PROLONGED ILLNESS INSURANCE

BY

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1. INTRODUCTION

In this paper there is described an approach to the coverage for the catastrophic aspect of a serious and prolonged illness as well as the methods used in arriving at a set of rates to be charged therefor. This type of insurance is relatively new and has been initiated by several large Life Insurance companies and Blue Cross-Blue Shield organizations. A paper on the subject by Alan Thaler* appeared in the Transactions of the Society of Actuaries. Mr. Thaler describes the statistics developed from an internal questionnaire of a certain group of the employees of the Prudential Insurance Company and the conclusions as to the rates based on the results of such data.

While most insurance company coverages combine both deductible and coinsurance features, the approach of the Blue Cross-Blue Shield organizations is somewhat different and this paper is devoted to a description of the coverage and ratemaking developed by the Massachusetts Blue Cross-Blue Shield.

I wish to express my sincere appreciation to the managements of the Massachusetts Hospital Service, Inc. and the Massachusetts Medical Service for their kind permission to use their experience and other information.

2. PRELIMINARY CONSIDERATIONS

Inasmuch as the prolonged illness coverage would be available only in conjunction with basic Blue Cross-Blue Shield contracts it is necessary to give a brief outline of the salient provisions of the basic contracts.

The Massachusetts Hospital Service Inc. offers hospital protection contracts with varying amounts of room and board indemnity ($7, $10 and $12 per diem are the most frequent) for a period of sixty (60) days and one half of this amount for an additional sixty (60) days. The extras are covered in full regardless of the daily room and board indemnity and for the entire period of one hundred and twenty (120) days.

The Massachusetts Medical Service provides coverage for surgical expenses (in hospital or in office) in accordance with a fee schedule and medical care while in hospital, the latter being restricted to the first twenty-one (21) days of hospitalization. There are two classes of contracts, A and B, with different rates and different fee schedules but both types are service contracts, that is the scheduled fee is the only fee the surgeon or physician receives if the subscriber is in a certain prescribed income category. Thus plan A provides service benefits

*Group Major Medical Expense Insurance, T.S.A. III, 1951, p. 429 f.f.

if the family income does not exceed $3,000 per annum and plan B if such income does not exceed $5,000 per annum. The monetary limits have been selected upon a careful study of the Massachusetts income statistics and it is estimated that these limits permit the application of service benefits to approximately 85% of the population. When wage data have shown that the limits are not adequate, appropriate changes have been made.

In considering the coverage for prolonged illness the approach was not from the amount of insurance point of view but rather what will be the most essential additional benefits needed to supplement the basic coverage in the event of a serious and prolonged illness. The type and extent of coverage and its underwriting limitations are described in the next section. The contract is a joint obligation of the two corporations permitted by special legislation.

3. SCOPE OF COVERAGE

The coverage may be divided into three (3) categories:

(i) Benefits for hospitalized cases
(ii) Benefits for mental disorders
(iii) Special benefits for specific serious conditions

The first category implements the coverage of the basic contract in that it provides for:

(a) The extension of the physicians services for hospital visits from the 22nd to the 120th day of hospitalization.

(b) An allowance for room and board charges of up to $6.00 per day in addition to the basic allowance from the 61st to the 120th day of hospitalization.

(c) An allowance of 50% of customary charges for private duty registered nurse. This benefit for which a maximum of $300.00 is provided, is restricted to conditions requiring a surgical procedure listed at $175.00 or more in the Blue Shield Plan B schedule of fees. There are at present 256 such procedures and this restriction was selected on the basis of medical opinion as to the real need for private duty nurses in order to avoid abuses.

The benefits for *mental disorders* are as follows:

(a) *Physician Services.*
  (1) Up to $25.00 per treatment (including anaesthesia) for *electric shock therapy* for a hospital in-patient or out-patient. Payments cover associated psychotherapy and are limited to twenty (20) treatments.
  (2) Up to $8.00 per treatment for *insulin shock* therapy to a hospital in-patient. Limit of seventy (70) such shock treatments.

(b) *Room and Board Allowance.* Up to $10.00 a day in a *mental* hospital or up to $10.00 a day in *licensed general* hospital from the 11th day. Maximum allowance $300.00.

(c) *Other hospital charges.*
Full coverage is provided for drugs, dressings, X-rays, pathology examinations and use of equipment to administer insulin shock or electric shock treatment.

