

THE DENTAL STATUS AND DENTAL NEEDS OF YOUNG ADULT MALES^{1, 2}

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DURING the winter and spring of 1940-1941 dental examinations were made of approximately 1,400 men. A major proportion of these individuals were enrolled in National Youth Administration projects located in Maryland and West Virginia, and the remainder were attending a National Defense Training School in Hagerstown, Maryland. Among the 1,400 men examined there were included a total of 642 whose ages covered the range 21 to and including 35 years.

The dental examination records of each of these 642 men were reviewed with the purpose of finding those men who would and those who would not meet the dental requirements set down by Selective Service for admittance to full military duty. These requirements are given in the United States War Department Mobilization Regulations MR 1-9, issued August 31, 1940, as follows:

Paragraph 31. Classes 1-A and 1-B

a. Class 1-A

(1) Normal teeth and gums.

(2) A minimum of 3 serviceable natural masticating teeth above and 3 below opposing and 3 serviceable natural incisors above and 3 below opposing. (Therefore, the minimum requirements consist of a total of 6 masticating teeth and of 6 incisor teeth.) All of these teeth must be so opposed as to serve the purpose of incision and mastication.

(3) *Definitions*

(a) The term "masticating teeth" includes molar and bicuspid teeth, and the term "incisors" includes incisor and cuspid teeth.

(b) A natural tooth which is carious (one with a cavity) which

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² Presented at the Nineteenth Annual Meeting of the Milbank Memorial Fund. This paper was published, in more detail, in *Public Health Reports*, July 4, 1941, 56, No. 27, pp. 1369-1387.

can be restored by filling, is to be considered as a serviceable natural tooth.

(c) Teeth which have been restored by crowns or dummies attached to bridgework, if well placed, will be considered as serviceable natural teeth when the history and the appearance of these teeth are such as clearly to warrant such assumption.

(d) A tooth is not to be considered a serviceable natural tooth when it is involved with excessively deep pyorrhea pockets, or when its root end is involved with a known infection that has or has not an evacuating sinus discharging through the mucous membrane or skin.

b. *Class 1-B*

Insufficient teeth to qualify for class 1-A, if corrected by suitable dentures.

Paragraph 32. Class 4

a. Irremediable disease of the gums of such severity as to interfere seriously with useful vocation in civil life.

b. Serious disease of the jaw which is not easily remediable and which is likely to incapacitate the registrant for satisfactory performance of general or limited military service.

c. Extensive focal infection with multiple periapical abscess, the correction of which would require protracted hospitalization and incapacity.

d. Extensive irremediable caries.

For the purposes of the present report, the men who would meet the requirements for Class 1-A are designated "acceptable" and those who would not are designated "rejectable."

A total of 97, or 15.1 per cent,³ of the 642 men fell into the rejectable group,⁴ the remaining 545 men having a dental status which

³The percentage of rejections obtained here is somewhat higher than that observed from actual selective service findings. The higher percentage found in the West Virginia and Maryland men is probably, in part, a resultant of a difference in age distribution. The actual selectees are probably somewhat younger than the men examined for the present study. Other factors probably also contribute to the high percentage of rejectables for dental conditions. Among these may be mentioned the socio-economic status of the men examined and the possibility that some of them might be counted by Selective Service as rejectable for other than dental defects.

⁴The rejectables include some men who have insufficient teeth to qualify for Class 1-A and who do not have their insufficient teeth "corrected by suitable dentures" (thus they do not qualify for Class 1-B) and who obviously do not have enough irremediable dental disease to place them in Class 4.

