for they apparently contain at least one ionone ring as well as an aliphatic conjugated polyene chain. Bixin and the safran pigments (crocetin and crocin) should probably be dropped from the true carotenoid classification, since it seems doubtful whether structural relationships to carotene will ever be established for them. As a matter of fact their polyene chain is all they have in common with the true carotenoids so far as chemical structure is concerned. Perhaps the designation pseudo- or secondary carotenoids would be better for them and their chemical classification based on the adoption of a generic name to indicate a common relationship, if that should alcohol-ketone (such as taraxanthin and fucoxanthin may be) derivatives of the carotenes would be given such designations as would indicate their respective relationships to the carotenes, and, in addition, the terminal endings -ol, -diol, -triol, -tetrol, etc., depending on the number of -OH groups; furthermore, such carotenes as possess the ketone structure would be indicated by the proper prefix, *i.e.*, keto-, diketo-, etc. The position of the various -OH and (or) $>C:O$ groups may also be indicated according to the usual organic chemistry nomenclature, as soon as this is determined.

The accompanying table shows the schemes for both

CAROTENOID NOMENCLATURE

Old name	Formula	Proposed new generic name	Proposed new chemical name
α-carotene	$C_{40}H_{56}$	α-carotene	βα-carotene
β-carotene		β-carotene	ββ-carotene
γ-carotene		γ-carotene	β-lyco-β-carotene
δ-carotene, etc.		δ-carotene, etc.	β-lyco-α-carotene, etc.
Lycopene	$C_{40}H_{56}$	β-lycopene	ββ-lycopene
Rhodoxanthin	$C_{40}H_{50}O_2$	diketo-β-carotene	5, 5′-diketo ββ-carotene
Xanthophyll	$C_{40}H_{54}(OH)_2$	α-xanthin-diol	βα-carotene-5, 5′-diol
Lutein			
Zeaxanthin	$C_{40}H_{54}(OH)_2$	β-xanthin-diol	ββ-carotene-5, 5′-diol
Flavoxanthin	$C_{40}H_{53}(OH)_3$	α-xanthin-triol	βα-carotene-(?)-triol
Taraxanthin	$C_{40}H_{53}O(OH)_3$	α-keto-xanthin-triol	(?)-keto-βα-carotene(?)-triol
Violaxanthin	$C_{40}H_{53}O(OH)_3$	β-keto-xanthin-triol	(?)-keto-ββ-carotene-(?)-triol
Fucoxanthin	$C_{40}H_{52}O_2(OH)_4$	(?)-diketo-xanthin-tetrol	(?)-diketo-(?)-carotene-(?)-tetrol
Cryptoxanthin	$C_{40}H_{55}OH$	β-carotene-β-xanthinol	β5′β-carotenol
Helenien	$C_{72}H_{116}O_2$	α-xanthin-diol-dipalmitate	βα-carotene-5, 5′-diol-dipalmitate
Physalien	$C_{72}H_{116}O_2$	β-xanthin-diol-dipalmitate	ββ-carotene-5, 5′-diol-dipalmitate
Capsanthin	$C_{35}H_{50}O_3$	?	?
Azafrin	$C_{27}H_{38}O_4$	hemi-α-xanthin-diol	di-α-1, 2-carotene-diol-(?)
Astacin	$C_{27}H_{32}O_3$	?	?

NOTE: The question mark indicates either (a) lack of information regarding the position of the known ketonic or hydroxyl group or (b) the group suggested has not been proved or (c) the structure is partly or wholly unknown.

prove possible, and a suitable terminology to show that they are carboxy acids.

The scheme proposed above is admitted to be a compromise with established practise of designating the oxygen-containing carotenoids by a distinct group name. However, attention may be called to the fact that it now seems entirely feasible to have a strictly chemical nomenclature for all the true carotenoids, based entirely on the terms carotene and lycopene or a combination of these terms. In this nomenclature the specificity of the true carotenes would be retained by use of the Greek letter prefixes which have already been assigned to them, except that "α" would specifically indicate the presence of optically active carbon atoms in the left- or right-hand ionone rings (or their open chain forms as they occur in lycopene), "β" will specifically represent the occurrence of only optically inactive carbons in the rings (or open forms of the rings). The order of naming the "α" and "β" rings (closed or open) would be from left to right. All the alcohol or ketone or combined the suggested new generic nomenclature for the C_{40} oxygen-containing carotenoids, and also for the proposed new strictly chemical nomenclature so far as the structural relationships to the carotenes are known.

The writer hopes that these suggestions will prompt discussion which will lead to the adoption of some logical biochemical nomenclature and prevent the accumulation of more confusion of names for these interesting and important substances while their chemistry is new and before long-established usage makes such adoption difficult if not impossible to secure.

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