site (62%) usually enlarged.
8. More common than petechiae which are not in themselves diagnostic), kidney is next.
9. Paralysis from brain emboli is frequent finding.
10. Meningitis is more frequent in acute forms.
11. Abscess in spleen may be seen in subacute 20% (said to be unknown).
12. Embolic glomerulonephritis is very common (hematuria). Produced in animals.
13. Diffuse glomerulitis is seen in most cases as well (Bell, Apr. 1931)
14. S. hemolyticus usually found in blood cultures.
15. Less virulent strains? show more embolic glomerular lesions.
16. Abscesses in the kidney may be seen (pyelonephritis, our case, or associated lesion).
17. Disease fuses clinically with rheumatic fever (valve, vegetations, myocardium, organism, joints, course)
18. The mitral and aortic valves are frequently involved.
19. Auricular endocarditis is common (40%) in both rheumatic and subacute embolism)
20. Ulceration is uncommon (not synonymous with embolism).
21. Pericarditis is rare (if not unknown)
22. Cause of death (toxemia, failure, uremia, embolism)
23. The extra cardiac findings may predominate in the picture.
24. Recovery is rare.
25. Early diagnosis may be difficult (intermittent fever)

CARDIAC DISEASE
POST-MORTEM STUDIES

B. J. CLAWSON AND E. T. BELL

	% of Group	% of Subgroup	% of Total
Congenital cardiac disease			
Acquired cardiac diseases (1452 cases)			
Infectious.....			45
1. Rheumatic.....	47		20.5
a. Acute rheumatic endocarditis.....		12.5	2.5
b. Recurrent " ".....		11.0	2.5
c. Old valve defects.....		67.5	14.5
Incompletely healed.....		22.0	3.0
Completely healed.....		44.0	6.5
Calcified nodular type (?).....		34.0	5.0
d. Adherent pericardium.....		8.5	1.5
2. Bacterial.....	29.5		13.5
a. Primary acute bacterial endocarditis.....		11.0	1.5
b. Secondary " " ".....		25.0	3.5
c. Subacute " " ".....		64.0	8.5
On normal valves.....		50.0	0.0
On previously thickened valves.....		50.0	0.0
3. Syphilitic (associated with syphilitic aortitis).....	21.0		9.5
a. Aortic insufficiency.....		46.0	4.5
b. Rupture of aortic aneurism.....		28.0	2.5
c. Narrowing of coronary orifices.....		24.0	2.0
d. Gumma of myocardium.....		2.0	0.2
4. Toxic myocardium.....		2.0	1.0
I. Non-infectious.....			55.0
1. Hypertension (primary.....	75.0		41.0
a. Myocardial insufficiency.....		53.5	21.0
b. Coronary sclerosis.....		20.5	8.0
c. Encephalic (apoplexy).....		17.5	7.5
d. Renal insufficiency.....		8.5	3.5
2. Coronary sclerosis without hypertension.....		23.0	12.5
3. Pulmonary hypertension.....		2.0	1.0
II. Miscellaneous			
1. Thyroid heart (no postmortem examples)			
a. Hypothyroidism			
b. Hyperthyroidism			
2. Primary renal disease (no cardiac deaths)			
a. Glomerulonephritis, etc.			
3. Cardiac hypertrophy without hypertension (?)			