levels of both pantothenate and coenzyme A in rat tissues. There was no appreciable accumulation of free pantothenate or panthenol during these tests. The lack of inhibitory effect of panthenol upon the rate of growth, the histopathological and hematological picture, as well as the high intravenous LD_{50} found for mice and rabbits provide further evidence that panthenol has no *in vivo* antipantothenate effect. Furthermore, in clinical tests of panthenol(6,7) no untoward or toxic effects were observed. For these reasons, it must be concluded that panthenol is generally non-toxic to mammals at dosage levels in the therapeutic range.

Summary. Toxicity tests of panthenol show that this biologically active, hydroxy analogue of pantothenic acid has no *in vivo* antivitamin effect in mammals. In acute toxicity tests, mice tolerated up to 6.25 g per kilo and rabbits up to 3 g per kilo. In chronic feeding tests, 2 mg per day of panthenol had no inhibitory effect upon the growth rate of normal rats on an adequate stock diet and 20 or 500 mg daily produced no histopathological or hematological changes in rats or dogs, respectively. When fed as above at the 2 mg per day level for periods up to 6 months, panthenol did not differ significantly from an equivalent supplement of calcium pantothenate in its effect on rat tissue storage of pantothenate. Total pantothenate in the liver, spleen, kidney and heart, and coenzyme A in the liver were equal or slightly greater in the dosed groups than in the controls. Liver storage in all groups was almost entirely as coenzyme A, and no appreciable amounts of panthenol or free pantothenate accumulated.

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Effect of Testosterone Propionate on Permanent Canine Tooth Eruption in the Monkey (*Macaca mulatta*). (17660)

G. VAN WAGENEN* AND V. O. HURME. (With technical assistance of Joseph Negri.)

From the Department of Obstetrics and Gynecology, Yale University School of Medicine, New Haven, and The Forsyth Dental Infirmary, Boston.

An obvious dimorphic character in the common rhesus monkey is the tusklike permanent canine tooth of the male. In the female the degree of modification of the canine is very much like that in human dentition. In fact, the teeth of the *Macaca mulatta* show many similarities to the teeth of man(1) and the dental formulae for both the deciduous and permanent teeth of man and this monkey are the same. In the normal male monkey of the rhesus colony† where these observations were made, the permanent canines begin to erupt during the latter half of the fourth year and all of them are present by the end of the fifth year. When recording the appearance of the deciduous teeth, it is necessary to make daily examinations during the first 3 months of infancy and then weekly observations are made, but after the second year the monkey's permanent teeth are not checked against his chart more often than once a month. There is, therefore, a plus or minus error of around 30 days in the data given here. However, in the normal male monkey all the permanent canines do not ap-

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1. Marshall, J. A., *The Anatomy of the Rhesus Monkey*, edit. by Carl G. Hartman and W. L. Straus, Jr., The Williams & Wilkins Company, 1933, chap. VI, p. 85.

† The Obstetric Monkey Colony, Yale School of Medicine, New Haven, established in 1931, now consists of 5 generations of this rhesus monkey.

pear simultaneously. They emerge one or two at a time as in the human, their period of eruption extends over 2 to 7 months.

The dental records of a series of 38 normal and 16 experimental males born in the colony have not been analyzed in full, as yet, but on the basis of preliminary surveys of the material, certain striking differences are apparent between the ages at tooth emergence in normal animals and those receiving injections of testosterone propionate.

The dentition records of 3 experimental animals in which early bone union of the skeleton and sexual precocity were induced(2) has been compared with similar data relating to the dentition of 10 normal males. The treatment with androgen began in Mm 22 at 6 months and 21 days of age; Mm 18 at 7 months, 6 days and Mm 43 at 1 year, 10 months and 2 days. Mm 22 and Mm 18 received 7.5 mg testosterone propionate‡ per kilo body-weight per week and Mm 43 received 22.5 mg per kilo. In these 3 monkeys an acceleration of growth and differentiation resulted in skeletal maturation at 2 years, 10 months instead of around 7 years, the age at which bone union is completed in the normal male.

Conclusions. A study of Table I reveals that in no normal male were the 4 permanent canines recorded as having emerged more or less simultaneously. The average age of the injected animals at time of canine emergence is seen to be about a year earlier than that of the controls. In fact, the earliest permanent canines in the latter group did not appear as early as the latest ones in the experimental group. It is thus evident that when androgen is employed as a growth-stimulating agent, the development with emergence of the canine teeth is also accelerated.

TABLE I.
Data on Permanent Canine Tooth Emergence for 10 Normal Male Monkeys and 3 Males Injected with Testosterone Propionate.

Animal No.	Age at emergence of earliest permanent canine yr.	mo.	day	Age at emergence of the fourth permanent canine yr.	mo.	day
A. Control Monkeys (Males):						
25	3	11	0	4	3	1
82	3	6	29	3	10	28
86	4	1	20	4	4	28
40	4	1	24	4	8	22
49	4	2	15	4	8	7
77	3	10	11	4	2	9
83	4	0	20	4	3	19
84	3	9	18	4	1	15
53	4	3	10	4	4	14
56	4	2	22	4	7	23
Age avg	4 yr.	0 mo.	7 days	4 yr.	4 mo.	11 days
B. Monkeys injected with testosterone propionate (Males):						
18	3	3	28	3	3	28
22	3	2	1	3	2	1
43	3	2	3	(2 lower canines present; autopsied)		
Avg age	3 yr.	2 mo.	21 days			

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2. van Wagenen, G., *Fed. Proc.*, 1947, v6, 219.

‡ Oreton was supplied by the Schering Corporation through the interest of Dr. Edward Henderson.

A Test for the Antigenicity of Rabies Vaccine. (17661)

CARL TENBROECK.

From the Department of Animal and Plant Pathology, The Rockefeller Institute for Medical Research, Princeton, N. J.

It is our purpose to report here a test for the immunizing ability of rabies vaccine that is more logical and less time-consuming than the official Habel test(1). It consists of one intraperitoneal injection of a vaccine into guinea pigs, followed 3 weeks later by the

1. Habel, K., *U. S. Pub. Health Rep.*, 1940, v55, 1473.