branches as its essential part? Botanists tell us that the
question is badly framed, and that the life of the organism
depends on the mutual action of its different parts.

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DARBOUX'S MEMOIR ON CYCLIQUES.

*Sur une Classe Remarquable de Courbes et de Surfaces Algébriques
    et sur la théorie des Imaginaires*, par GASTON DARBOUX,
    Doyen de la Faculté des Sciences de Paris.   Second
    tirage.   Paris, A. HERMANN, 1896.

IT is a pity that M. Darboux did not make some addi-
tions to this work since its first publication in 1873.   He is
so full of ideas in a number of mathematical directions
that it is a cause for regret that he has not devoted some
more time to a subject which offered him once such a fruit-
ful field for original investigation.   However, those who
know the work will be glad to make acquaintance with it
again, and others who are tired of conic sections and quad-
rics may be gratified by finding in it a somewhat similar
but still novel field of investigation.

Darboux calls the curves and surfaces which he treats of
cycliques and cyclides, respectively.   The latter word has
been generally adopted in English as a name for the sur-
faces, but the former has been replaced by bicircular quar-
tics and sphero-quartics, which two designations conveni-
ently distinguish between the plane and spherical curves.
The name cyclide had already been used for a particular
form of the surface by Dupin, and soon came to be adopted
generally in its present sense, while the different names of
the curves arose from their being studied independently in
Great Britain and France.   At one time, from about 1865
until early in the seventies, these curves and surfaces were
studied enthusiastically in France by Darboux, Laguerre,
de la Gournerie, Moutard, Mannheim and others, while
they received attention in England at the hands of Crofton
and Clifford, and in Ireland secured very full and adequate
treatment from Casey.   All these mathematicians worked
at the same time and nearly entirely independently of each
other.   Thus Darboux's book contains much that has been
more fully worked out elsewhere, and, besides, of course,
it has no references to many striking results that have been
arrived at in this branch of geometry, as, for instance,
Casey's ingenious method of rectification of the bicircular
quartics and sphero-quartics.   But these wants are made up