should arbitrary irrationality be on the side of the status quo? If the status quo is based on accidents of history and tradition which are difficult to justify, why not then say quite as irrationally: "we are going to eliminate excessive lengths of stay in hospital by administrative action; this may do some damage but less than the benefits of the spending money in other ways."

PROFESSOR DUDLEY: This is why Galton coined the term "regression to the mean": irrationality is on the side of the status quo. We're not ready to make these arbitrary decisions on, say, not letting anybody having a herniorrhaphy stay in hospital for over two days. One of the reasons for this is that we're a profession—and one of the freedoms of a profession is for its members to do as they like.

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Hospital Topics

Splinter Haemorrhages, Pitting, and Other Findings in Fingernails of Healthy Adults

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Summary

Splinter haemorrhages, pitting, transverse grooving, ridging, and flaking occur often in the fingernails of the healthy. While they may occur more often in certain diseases they have little diagnostic value in the absence of proper methods of measurement and examination and without a range of normal values for the sexes and age groups.

Introduction

Pitting and splinter haemorrhages are traditionally associated with psoriasis and bacterial endocarditis, but these phenomena may be absent in psoriasis and endocarditis and present in other conditions.[1 2] Platts and Greaves[3] surveyed 35 "normal" people and found no splinter haemorrhages, but they found them in 12 of their colleagues and in four out of 12 hockey players. Schinas and Brun,[4] attempting to assess the significance of pitting in patients, found 25% of non-psoriatic patients had pits compared with 61% of psoriatic patients. If these phenomena are common in the healthy their presence in disease means little and does not aid diagnosis.

Subjects and Methods

The criteria of "healthiness" were strict, and a quarter of the subjects approached were rejected. No subject was included who had a history of psoriasis or active skin disease. No one who had been ill in the last two months was accepted nor was anybody with chronic disease or on long-term medication. All the 64 subjects (56 right handed, six left handed, and two ambidextrous) were white, unrelated by blood, associated with the hospital service, and working normally (table I).

TABLE I—*Age and Sex Distribution of 64 Subjects Studied*

Age (yrs)	10–19	20–29	30–39	40–49	50–59	60–69
Men	0	3	13	2	5	1
Women ..	1	18	9	6	5	1

Examination began with a general inspection of the hands. The nails were viewed end-on to see if the nailplate or hyponychium were thickened. Each nail was examined from the nailfold to the free edge with an auroscope providing a convenient light and magnification (×1½). Pressure on the free edge of the nail blanched the distal capillary plexus, making it easier to see splinter haemorrhages. Abnormalities were recorded diagrammatically.

Results

Pits were defined as localized deficiencies of the nailplate, and required differentiation from trauma and undulations of the plate. "Dappling" or distortion of the plate, "grid iron" appearances due to the intersection of transverse and longitudinal grooves, and "beading" of longitudinal ridges made interpretation difficult. If we were uncertain of the nature of a lesion it was not counted as a pit. The size of pits varied both in and between individual nails and subjects but ranged from 0·25 mm to 1 mm. Smaller pits were often missed on naked eye inspection. Most pits were 0·5 mm to 1 mm and had smooth and rounded sides. No erosions[1] or confluent pitting were seen. Over half the subjects had pits (table II) but only one had "gross pitting"—

TABLE II—*Distribution of Pitting*

No. of Pits	0	1	2	3	4	5	6	7	8	9	10	11	12	13	21
No. of Subjects	27	12	7	5	3	1	1	0	3	1	0	2	0	1	1

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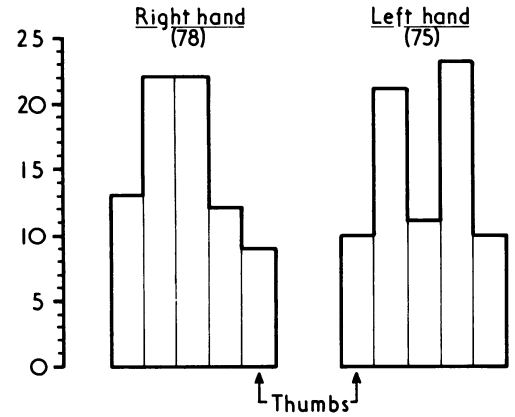

FIG 1.—Digital distribution of pits in nails of 37 subjects. Numbers of pits are given in parentheses.

more than 20.[5] Statistical analysis suggests that the digit distribution of pits is due to chance (fig. 1).