GROUPS EXAMINED	CHRONOLOGICAL AGE (LAST BIRTHDAY) IN YEARS															
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	All Ages
	NUMBER EXAMINED															
BOTH GROUPS	145	121	107	75	31	21	28	10	29	13	11	18	13	10	10	642
Rejectables	10	12	14	6	5	3	4	3	10	4	5	8	4	4	5	97
Acceptables	135	109	93	69	26	18	24	7	19	9	6	10	9	6	5	545
	PER CENT REJECTABLE															
	6.9	9.9	13.1	8.0	16.1	14.3	14.3	30.0	34.5	30.8	45.5	44.4	30.8	40.0	50.0	15.1

Table 1. The number of men examined and the number found rejectable or acceptable and the per cent found rejectable. Data arranged by the single chronological ages and derived from examination of 642 men of West Virginia and Maryland.

would justify their being designated acceptable (dentally) for military duty in Class 1-A. The numbers of men examined and their ages and the number found rejectable or acceptable are given in Table 1.

FINDINGS

Description of dental status is accomplished through measurement of: (a) the tendency to be attacked by caries (the number of decayed, missing, and filled teeth or tooth surfaces per man); (b) the volume of dental service received (the number of filled teeth or tooth surfaces per man); and (c) the residuum of experience with caries which has not received treatment by fillings (the number of unfilled carious teeth, the number of teeth indicated for extraction, the number of teeth extracted). Dental needs (due to caries) are measured in terms of the three ingredients of the unfilled residuum of caries experience, namely: (a) the tooth surfaces carious and requiring fillings; (b) the teeth carious and indicated for extraction; and (c) the teeth already extracted presumably because of caries involvement. These two latter ingredients (b and c) together represent the need for prosthetic replacements.

Measurement of the tendency to experience caries is based on the fact that the stigmata of caries attack are essentially non-erasable. For example, a permanent tooth attacked by caries in a person 7 years of age will appear at a later chronological age as a carious tooth which should be filled, as a tooth which has been filled, as a tooth so extensively carious as to require extraction, or as a tooth already extracted. Teeth which fall into any of these four categories of caries experience are designated "DMF teeth" (decayed, missing, and filled). The summation of the numbers of permanent teeth representing these categories of caries experience, expressed on a per man basis, provides a broad measure of the tendency of a group to experience caries attack. A more detailed description of caries tendency is obtained by summation of the number of permanent tooth surfaces which fall into the several categories of caries experience. Such surfaces are termed "DMF surfaces." In these summations a tooth both carious and filled is counted as one DMF tooth

Table 2. Dental status of the permanent teeth of rejectables (R) and acceptables (A). Data for the specified components of dental status are expressed per man of specified chronological age group. Data derived from examination of 642 men of West Virginia and Maryland.

COMPONENTS OF DENTAL STATUS	GROUP	CHRONOLOGICAL AGE IN YEARS (LAST BIRTHDAY)															
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	All Ages
<i>Teeth</i>																	
Cariou— Requiring Fillings	R	4.9	5.4	6.9	7.0	5.2	4.0	5.3	4.7	5.3	5.3	5.2	7.0	3.0	3.5	2.4	5.4
	A	5.5	5.3	5.6	5.5	5.4	6.6	6.0	4.6	5.6	5.6	3.8	5.8	7.0	3.2	7.2	5.5
Extracted	R	10.1	9.4	10.6	11.3	14.0	10.0	11.5	12.7	14.2	15.3	22.8	11.4	14.5	20.3	20.8	13.0
	A	2.1	1.9	2.6	2.0	3.8	3.9	3.1	3.9	4.0	5.7	4.5	5.4	3.2	2.7	6.6	2.6
Cariou— Indicated for Extraction	R	3.4	3.9	2.6	3.0	1.0	6.3	1.8	3.0	1.2	4.8	0	1.6	0.5	1.5	0.6	2.4
	A	0.7	0.5	0.6	0.3	0.8	1.3	1.5	0.7	1.5	0.8	0.7	1.4	1.6	0.8	1.0	0.7
Filled	R	1.0	2.2	2.6	3.5	1.0	0	1.3	2.7	3.0	1.5	1.8	2.6	2.0	1.0	2.0	2.1
	A	1.8	1.9	2.3	3.3	3.0	2.3	2.8	2.4	3.5	5.2	5.5	2.8	1.2	4.5	2.6	2.4
DMF	R	19.2	20.7	22.0	24.5	21.2	20.3	19.8	22.0	23.2	26.5	29.4	22.8	19.3	25.5	25.6	22.5
	A	9.8	9.4	10.9	10.8	12.8	13.7	13.4	11.0	14.3	16.4	13.8	15.3	12.9	10.8	17.2	11.0