The category of special benefits for major injuries and illnesses is applicable to the following diagnoses:

(1) Amputation (where artificial substitute is required)
(2) Cancer
(3) Cerebral hemorrhage, embolism or thrombosis (brain)
(4) Cirrhosis of the liver (with abnormal accumulation of fluid within abdominal cavity requiring puncture of abdominal wall or following an operation to provide compensatory circulation)
(5) Coronary Embolism or thrombosis (heart)
(6) Degeneration of kidney or chronic nephritis
(7) Degeneration of Spinal Cord (producing paralysis of lower limbs)
(8) Fractures
(9) Heart Failure (congestion in circulatory system)
(10) *Hemiplegia* (paralysis of one side of body); *Paraplegia* (paralysis of legs and lower part of body) or *quadraplegia* (paralysis of all four limbs)
(11) Myasthenia gravis (progressive weakness of muscles)
(12) Pemphigus (a grave skin disease)
(13) Polio
(14) Rheumatic Fever and Chorea
(15) Subarachnoid hemorrhage (brain)
(16) Tuberculosis of the Lungs (Active, proved by sputum or gastric tests
(17) Tumors of brain or spinal column
(18) Ulcerative colitis (colon) and regional enteritis (intestine)

The above diseases have been enumerated in the contract not only in order to prevent abuses, but also because, in the opinion of the medical profession, they represent practically all of the known prolonged illnesses.

The coverage provided for these specific diseases embraces the following elements:

(a) *Physicians' Services.* Customary charges for hospital visits beginning with 22nd day up to discharge. Customary charges for medical (non-surgical)* services following discharge from hospital. Payments for X-rays, X-ray therapy, pathology examinations and physical therapy by a registered physical therapist.
(b) *Room and Board Charges.* Up to $6.00 a day in addition to regular Blue Cross allowances from 61st through the 120th day of hospitalization and up to $10.00 a day thereafter. 75% of Room and Board charges up to $6.00 a day in a licensed chronic disease hospital or a convalescent home with which the Blue Cross has a contract.

*Surgical services are covered by basic contract.

(c) *Drugs, Medications, Appliances and Other Ancillary Services.* 75% of cost of drugs, medications and use of the operating room after 120th day of inpatient hospitalization; 75% of cost of drugs and medications requiring prescriptions for use outside of hospital; payment to hospitals for X-rays, X-ray therapy, pathology examinations, use of outpatient department and physical therapy by a registered physical therapist; entire cost of rental or 75% of purchase price of appliances ordered by attending physician.

(d) *Nurse's Services.* 50% of regular charges for services of private duty registered nurse to an inpatient ($300.00 maximum); charges of any Visiting Nurse Association with which the Blue Cross has a contract.

The total benefits under this contract are limited to $2,000.00 for physicians' services and to $3,000.00 for all other services so that the maximum benefit payments cannot exceed $5,000.00.

4. UNDERWRITING LIMITATIONS

In the above description of the benefits the coinsurance features of the various benefits other than physicians' services (except for mental disorders) were indicated. All were predicated on considerations of practical needs and with the object of preventing abuses and unnecessary utilization.

While as large a volume of this coverage as possible is desirable, certain underwriting precautions must be exercised to avoid antiselection and to insure a sufficiently broad cross-section of the population to obtain an average exposure. For this reason certain further underwriting rules and restrictions were deemed necessary:

(a) In groups of 100 or more, 75% of the total eligible personnel apply for this coverage or in groups of any size if regular underwriting requirements are met and the average age of the applicants does not exceed forty (40) years.

(b) A waiting period of twelve (12) months is provided for all benefits except that immediate benefits are available for certain acute conditions arising after the effective date of the contract such as infections, contagious diseases, traumatic conditions, inflammations unrelated to underlying pathology or defect, primary coronary or cerebral artery occlusion or rupture, certain primary malignant and benign neoplasms.

(c) No benefits will be payable for any condition which has exhibited signs or symptoms prior to the effective date of the coverage.

(d) No benefits will be provided where the insured person would be eligible for full or partial benefits under any municipal, State or Federal law, regulation or agency if this contract were not in effect nor for policemen or firemen for injuries sustained in the line of duty.

