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Examination of cracks in a house at Tamar Avenue, George Town.

W.L. Matthews

Cracks have developed in the north side of a brick house situated in Tamar Avenue, owned by Mr Jaesche who requested an examination to determine the likely causes of the cracking.

The house is situated on the west side of Tamar Avenue on the edge of a terrace and on a block which slopes towards the Tamar River at an angle of about 10°. Sand has been deposited on the terrace some of which has drifted down the slope towards the river. Clay underlies the sand which in turn is underlain by Tertiary basalt. The basalt appears to extend to the shoreline west of the house. The basalt overlies Tertiary clay with an undulating contact, the clay being exposed along the shoreline at some points in the vicinity of Tamar Avenue. The clay overlying the basalt could be derived from the *in situ* weathering of basalt or could be sedimentary in origin.

DISCUSSION

Mr Jaesche thought that the cracking, which he states has developed during the last 1-2 months, might be due to landslipping, blasting or foundation failure.

Some time ago the block was included in a zone regarded as potentially unstable but after subsequent investigations, it was removed from this classification. No signs of recent movement can be seen although old slips are known to occur in the Tamar Avenue area.

Blasting on a nearby island in the Tamar River was thought by the owner to be a possible cause but this was discontinued some two years ago. It is unlikely that the blasting would have caused cracking that developed only recently.

Mr Jaesche has dug small pits beside the foundations of the house to examine the cracking. The foundations are shallow and rest on clay where the pits have been dug. The north-east corner of the house has only about 150-200 mm of sand overlying the clay, whereas under the house on the western side has at least 600 mm of sand. Because of the shallow foundations and the fact that clay underlies them, it is thought that the cracking is due to drying and contraction of the clay. Tamar Avenue has recently been sewered (about November 1972), and previous to this, septic tanks were used. Mr Jaesche states that drainage from houses on the east side of Tamar Avenue used to keep his block quite damp even in summer time, but since the sewerage scheme has been connected his block has dried out. It therefore seems likely that the reason why the cracking has not occurred previously is because drainage from septic tanks has kept the clay moist and in an expanded condition.

CONCLUSION

The probable cause of the cracking in Mr Jaesche's house is due to shallow foundations resting on clay which contracts and expands when it is dried or wetted. This process has apparently been more pronounced since the connection of the sewerage scheme in Tamar Avenue.

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