and a surface both carious and filled is counted as one DMF surface. An extracted tooth is arbitrarily counted as five DMF surfaces.

Information on the dental status and major dental needs of the two groups of men is given in Tables 2 and 3.

Per rejectable man (ages 21-35 years) more than twenty-two permanent teeth have been attacked by caries (DMF). Per man of this group, 2.1 teeth have been filled, 2.4 teeth are carious to such an extent as to require extraction, 5.4 teeth require one or more surfaces filled, 7.6 tooth surfaces need to be filled, and the thirteen teeth already extracted plus the approximately two teeth needing extraction constitute the need for prosthetic replacement. Thus per rejectable man more than two-thirds of the dentition has been attacked by caries, close to one-half has been lost, only one-sixteenth shows treatment by fillings, and more than one-sixth is affected by unfilled caries which is in such condition as to justify treatment by fillings.

Per acceptable man (ages 21-35 years) eleven permanent teeth

Table 3. Dental status of the permanent tooth surfaces of rejectables (R) and acceptables (A). Rates for the specified components of dental status are expressed per man of specified chronological age group. Data derived from examination of 642 men of West Virginia and Maryland.

COMPONENTS OF DENTAL STATUS	CHRONOLOGICAL AGE IN YEARS (LAST BIRTHDAY)																
	GROUP	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	All Ages
<i>Surfaces</i>																	
Caries— Requiring Fillings	R	6.6	7.7	9.7	10.2	5.8	5.0	8.0	5.0	7.7	7.8	9.4	11.3	4.3	3.5	3.6	7.6
	A	7.2	6.7	7.1	7.1	7.0	8.1	7.4	6.3	6.7	7.0	4.2	8.4	8.9	4.2	8.8	7.1
Extracted	R	50.5	47.1	52.9	56.7	70.0	50.0	57.5	63.3	71.0	76.3	114.0	56.9	72.5	101.3	104.0	65.2
	A	10.3	9.4	13.1	10.1	18.0	19.4	15.4	19.3	20.0	28.3	22.5	27.0	16.1	13.3	33.0	13.1
Caries— Indicated For Extraction	R	14.6	15.8	11.9	13.0	4.4	31.7	8.8	10.0	4.5	17.3	0	5.8	1.8	4.8	2.4	9.9
	A	2.9	2.4	2.7	1.3	3.2	4.6	6.0	3.1	6.3	2.9	2.2	5.8	7.1	3.3	5.0	3.0
Filled	R	1.5	2.6	3.0	6.3	1.6	0	4.5	3.3	5.0	2.5	2.4	4.5	3.0	2.3	2.2	3.1
	A	2.9	2.8	3.5	5.8	4.9	3.4	4.9	3.3	6.1	10.2	8.8	5.0	1.8	9.3	3.8	4.0
DMF	R	73.2	73.0	77.4	86.2	81.8	86.7	78.8	80.7	88.0	103.8	125.8	78.1	80.8	111.5	112.0	85.7
	A	23.2	21.2	26.3	24.1	33.9	35.3	33.6	31.6	39.0	48.1	37.3	46.2	33.7	30.0	50.6	27.0

have been attacked by caries (DMF). Per man of this second group, 2.4 teeth have been filled, 0.7 of a tooth is carious to such an extent as to require extraction, 5.5 teeth require one or more surfaces filled, 7.1 tooth surfaces need to be filled, and the 2.6 teeth already extracted plus the 0.7 of a tooth needing extraction constitute the need for prosthetic replacement. Thus, per acceptable man, approximately one-third of the dentition has been attacked by caries, only about one-tenth has been lost, approximately one-sixteenth shows treatment by fillings and more than one-sixth of the dentition is affected by unfilled caries of such limited character as to justify treatment by fillings.

