5 (cont'd) S_c, F_s and F_c. Both F_0 & F, and the k's are known. Eliminating, yields:

$$F_c = (F - F_0) / (1 + k_s/k_c)$$

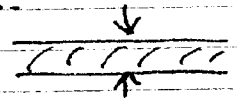
— 2 other approaches are possible

6 This problem is clearly indeterminate as no loads are given, and we need to know load on tie rods before we can find stress. Assuming single start thread, the pitch is the distance moved along the screw by a nut when it is rotated by one revolution. So, here, the screw will have drawn through the tapped hole in the beam by 1/4 of 3 = 0.75 mm.

In order to clarify deformations and load building blocks, first consider each deformable member in turn to be made of soft rubber. What then happens when the screw moves downward through the beam?

- if the tie rods are rubber, they'll extend i.e. tie rods in tension.
- if the screw's of rubber, the majority of it (i.e. the bit that counts below the beam) will be compressed.
- if the beam's of rubber, it will bend thus :-

NOTE
- Buckling is NOT the same as bending.
- It's not enough to say "Assume bending is negligible", when it can be demonstrated that it's not negligible. Assumptions must always be justified.
- Have to neglect beam's local change in cross-section near hole, since no other dimensions given. Assume constant rectangular cross-section.
- Note that the beam is not compressed, there are no loads as shown here :-



- The approximate length of screw subject to compression is 250 mm. Although we might strive for greater accuracy, recognising that part of screw in beam is also compressed, this sophistication is not warranted in view of other simplifications.