(e) In cases where the benefits depend upon diagnosis (18 specific illnesses) no benefits will be provided until the condition has been determined by laboratory examinations or other objective means and unless the initial treatment takes place in a licensed general, mental or contagious disease hospital subsequent to the effective date of the contract and prior to its termination.

(f) In the event of cancellation benefits shall not be provided for expenses incurred later than twenty-four (24) months after the date of the initial hospital treatment, provided that such initial hospitalization took place prior to cancellation.

(g) Benefits will be provided only when the initial hospitalization occurs while the subscriber is employed in the group or within thirty (30) days after leaving such employment. This provision precludes the right of conversion as the issuance of this coverage on other than group basis is considered unsound.

On the whole the above restrictions are reasonable and necessary until such time when the accumulated experience will indicate what changes and modifications can be made.

In general the entire approach to the problem is that of a cautious first major extension of benefits. As the actual experience develops there will be no doubt progressive extensions of the coverage commensurate with demonstrated needs and the ability of the public to absorb the cost.

5. DETERMINATION OF RATES

The problem of rate making for new coverages is of necessity an admixture of a large dose of judgment and such experience as can be utilized which again involves a great deal of actuarial judgment.

Since the policy of the Blue Cross and Blue Shield is not to differentiate the charges for coverage by age or by sex or by the number of children for married employees, the problem resolves itself to the determination of the various cost elements separately for individual employee contracts and for family contracts, that is the employee, his wife and children, if any.

Each benefit or group of benefits requires a separate approach and the various computations and preliminary steps are described in detail below:

(a) Duration Distribution and Cost of Certain Additional Benefits.

One of the most powerful tools in rate computations for sickness and accident insurance is the knowledge of the number of cases for each duration from one day on. For this reason continued statistical analyses and research is being conducted in this direction as changing conditions in medical and surgical techniques have a definite bearing on the length of hospital confinement.

I am showing below a condensed duration distribution for the number of non-maternity in-patient days based on the 1952 experience for Blue-Cross contracts with a daily room and board indemnity of $7.00.

TABLE I

Duration Distribution Based on 1952 Experience of Massachusetts Hospital Service, Inc.

Non-Maternity Inpatient Cases-Group

(1) Duration in days n	Individual Contracts* (2) No. of Cases X_n	(3) $\sum_{120}^{n} X_n$	(4) No. of Days# $\sum_{120}^{n}$ (3)	Family Contracts* (5) No. of Cases X_n	(6) $\sum_{120}^{n} X_n$	(7) No. of Days# $\sum_{120}^{n}$ (6)
1	675	9,213	100,239	12,859	59,280	465,818
2	804	8,538	91,026	5,151	46,421	406,538
3	693	7,734	82,488	4,345	41,270	360,117
...	...	....	.....	.....	.....	.....
21	104	1,107	18,662	427	4,145	59,477
22	79	1,003	17,555	327	3,718	55,332
...	...	....	.....	.....	.....	.....
60	9	126	3,063	20	311	7,259
61	8	117	2,937	10	291	6,948
...	...	....	.....	.....	.....	.....
120	20	20	20	31	31	31
Total	9,213	100,239	—	59,280	465,818	—

*Contracts with a daily allowance of $7.00.
#This column means "number of days contributed by the given day and all following days," as may be easily verified.

Even though condensed, Table I shows a difference in the distribution between individual and family contracts, there being a greater proportion of short duration cases for family contracts. There exists also a variation in the distributions of medical and surgical days and a slight variation for contracts with different daily allowances.

Since in the prolonged illness contract certain additional benefits are provided after 21 days and others after 60 days, I am showing below the ratios of days in excess of 21 days and in excess of 60 days for all classes of contracts combined:

TABLE II

Ratios of Days in Excess of a Given Duration
based on 1952 Duration Distribution of Inpatient Days
All Classes of Contracts — Group

(1) *Item*	(2) *Individual*	(3) *Family*
1. Total Days — Medical Cases*	110,241	452,470
2. Total Days — All Cases	245,882	1,056,908
3. Medical Days in Excess of 21	18,433	61,119
4. All days in Excess of 60	6,083	15,145
5. 3. ÷ 2.	.0750	.0578
6. 4. ÷ 2.	.0247	.0143

*Shown here only to indicate the proportion of days of medical care cases to total days.