COMMENT

It is clear, as shown by the data given in the tables and in Figure 1, that the rejectable men have a more pronounced tendency to be attacked by caries than the acceptables. It may be noted that the rejectables have more missing teeth (extractions and indicated extractions) than the acceptables have teeth showing evidence of caries experience (DMF). Rejectables, as determined by Selective Service requirements, therefore tend to be those men who fall in the upper end of the range of caries susceptibility. On the other hand, the acceptables, although they tend to distribute along a lower range of susceptibility, have a considerable caries tendency. It is clear that the acceptables have a caries susceptibility sufficient to render their current volume of carious surfaces needing fillings approximately equal in magnitude to that shown by the rejectables.

The present situation, that is, the existing profound loss of teeth in the rejectables and the large volume of reparative services in the form of fillings and prosthetic appliances currently needed by both the rejectables and acceptables, arises in the main from a long continued accumulation and neglect of carious teeth and tooth surfaces which have developed and remained untreated year after year since the men were about 6 years of age. It is clear that a large disparity has long existed and still exists between the rate of development of

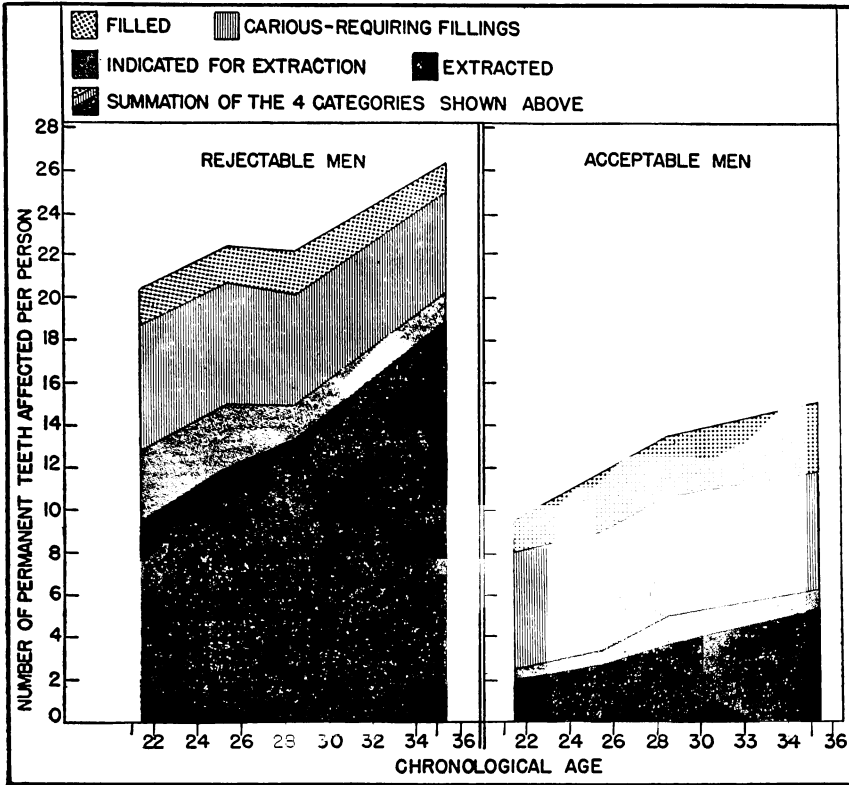


Fig. 1. Chronological age and the number of permanent teeth affected by the several categories of caries experience, per rejectable and per acceptable man. Data derived from examination of approximately 640 men aged 21-35 years in Maryland and West Virginia.

carious lesions and the rate at which these lesions are serviced by fillings in both the acceptables and the rejectables. The material presented graphically in Figure 2 shows the quantitative character of this disparity which has its origin soon after the first permanent tooth is attacked by caries. This disparity is maintained and continuously widens with increasing chronological age. The dental status of males (6-35 years of age) for whom such a disparity exists is shown graphically by Figures 3 and 4. These charts clearly indicate the large proportion of the caries experience which is formed at the present time, by extracted teeth, teeth indicated for extraction, and by tooth surfaces carious and awaiting treatment by fillings.

