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by the mother. When they see her coming with some
tucker they will race to her and the winner takes it on
the wing. And talking of these swallows, just stand in
the rain and watch them some day. They are sure to be
there—swooping and turning, somersaulting and twist-
ing, flying low over the pools yet barely skimming the
surface—riying so close that their russet throats and
deep blue backs open one’s eyes with wonder. Look
up, too, what a gathering on the telephone wires! What
a happy, excited, gossipy gathering!

Our willie wagtail likes us so very much that he
takes the cocoanut fibre from the fern baskets to build
his nest. I’ve caught the scarlet honeyeater doing that,
too. This willy has had a wonderful time—about full
moon last month he could be heard singing in the moon-
light about 1 or 2 each morning. In spite of the lack
of sleep his nesting operations appear to be proceeding
according to plan.

Of course, I have had to leave quite a few out—
the black-faced and leaden flycatchers go through each
February and September. You would love my fly-
catchers in their soft greys and oranges. They are easy
to distinguish apart from their colouring, because when
they land on a branch, their tails tremble ever so slightly.

From across the Pacific have come the words of a
naturalist for whom I have the greatest admiration, John
Burroughs, a naturalist in the fullest and wisest sense
of the word. In one of his essays he says of his rambles,
"Whichever way I go, I’m glad I came." And although
the birds and trees and stones of these few paddocks are
so very well known to me, such are their variety and
charm that I say with John Burroughs, "Whichever way
I go I’m glad I came."

PRESIDENTIAL ADDRESS.

By Dr. E. O. Marks; delivered 15th February, 1943.

On the occasion of his retirement, the President of
this Club is expected to deliver an address. Would that
I had either the mind or the matter, as I have the desire,
to give you something worthy of the occasion, something of
fresh scientific interest. But the times are such that none
of us can give our usual application to our scientific hobbies. At the back of everyone’s mind, suppressed perhaps more in some than in others, is the sadness, the horror and the anxiety of the war and of its aftermath, though, fortunately, we have not in Brisbane felt the direct effects of enemy action.

For this immunity we have to thank the wonderful young men and women of the fighting and auxiliary services, both of our own Empire and our allies, who are enduring unlimited hardships and dangers to preserve our nationhood. Fifteen of our Club members are in full time service with the forces. One of them, Lieutenant George Kenneth Jackson, whom we knew as a member from his boyhood and who indeed, as a naturalist, grew up in the Club, has made the supreme sacrifice. He enlisted in the A.I.F. at the outbreak of the war and served in the Middle East, being through the siege of Tobruk. He returned to fight in Papua at Milne Bay and had only recently got his commission when he was killed in the attack on Sanananda.

Our profound sympathy goes to his young wife and to his parents, Mr. and Mrs. G. L. Jackson. Their sorrow and pride is shared by all members who will miss Ken Jackson’s cheerful companionship and will long remember his enthusiasm, energy and venturesomeness, and not least his facility for finding aboriginal implements where others could see none. His wide interest in, insight into, and love for nature showed him to be a natural naturalist and we can recall some delightful talks he gave on his favourite subject, the Australian aboriginal. Mr. Longman, the Director of the Queensland Museum, of the staff of which Ken Jackson was a member, has told me what a great loss he is to the Museum being so fitted by natural bent to that kind of work.

Our sympathy goes, too, to our former President, Mrs. Aubrey Thomson and to Mr. Aubrey Thomson in the loss in the war of their son Comrie and their anxiety for their son Peter, a prisoner of war.

Two of our members, Mrs. Williams and Mr. W. D. Salkeld, who died during the year, will be greatly missed from meetings and excursions.

Owing to the difficulties of travel and accommodation mentioned by our Excursion Secretary, we have been to no
new areas. Consequently I have no new field on which to address you, but instead propose an

"Excursion in Local Geological History."

This contains nothing new, nothing that is not familiar to all local geologists, but it may perhaps give a little more connected view to those of us who only get disconnected glimpses on our field excursions, and may point out the great gaps in our knowledge and the many problems for which we seek information in the field.

From the geologist’s point of view we in Brisbane are very fortunate in having a great variety of structures and formations within our reach, even within the city quarried sections, show a geological rarity, a fossil land surface. By the ordinary citizen our schist areas, though providing nice hills for residential purposes, are regarded with disfavour because of the poor and stony soil which gives the would-be gardener such a heartache and backache in trying to make, and such a pride in achieving, a garden. But what gardener thinks of these rocks as being ancient sediments deposited in a long-ago palaeozoic sea or considers that they must have been derived from a land of still older rocks? These Brisbane schists are the oldest rocks we know of in south-east Queensland. Whence did their material come? The sands and muds, mostly fine, may have been transported great distances by water currents, so the land from which they were derived was not necessarily very near. Could a study of the schists from a petrological aspect give any information regarding the place of origin or the nature of the land?

