Rocks in the field

Two more igneous rocks

GLYNDA:
Before we finish with the igneous and metamorphic rock types lets look at two more which give clues as to their origin when we find them in field situations. No bedding, irregular jointing but no contact visible. And of course it's a very pink colour .If we look at a freshly broken surface we can see that it contains abundant pink feldspars and white feldspars. It's crystalline texture and medium grain size would seem to indicate to me that it could be a microgranite. And a thin section that we collected on an earlier trip confirms this. In thin section the rock is medium grained with a crystallised texture and although quite weathered it's still possible to make out fresh quartz and twinned potassium and plagioclase feldspar Any micas present have been altered to secondary minerals. The grain size, mineralogy and texture confirm, that it is indeed a microgranite. A reasonable hypothesis is that the rock was once a magma. And from extensive work on granites, we know that they're cooled as intrusions at depth only reaching the surface when exposed by uplift or erosion or a combination of the two. But of course igneous rocks are not the only rocks that are formed at depth.

TONY:
Whilst many granites crystallise at a depth of about 5 to 10 kilometres, this rock has probably formed at much greater depth -perhaps 15 to 20 kilometres. It's still a crystalline rock but if I was to look at it in a slice through the rock in this orientation, I'd see it's actually very different. There's quite a pronounced preferred orientation of the minerals in this rock. How do I form that? If I start with a sediment that's rich in clay minerals like a mudstone and subject it to an increase in temperature and pressure what's going to happen? Well it's going to start to recrystalise and as it does so if the pressure is operating in this orientation the platey minerals like micas and so on will find it easier to develop in that orientation and so in essence the long axis of these micas will be arranged in a parallel alignment, creating what we refer to as a foliation. It's a very characteristic feature of regional metamorphosed rocks. There's one crucial difference between this rock and the granite though. Whereas the granite forms as a magma and crystallises in essence from a liquid, this rock is largely formed in the solid state. The end product of this rock is one which has this beautiful alignment of minerals and I can see it here in this specimen -this very pronounced sheen is totally diagnostic of micaschists. And on that basis, that's what I'm going to call it.

GLYNDA:
Here are some more examples of micaschists as you might find them in the field. Often folded and refolded there's good evidence of tectonic activity to be found in these ancient rocks.