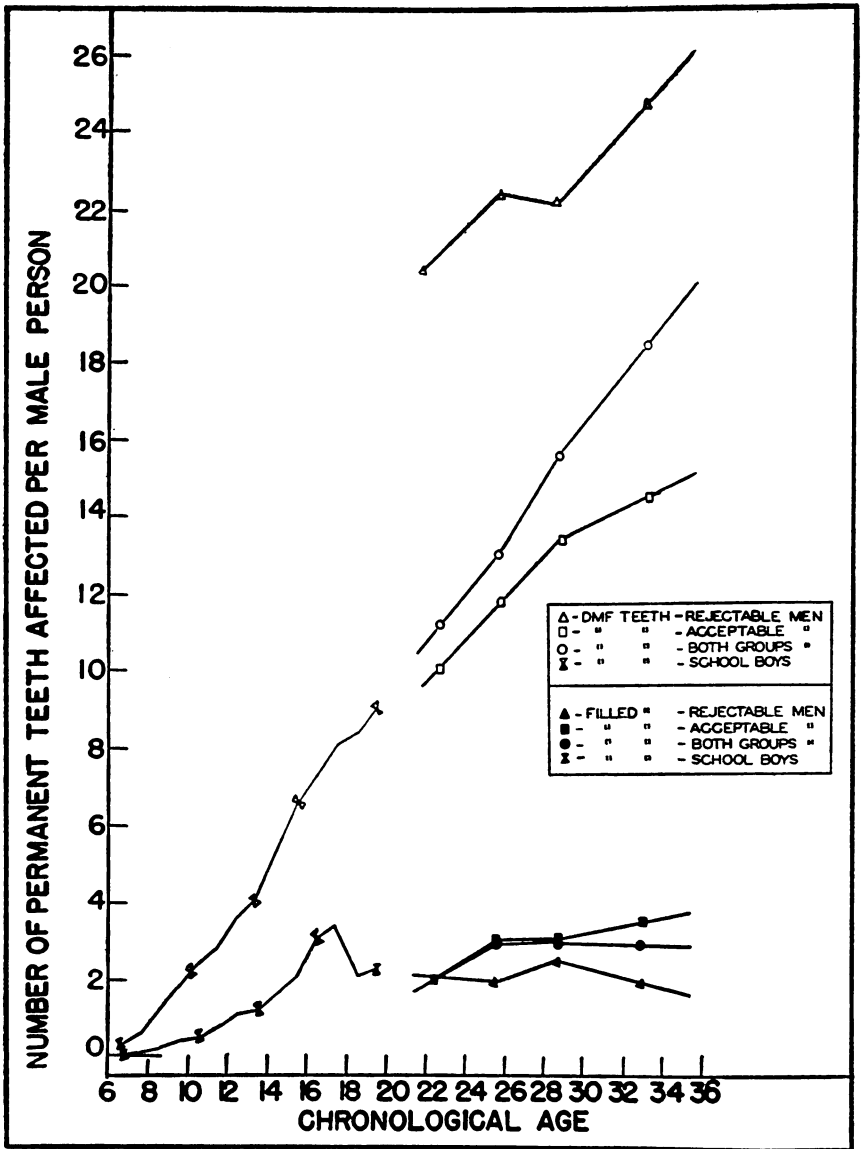


Fig. 2. Chronological age and the number of DMF permanent teeth and the number of filled permanent teeth per male person. Data derived from examination of approximately 3,000 elementary and high-school boys of Hagerstown, Maryland, and environs, and of approximately 640 men aged 21-35 years in Maryland and West Virginia.

