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felicity which Divine Providence in its wisdom may deign to
shower down on Your Royal and Sacred Head—is the most
ardent wish and fervent prayer of the President, Council, and
Fellows of the Royal Society, in unison with all your other loyal
subjects."

The following papers were then read, viz.

"On the structure of the teeth, the vascularity of those organs,
and their relation to bone." By John Tomes, Esq. Communicated
by Thomas Bell, Esq., F.R.S., Professor of Zoology in King's Col-
lege, London.

The microscopical examinations which the author has made of the
structure of the teeth of man and various animals, lead him to the
conclusion that their bony portions are formed of minute tubes, dis-
posed in a radiated arrangement, in lines proceeding everywhere
perpendicular from the inner surface of the cavity containing the
pulp. These tubuli are surrounded by a transparent material, which
cements them together into a solid and dense mass. He finds, by
applying the test of muriatic acid, that carbonate as well as phos-
phate of lime enters into their composition. In man, the tubuli, du-
ing their divergence from their origin at the surface of the central
cavity, send off a number of very minute fibrils; and on approach-
ing the enamel or the granular substance, which cover respectively
the crown and the fangs of the tooth, the tubuli divide into smaller
ones, which freely anastomose with one another, and then either are
continued into the enamel, or terminate at the boundary between
these two substances. Various modifications of this structure, ex-
hibited in the teeth of different animals, in the class Mammalia and
Fishes more particularly, are minutely described. The granular sub-
stance appears to be composed of irregularly shaped osseous gra-
nules, imbedded in the same kind of transparent medium which ce-
ments the tubuli together. External to the granular portion, the
author finds another substance entering into the formation of the
simple tooth, and commencing where the enamel terminates; and
which he describes as beginning by a thin and transparent layer con-
taining only a few dark fibres, which pass directly outwards; but
assuming, as it proceeds towards the apex of the fang, greater
thickness and opacity, and being traversed by vessels.

External to the enamel, and in close connexion with it, in com-
pound teeth, is situated the crista petrosa, a substance very similar
to the bony layer of the simple tooth. It contains numerous cor-
puscles, and is traversed by numerous vessels entering it from with-
out, and anastomosing freely with one another, but terminating in
its substance. These investigations of the structure of the different
component parts of teeth, furnish abundant evidence of their vascu-
lariness and consequent vitality.

"On the evolution of Nitrogen during the growth of plants, and
the sources from whence they derive that element." By Robert Rigg

In this communication the author follows up his inquiry into the