Table II permits us to compute the estimated cost of physicians' visits after twenty-one (21) days and the estimated cost of the daily allowance of up to $6.00 for room and board after 60 days. This computation is shown in Table III below:

TABLE III

Calculation of the Estimated Cost of Additional
Physicians Hospital Visits and Room and Board Allowances*

Item	*Individual*	*Family*
1. No. of Contract Years	234,106.	425,627.
2. No. of Inpatient Days	255,946.	1,098,983.
3. Ratio: Medical Days in Excess of 21	.0750	.0578.
4. Ratio: All Days in Excess of 60	.0247	.0143
5. Estimated Physicians' Visits: 2. x 3.	19,196.	63,521.
6. Estimated Cost 5. x $5.00	$95,980.	$317,605.
7. Estimated Days in Excess of 60: 2. x 4.	6,322.	15,715.
8. Estimated Cost 7. x $6.00	$37,932.	$ 94,290.
Cost per Contract per Annum:		
9. Physicians' Visits 6. ÷ 1.	$ .4100	$ .7462
10. Room & Board Allowance 8. ÷ 1.	$ .1620	$ .2215

*Based on Experience for the period July 1, 1952 to June 30, 1953 as of November 30, 1953.

It will be noted that in the above computations it was assumed that there will be a physician's visit for each day of hospitalization in excess of twenty-one (21) and that the full allowance of $6.00 will be paid for room and board for each day in excess of sixty (60). This was done in order to compensate for probable longer durations under the proposed coverage.

(b) Calculation of the Cost of Private Duty Nurse Coverage.

The calculation of this cost consists of two elements. First we have determined the annual frequency of procedures for which the Blue Shield Plan B fee schedule provides $175.00 or more on the basis of experience of two policy years. We then selected the average cost per case of $100.00 based upon a consensus of medical and hospital opinion. The details of calculation are shown in Table IV.

TABLE IV

Calculation of Cost of Private Duty Nurse Coverage
Based on the Blue Shield Experience for policy years
1951 as of 12-31 and 1952 as of 11-30-1953.

Item	*Individual*	*Family*
1. Contract Years Exposed —Plan A . . .	216,692	362,768
2. Contract Years Exposed —Plan B . . .	130,232	233,285
3. Contract Years Exposed —Total . . .	346,924	596,053
4. No. of Eligible Procedures—Plan A . . .	2,756	10,980
5. No. of Eligible Procedures—Plan B . . .	2,034	9,005
6. No. of Eligible Procedures—Total . . .	4,790	19,985
7. Annual Frequency —Plan A . . .	.012719	.030591
8. Annual Frequency —Plan B . . .	.015618	.038601
9. Annual Frequency —Total . . .	.013807	.033529
10. Est. Annual Cost per Contract: 9. x $100 .	$1.3807	$3.3529

(c) Calculation of the Cost of Shock Therapy.

Here again it was necessary to determine the average cost per case by consulting the medical profession or hospital authorities. There being no available experience the annual claim frequency per 1000 contracts was *assumed* at 1 claim for individual and 2.3 claims for family contracts. The calculation is shown in Table V.

TABLE V

Calculation of Cost of
Insulin Shock or Electric Shock Therapy

Item	*Hospital*		*Medical*	
	Individual	*Family*	*Individual*	*Family*
1. Est. Average Cost per Case	$650.00	$650.00	$450.00	$450.00
2. Est. Claim Frequency per Contr.	.0010	.0023	.0010	.0023
3. Est. Annual Cost 1. x 2.	$ .6500	$1.4950	$ .4500	$1.0350

(d) Calculation of Cost of Benefits for Specific Conditions.

In order to arrive at this most important element of cost we were first confronted with the problem of determining the rate of incidence or the claim frequency of cases involving any one of the eighteen (18) specific diagnoses.

Toward this end we have prepared for each of the eighteen (18) diagnoses a duration analysis based on the Blue Cross experience of fiscal year ended June 30, 1953 as of November 30, 1953. A review of this experience led to a judgment decision to assume that all cases where the duration exceeded twenty-eight (28) days are potential cases involving expenditures under the proposed contract. Since the basic contract covers Pulmonary Tuberculosis only for a duration of 10 days, it was decided to use all cases for that diagnosis

The results of this study are summarized in Table VI.

TABLE VI

Estimated Incidence of Special Diagnoses
Based on Blue Cross Experience for
Fiscal Year ending June 30, 1953 as of November 30, 1953.