The prevalence of pitting in both sexes was similar, 22 out of 40 women compared with 15 out of 24 men having one or more pits, and it was not more common in the older groups. Thirteen out of 20 subjects over 40 years of age had pits compared with 24 out of 44 younger subjects. Of the subjects with pitting men had significantly* more severe pitting. Out of 153 pits 102 occurred in 15 men, while 22 women had 51 pits. Age did not affect the severity of the phenomenon. Twenty-four subjects under 40 years of age had 102 pits compared with 51 in the 13 subjects over 40 years old.

Splinter haemorrhages have been well described by Dowling.[3] An idea of their variation in size is given in fig. 2; the finger belonged to a wicket-keeping surgeon who had received a direct hit on it a week or two before. The distribution of splinter haemorrhages among the subjects, more than half of whom had at least one, is shown in table III. The digit distribution of splinter haemorrhages is shown in fig. 3. It was different to that of pitting, there being significantly more on the index fingers and thumbs and on the right hand. The site of all but one of the 87 splinter haemorrhages was on the distal one-third of the nail plates. Most lay in the line of the distal capillary bed or the onychodermal band.

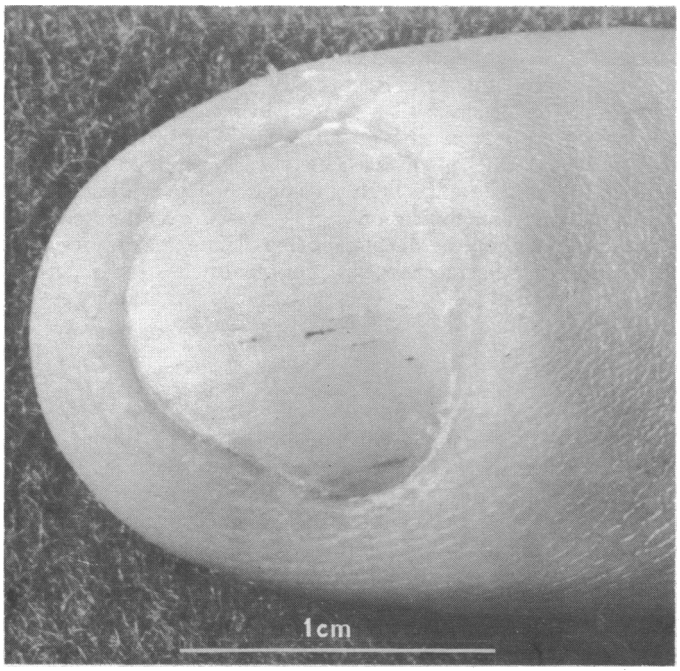

FIG. 2—Splinter haemorrhages resulting from hit with cricket ball.

TABLE III—*Distribution of Splinter Haemorrhages*

No. of Splinter Haemorrhages ..	0	1	2	3	4	5	6	7	8
No. of Subjects ..	28	12	14	4	3	0	0	1	2

*Unlikely to occur by chance more than once in 100 similar samples.

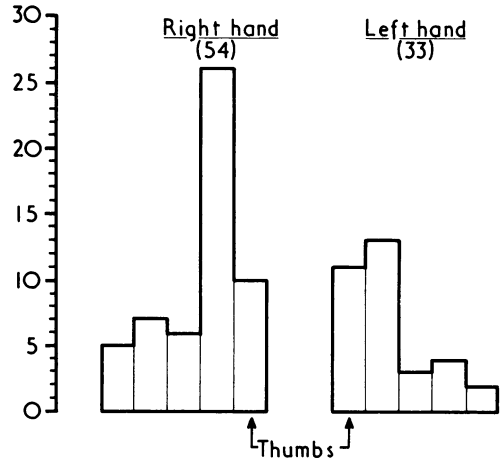

FIG. 3—Digital distribution of splinter haemorrhages in nails of 36 subjects. Numbers of haemorrhages are given in parentheses.