It is well known that the prompt placement of fillings during

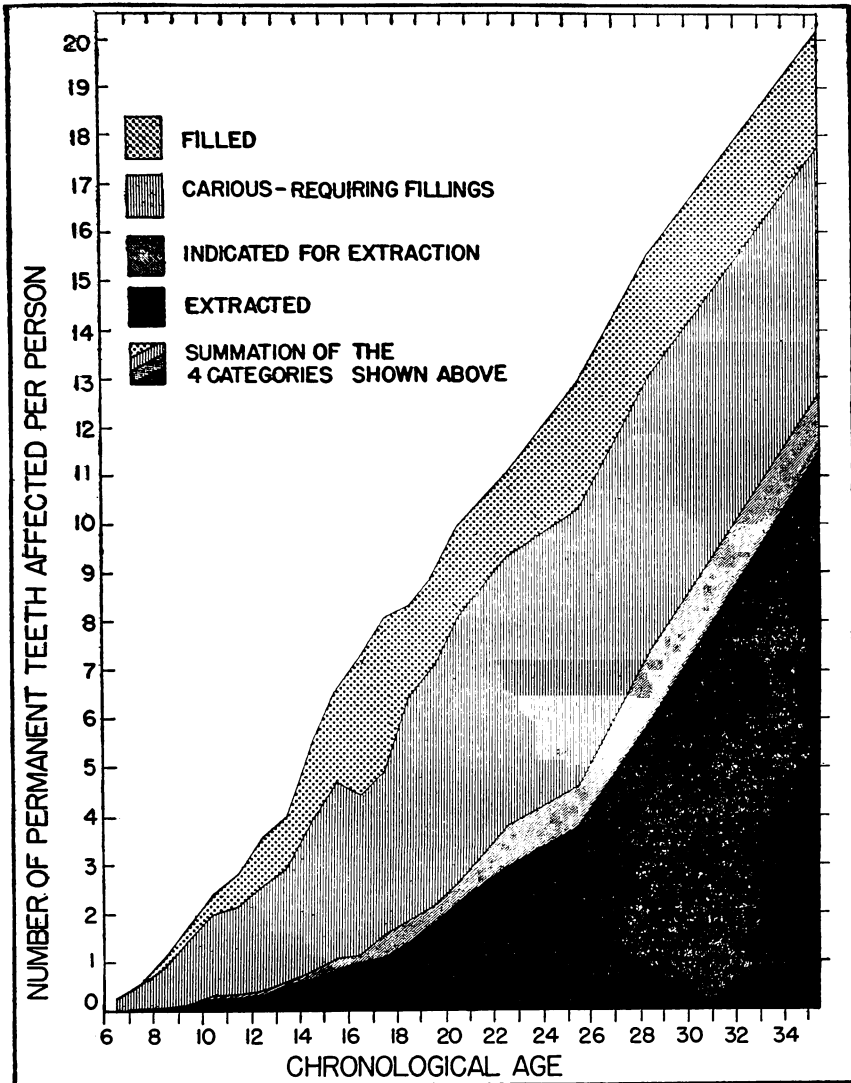


Fig. 3. Chronological age and the status of the permanent teeth. Data derived from examination of approximately 3,000 elementary and high-school boys in Hagerstown, Maryland, and environs, and of approximately 640 men aged 21-35 years in Maryland and West Virginia.

school attendance would have prevented a large share of the tooth loss observed in the men. Although present knowledge is not sufficient for the prevention of initiation of caries, the procedures of dentistry are sufficient to prevent dental rejectability even in persons