	(1)	(2)	(3)	(4)
	*Est. Number of Claims**		*Est. Annual Frequency per 1000 Contracts#*	
Diagnosis	*Individual*	*Family*	*Individual*	*Family*
Amputations	See special computation in Table VII			
Cancer	264	578	1.1277	1.3580
Cerebral Hemorrhage . . .	74	165	.3161	.3877
Cirrhosis of Liver	13	21	.0555	.0493
Coronary Embolism	144	529	.6151	1.2429
Chronic Nephritis	4	12	.0171	.0282
Degeneration of Spinal Cord .	6	10	.0256	.0235
Fractures	173	376	.7390	.8834
Heart Failure	13	43	.0555	.1010
Hemiphlegia	2	6	.0085	.0141
Myasthenia gravis	1	3	.0043	.0070
Pemphigus	2	4	.0085	.0094
Polio	1	92	.0043	.2162
Rheumatic Fever	3	85	.0128	.1997
Subarachnoid hemorrhage . .	1	14	.0043	.0329
Tuberculosis of the Lungs .	51	164	.2179	.3853
Tumors of the brain	5	15	.0214	.0352
Ulcerative Colitis	13	61	.0555	.1433
Total	770	2,178	3.2891	5.1171

*Cases with duration of 29 days or more, except for Tuberculosis where all cases are shown.

#Obtained by multiplying columns (1) and (2) by 1000 and dividing by the contract year exposure of 234,106 and 425,627 respectively.

The next step was to determine the average cost per case and this was done on the basis of judgment of the medical profession. In exercising such judgment each diagnosis was considered separately and for each diagnosis separate estimates were made for the cost of medical care and the cost of all other benefits. Such estimated average claim costs and the resulting costs per contract are shown in Table VIII.

As respects amputations it was felt that it will be sufficient to determine the cost of wheel chair or prosthetic appliance and the calculation of this element is shown in Table VII.

TABLE VII

Calculation of Cost of Amputations

Type of Amputation	*(1)* *No. of Claims** *Indiv.*	*(2)* *Family*	*(3)* *Annual Frequency*** *Indiv.*	*(4)* *Family*	*(5)* *Est. Cost#*	*(6)* *Annual Cost per 1000 Contracts* *Indiv.*	*(7)* *Family*
Arm through Humerus	1	2	.00288	.00336	$400.	$ 1.1520	$ 1.3440
Forearm through Radius and Ulna	—	1	—	.00168	350.	—	.5880
Hip Disarticulation	—	5	—	.00839	350.	—	2.9365
Thigh through Femur	20	63	.05765	.10570	400.	23.0600	42.2800
Leg through Tibia and Fibula	4	12	.01153	.02013	275.	3.1708	5.5358
Leg Guillotine	—	4	—	.00671	300.	—	2.0130
Subsequent Reamputation	1	3	.00288	.00503	300.	.8640	1.5090
Ankle through Malleoli of Tibia and Fibula	1	2	.00288	.00336	200.	.5760	.6720
Total	27	92	—	—	—	$28.8228	$56.8783
Annual Cost Per Contract						$ .0288	$ .0569

*Based on 1951 and 1952 Blue Shield Experience.

**Obtained by multiplying columns (1) and (2) respectively by 1,000 and dividing by the 1951-1952 Blue Shield contract year exposure: 346,924 individual and 596,052 family.

#Based on quotations of several manufacturers of prosthetic appliances.

(e) Summary of Costs and Calculation of Rates.

The various costs calculated in the preceding sections can be now summarized and the total pure premiums converted into rates by the application of an appropriate expense loading.