Mr. C. C. Morton has suggested that the Greywackes which form part of the schist series and show fresh felspar fragments, indicate that the condition of denudation had been either frozen or arid.

The schists vary immensely from what are little altered shales and sandstones to quartzites, mica-schists and greywackes and include altered igneous rocks. Mr. Denmead regards them as being of three series:—

1. The Greenstones—altered basic igneous rocks, as seen at Petrie and Mt. Mee, and elsewhere.
2. The Phyllites, such as we have in Brisbane and vicinity.
3. The Greywackes, the dense hardened massive sediments such as we see on the eastern side of Tamborine Mountain.
They total an immense thickness of sediments and lavas, estimated by him at 75,000 feet, which were subsequently crumpled, twisted and tilted, and altered to varying degrees by heat, compression and shearing so that now they mostly lie at very steep angles with a prevailing N.N.W.-S.S.E. strike. What is their geological age or ages? Geologists have sought vainly for fossils and speculated almost as vainly. A few years ago Mr. L. C. Ball found some marine fossils of carboniferous age at Northbrook in rocks which until then were accepted as part of the schist series, but further examination has led some to the opinion that they belong to a more recent series.

Members of this Club may perhaps be lucky enough to find a fossil-bearing locality in the so-called schists or succeed in puzzling out the structure of the complex of varied rocks, and their relationship to the carboniferous strata at Northbrook.

The steep dips and almost uniform strike of these ancient strata indicate that after their deposition there must have been a period of mountain forming to which nothing comparable has since happened in this part of Queensland. The upturned and elevated rocks thus exposed to denudation became worn down to a surface which seems to have been somewhat similar to the surface of the same rocks at the present time. On this hilly land-surface, in Triassic times were laid down the extensive fresh-water formation of the Ipswich coal-measures and Bundamba sandstones and Walloon Coal-measures in continuous sequence.

In the Esk district there are Triassic strata under the Ipswich. In the neighbourhood of Brisbane the very beginning of the deposition of the Ipswich coal measures, and cessation of denudation of the then existing land was ushered in by an eruption of volcanic ash, the land being covered and thus preserved by what is now known as the Brisbane Tuff.

Preservation of vegetated swamps under subsequent sandstones or shales is, of course, a feature of all coal-measures, and the preservation of the vegetated surface under and between lava flows is also common, as for instance at Tamborine Mountain, but it must be surely a great rarity for a land-surface, an ordinary hilly land-surface to be preserved by being covered with a
volcanic ash and to form the base of a very extensive and important geological formation. Yet this is actually what we have exposed in some of our city quarries. It was a surface on which large coniferous trees grew in abundance, the silicified trunks of which are a notable feature in the exposed sections.

It was an irregular surface, of which the tuff and the Ipswich strata first filled the valleys, the later strata extending beyond, or overlapping the lower beds like a flood, so that we find either the basal beds or higher strata resting directly on the schists in an "uncomformable" junction.

Subsequent changes in elevation and consequent denudation of the mesozoic strata has exposed again areas of schist once covered, exposing hills of schist like islands surrounded by the sea of sandstones and shales. Only in a few places does the present boundary line appear to have been determined by later faulting, though the whole area has been much faulted.

The chief interest for our present purposes is the time-gap which the unconformable junction represents between the deposition of the "schists" and the deposition of the mesozoic strata. In that interval the "schists" were folded and crumpled, and to a varied degree metamorphosed, then exposed to denudation and on their worn-down surface was deposited the later formation.

Over a very large part of Queensland a long period of fresh-water sedimentation now followed, in which the Ipswich coal-measures, the Bundamba sandstones and the Walloon coal-measures followed in continuous succession. The coal-measures were vegetated swamps alternating with deposits of sand and mud, probably carried by floods. Dinosaur footprints in the roof of a coal seam at Rosewood show that the animal walked about in the soft vegetable matter just before it was covered by a deposit of silt which made a cast of the prints. In other places fossilised tree-stumps growing in situ in the sands show that the sands were not deposited in deep water. Rather do these suggest a condition something like our present western Queensland where the rivers in flood spread out over wide areas of level plain depositing the sediments brought from the higher country, only with the difference of course, that the climate was much less arid than our
present West.

In Western Queensland, and also in the Maryborough district, the freshwater deposits were succeeded by marine strata, the sea apparently invading in cretaceous times areas previously freshwater.