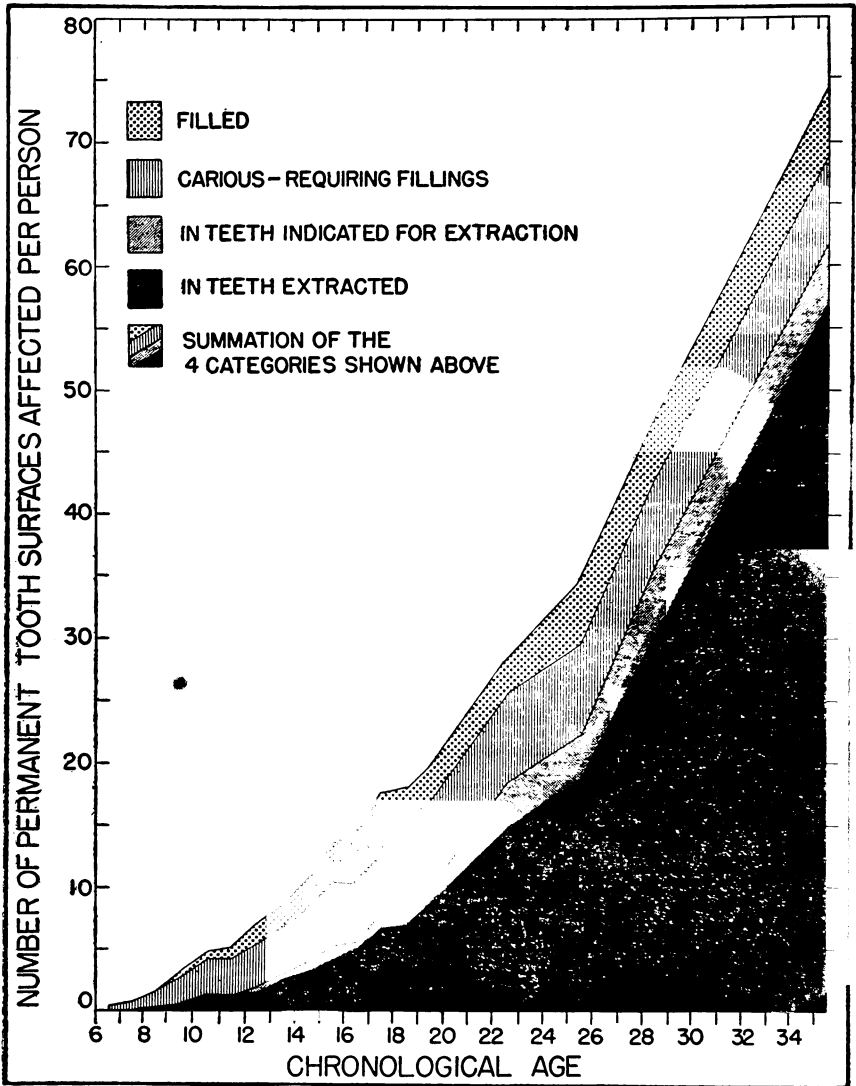


Fig. 4. Chronological age and the status of the permanent tooth surfaces. Data derived from examination of approximately 3,000 elementary and high-school boys of Hagerstown, Maryland, and environs, and of approximately 640 men aged 21-35 years in Maryland and West Virginia.

having marked caries susceptibility. If the prevention of dental rejectability be set up as an objective, it would be necessary to begin, at least at age 6 years, filling the teeth annually at a rate coincident with the rate at which carious lesions arise.

To reiterate, it is necessary to recognize that in general a new crop of caries develops each year in the permanent teeth from about age 6 years until practically all susceptible tooth surfaces have been attacked in late adult life. Thus the prevention of rejectability (as now defined) and the prevention of the *excessive accumulation* of need for fillings, and of dentures and bridges, in the rejectables and acceptables involves, until dental caries actually can be prevented, a systematic, perennial dental servicing problem, beginning in the first decade of life and continuing without interruption through the late adult ages.