TABLE VIII

Calculation of Cost of Benefits for Specific Conditions

Diagnosis	Est. Av. Case Cost Blue Cross	Est. Av. Case Cost Blue Shield	Annual Claim Incidence Per 1000 Contracts* Individual	Annual Claim Incidence Per 1000 Contracts* Family	Cost per 1000 Contracts per Annum — Blue Cross Individual (2) x (4)	Blue Cross Family (2) x (5)	Blue Shield Individual (3) x (4)	Blue Shield Family (3) x (5)
Amputations	$ #	$ —	.0778	.1544	$ 28.82	$ 56.88	$ —	$ —
Cancer	1,500	500	1.1277	1.3580	1,691.55	2,037.00	563.85	679.00
Cerebral Hemorrhage	2,000	350	.3161	.3877	632.20	775.40	110.64	135.70
Cirrhosis of Liver (Surg.)	2,500	1,700	.0555	.0493	138.75	123.25	94.35	83.81
Coronary Embolism	2,000	350	.6151	1.2429	1,230.20	2,485.80	215.29	435.02
Chronic Nephrosis	2,500	1,700	.0171	.0282	42.75	70.50	29.07	47.94
Degeneration of Spinal Cord	2,500	500	.0256	.0235	64.00	58.75	12.80	11.75
Fractures	500	300	.7390	.8834	369.50	441.70	221.70	265.02
Heart Failure	750	500	.0555	.1010	41.63	75.75	27.75	50.50
Hemiphlegia	2,500	1,700	.0085	.0141	21.25	35.25	14.45	23.97
Myasthenia Gravis	300	500	.0043	.0070	1.29	2.10	2.15	3.50
Pemphigus	2,500	1,700	.0085	.0094	21.25	23.50	14.45	15.98
Poliomyelitis	1,000	250	.0043	.2162	4.30	216.20	1.08	54.05
Rheumatic Fever	2,500	1,700	.0128	.1997	32.00	499.25	21.76	339.49
Subarachnoid Hemorrhage	500	100	.0043	.0329	2.15	16.45	.43	3.29
Tuberculosis of the Lungs	1,500	1,000	.2179	.3853	326.85	577.95	217.90	385.30
Tumor of the Brain	750	150	.0214	.0352	16.05	26.40	3.21	5.28
Ulcerative Colitis	500	500	.0555	.1433	27.75	71.65	27.75	71.65
Total			3.3669	5.2716	$4,692.29	$7,593.78	$1,578.63	$2,611.25
Cost Per Contract Per Year					$4.6923	$7.5938	$1.5786	$2.6113

*From Table VI
#From Table VII

In view of the newness of the coverage and the considerable amount of judgment injected into the calculation of the various cost elements it was decided to use a loading of 20% for expenses and contingencies. The resulting total rates were rounded to the higher 25 cents.

The details of this final stage of computation may be seen in Table IX.

TABLE IX

Summary of Pure Premiums and Calculation of Rates

Item & Table	*Blue Cross*		*Blue Shield*		*Total*	
	Individual	*Family*	*Individual*	*Family*	*Individual*	*Family*
Specific Diagnoses-VIII	$4.6923	$ 7.5938	$2.6113	$2.6113	$6.2709	$10.2051
Shock Therapy-V.....	.6500	1.4950	.4500	1.0350	1.1000	2.5300
Private Nurse-IV.....	1.3807	3.3529	—	—	1.3807	3.3529
Physicians' Visits-III	—	—	.4100	.7462	.4100	.7462
R. & B. Indemnity-III	.1620	.2215	—	—	.1620	.2215
Total Pure Premiums	$6.8850	$12.6632	$2.4386	$4.3925	$9.3236	$17.0557
Monthly Pure Premiums	$ .5738	$ 1.0553	$ .2032	$ .3660	$ .7770	$ 1.4213
Indicated Rates*	$ .717	$ 1.319	$ .254	$ .458	$ .971	$ 1.777
Proposed Rates	$ .75	$ 1.50	$ .25	$. 50	$1.00	$ 2.00

*Expense and Contingency Loading of 20.0%.

The proposed monthly rates of $1.00 for individual and $2.00 for family contracts appear to be very reasonable for the amount of coverage granted. Because of the manner of computation and the generous margin for unknown elements and errors of judgment they should prove to be adequate.

6. CONCLUDING REMARKS

It may be readily seen that the coverage described in this paper provides benefits in serious cases only and that benefits would be payable only after a substantial duration with a few minor exceptions. This will preclude the handling of many small claims which of necessity arise in the case of the usual major medical coverage with a specific deductible because as soon as the total cost of an illness exceeds the deductible amount, there exists some liability in most instances.

The contract became available to the public on October 1, 1954 and it is, therefore, too early to speculate on its acceptance and popularity. It is primarily designed for the general population and the service character must be stressed again although there are sufficient coinsurance safeguards.

It will take a number of years to develop experience which will be of significance. If the circumstances will permit it, I will present another paper dealing with a critical analysis of the estimates in the light of actual experience. In the meantime I hope that the present paper will prove of value to students and others who seek some guide posts for the approach to new and unusual types of coverage.