nevertheless missed an article by J. Ettori, published just 10 years ago (*C. R. Soc. Biol. Paris*, 1936, 202, 852), wherein is described a reaction similar to the one reported by us at Brussels.

Might we add a word of high praise for such men as Prof. Brull, Prof. Gillet, Dr. Lambrechts, Dr. Barac, and their Belgian colleagues at the University of Liége who, in the face of many dangers and personal disasters, bravely continued their scientific researches throughout the war, and who, with their families, extended every kindness and courtesy to the American soldier and scientist.

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The Occurrence of Crystalline Naringin on Grapefruit Rind

Naringin ($C_{27}H_{32}O_{14} \cdot 2H_2O$), the glucoside which imparts the characteristic bitterness to grapefruit, was first discovered by DeVry in 1857 (*Jb. Pharmacog*, 1857, 132, 1866). According to Poore (*Ind. eng. Chem.*, 1934, 26, 637), when grapefruit is stored, the content of naringin appears to diminish in both the peel and the juice.

Not long ago the writer's attention was called to aggregates of crystalline material that had collected on the surface of grapefruit rind, a cursory examination of this crystalline material indicating that it closely resembled naringin. The sample of grapefruit examined had been in the laboratory for some time and was gradually decomposing. Due to the pressure of other duties at the time, no more attention was paid to the exhibit, although a record of preliminary observations was made. More recently, opportunity was afforded for repeating the test for the purpose of definitely confirming the results heretofore casually observed. For this purpose a one-half portion of a grapefruit was placed, cut side down, under a bell jar, the latter not resting tightly over the fruit but on glass supports to permit ingress of air. The cut portion soon became inoculated with *Aspergillus niger* (Cramer) Van Tieghem. (The writer is indebted to John F. Reed, Baldwin-Wallace College, Berea, Ohio, for this identification.) In the course of 10 days, the growth of the *Aspergillus* was quite considerable, the fruit was rapidly decomposing, and there was formed on the surface of the rind numerous yellowish-white aggregates of material. These could be readily removed with a needle to an object slide and allowed to dry at room temperature.

The dried, yellowish-white masses, upon microscopic examination with crossed nicols, consisted of narrow rods and needles showing parallel extinction and negative elongation. The significant refractive indices as determined by the immersion method were: $\alpha = 1.480$ (shown lengthwise), $\beta = 1.625$ (shown crosswise), $\gamma = 1.668$ (shown crosswise)—all ± 0.002. These optical crystallographic data all agreed with those characteristic of naringin obtained from grapefruit and Florida and California oranges.

The fact that naringin crystallizes out on the rind of the grapefruit as it decomposes is of interest. The objective evidence indicates that conditions were suitable for the occurrence of these aggregates, although it has not been demonstrated that the increasing growth of the *Aspergillus* was necessarily wholly responsible for it. Both the changes initiated by the progressive development of mold growth and the general chemical decomposition of the fruit might have some effect on the appearance of the glucoside on the rind in crystalline form.

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Book Reviews

Rockets. Robert H. Goddard. New York: American Rocket Society, 1946. Pp. xix + 69; 10. (Illustrated.) $3.50.

Dr. Goddard is well known as a pioneer, if not the pioneer, of modern rocketry. Unfortunately, this book is not, as the title might indicate, a general discussion of the principles or accomplishments of rocketry but simply a reprinting of two Smithsonian Institution publications of the author—apparently his only publications in the field.

While an historical service is unquestionably performed in making available these out-of-print publications of the "father of modern rocketry," the dates of their original publication (1919 and 1936, respectively) and the tremendous development of rocketry in the last few years make it unreasonable to expect any great scientific value to accrue to the present-day reader.

The earlier and by far the longer paper is entitled "A Method of Reaching Extreme Altitudes" and gives a discussion of the possibility of using (sounding) rockets for the exploration of the upper atmosphere. It includes a presentation of Dr. Goddard's early experimental determinations of the gas velocity of smokeless powder rockets and a computation of the weights required to reach various extreme altitudes (125,000 feet and up).

The entire paper exhibits a rather odd blend of farsightedness and a surprising scientific naïveté. The soundness of the basic conception, that a rocket provides a practical means of attaining extreme altitudes, has been amply demonstrated by now. In addition, the extreme importance of a high gas velocity and a high ratio of fuel to empty weight is properly emphasized. Other suggestions presented in this 1919 paper which have subsequently proved of value include the idea of a multistage