The area now occupied by, or underlain by Mesozoic freshwater beds is very large, extending from the southern border to the Gulf of Carpentaria, and up the western side of Cape York Peninsula, and from Brisbane to the western border. Along the Eastern coast it extends from Brisbane to beyond Bundaberg on the eastern side of the belt of palaeozoic rocks which further north come right to the coast. This gives the suspicion that the sandstones may continue beyond Sandy Cape under the sea to the east of the palaeozoic rocks and be continuous with the sandstones of Cape York Peninsula, as is the case on the western side.

Even without this possible very large extension of area under the sea, the present exposed area of mesozoic rocks is very large and of considerable thickness,—a few thousand feet.

This is an immense volume of material, derived in mesozoic times from the denudation of the exposed areas of older rocks, on the west probably from the vast areas of ancient rocks further west, but in the east no doubt from the palaeozoic rocks forming the backbone of eastern Queensland.

To come back to the south-east corner of Queensland where we are holding our excursion, the change from the Ipswich and Bundamba to the Walloon coal-measures seems to have been accompanied by a change of conditions for the strata become more calcareous or saline, and the coal seams are of a different character. There is also a slight change in the flora to the Jurassic rather than Triassic types though many are common in both formations.

The change in rock type and perhaps also in the flora may be due to a change in climate or to a change in the material from which the rocks were derived. Personally, I fancy the latter is the likely explanation, and that there were probably volcanic eruptions on the land, the denudation of which altered the character of the resulting vegetation and sediments. There are some sections showing
volcanic rocks included in the Walloon strata very suggestive of contemporaneous volcanic action.

The story after the Walloon or Jurassic period is very confused in this area. Perhaps some day we will be able to puzzle it out. There are no known marine cretaceous strata following the Jurassic here; if they ever existed they have been removed. The later deposits of Cainozoic age, which we usually call the Tertiaries seem to occur as freshwater sediments in basins in the mesozoic rocks. There had been much denudation and in some places much faulting and folding of the mesozoic strata, though nothing comparable with what had happened to the "Brisbane Schists" prior to the laying down of the Ipswich coal-measures.

There were two major faults, West Ipswich and D'Aguaier and some folding with subsequent denudation prior to the tertiary deposits which lie unconformably on the mesozoic beds. The tertiaries themselves have since been faulted and folded to some extent.

Just as, owing to lack of fossil evidence we are uncertain of the age of the "schists," so geologists are uncertain where to place in the time scale the isolated basins of tertiary deposits, the fossils found sufficing only to refer them to the Cainozoic or Tertiary age.

Associated with the Tertiary beds in the Brisbane region are flows of a peculiar kind of basalt, as at Bald Hills, Runcorn, Cooper's Plains and Bundamba.

This basalt occurs at low levels, and extends along the shores of Moreton Bay from Redland Bay to Lytton and occurs again at Humpybong. It lies on the denuded upturned edges of the West Ipswich fault and seems to flood round the mesozoic hills at Manly. In two places bores have penetrated through 900 feet of it, one at Bundamba and the other at Birkdale on the shore of the Bay.

This is very puzzling, for there is no possible connecting valley between these two points where the lava flowed, now so far below sea level.

If we now come to consider the other basaltic rocks which occur to the south and south-west, Tamborine Mountain is perhaps the nearest of them to Brisbane. They are of different rock types from the basalt associated with the Tertiaries mentioned above and they occur largely as cappings of mountains or plateaus. These lavas were poured out in extensive and oft-repeated flows
of great total thickness over both the schists and the mesozoic strata, which have been intruded by sills and dikes. The surface on which they flowed was apparently not an even one. Between the flows there was often time for vegetation to grow on the basalt surface, now evidenced by charred wood and lignite. We do not know the former extent of these basaltic lavas, but we do know that it was very much greater than the present area covered for the simple reason that liquid lava, like water, flows in and floods the valleys or spreads over flat land, while the rock now occurs largely as mountain cappings with abrupt cliffs looking out over low country, from which it and much underlying rock must have been removed by denudation. Associated with these basaltic rocks are rhyolites and rhyolitic tuffs. The field relationship of these two very different types of rock are by no means clear, the more we see of them the more confused they seem (and we become). There is a lot of careful field observation required before we can hope for a solution. It is clear, from their present position, that these lavas, though of Cainozoic age, are very far from recent, for an enormous amount of denudation has taken place since the streams first started to flow on their surface. Consider Tamborine, the Main Range at Cunningham’s Gap, Mt. Mistake, Mt. Edwards or the small area left at Mt. Glorious on the top of the D’Aguilar Range, and what a long period of denudation they indicate.

There is much scope for our geological observers to try and puzzle out the age of these basalts and their relationship to the basalt associated with the Tertiary deposits near Brisbane and along the shores of Moreton Bay, and the part played by these rocks in the development of our present topography.

May members of this Club find the solutions to the problems!