The number of splinter haemorrhages per person remained similar however many pits were present (table IV). This suggests that the distribution of splinter haemorrhages is statistically independent of that of pits. The prevalence of splinter haemorrhages was the same in both sexes (22 out of 40 females and 14 out of 24 males). The prevalence in the over 40 age group was 13 out of 20 compared with 23 out of 44 in younger subjects. Men with splinter haemorrhages had significantly more of them as did those in the older (above 40) age group. Thus 22 women had 41 splinter haemorrhages compared with 46 in 14 men, and there were 39 splinter haemorrhages in 13 subjects over 40 years of age while there were only 48 in the 23 below 40 years.

TABLE IV—*Relationship between Number of Pits and Number of Splinter Haemorrhages*

No. of Pits:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	21
No. of subjects ..	27	12	7	5	3	1	1	0	3	1	0	2	0	1	1
No. of splinter haemorrhages in each pit group ..	35	10	11	8	0	2	2	0	0	3	0	8	0	0	8

The term longitudinal ridging included "beading" and other longitudinal patterns as well as simple "reeding." It did not include undulations in the long axis of the nails. The subject is of some interest for Hamilton[6] found ridging to be more pronounced in rheumatoid patients and postulated an underlying vascular abnormality. Samman[7] discusses this finding and stresses the high prevalence of pronounced ridging in older people. Ridging and brittleness have been associated with a gout-like state.[8] Brittleness was not surveyed but many subjects complained of it though their nails seemed no different to the others. Distinction between fine, medium, and coarse ridging was subjective. Fourteen out of 64 subjects were considered to have medium or coarse degrees of ridging on one or more nails and 10 of these subjects were over 40 years old. More than half of those over 40 had medium or coarse ridging whereas less than

one-tenth of the younger groups showed such findings. More pronounced ridging was significantly commoner in males.

Transverse grooves were distinguished from Beau's lines. The latter term was reserved for transverse grooves running across the greater part of each nail occurring simultaneously in all. No Beau's lines were found but simple transverse grooves were common, occurring in 16 subjects of whom 14 were women (table V and fig. 4). The woman with 22 had noted their occurrence after an attack of eczema involving the nailfolds. The eczema was thought to be related to detergents and dish-washing and responded to wearing gloves. Otherwise, there was no association between grooving and a previous history of skin complaints. Eighteen out of the 48 subjects without grooves had a previous history of skin trouble compared with five out of the 16 with transverse grooves. Such grooves, as Crawford[1] remarked, seem to be non-specific.

TABLE V—*Distribution of Transverse Grooves*

No. of grooves	0	1	2	3	4	5	6	7	8	9	10	11	12	14	22
No. of subjects	48	2	6	0	0	2	2	0	1	0	1	0	0	1	1

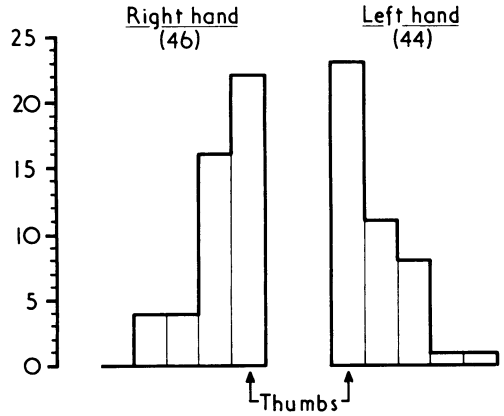

FIG. 4—Digital distribution of transverse grooves in nails of 16 subjects. Numbers of grooves are given in parentheses.

Flaking, or lamellar dystrophy,[7] describes the splitting of the free edge of the nails into horizontal layers. This appearance was confined to the distal third of the nail. Two men and nine women showed it on one or more nails (table VI and fig. 5).

Onycholysis, or the separation of the nailplate from its bed, was found in one nail, involving its lateral margins. One subject showed thickening of the hyponychium with "waxiness" of the plate, and only one subungual bruise was found, in a porter. Leuconychia punctata was so common that it seemed pointless to record it. No other form of leuconychia was found. Two men each had two nails with localized and eccentrically placed areas of shallow saucer-shaped depressions reminiscent of koilonychia. A young woman had five lesions like splinter haemorrhages on one proximal nailfold and one on another. She had only one distal splinter haemorrhage. She had had Raynaud's phenomenon for some years and when examined all her digits were equally pale and cold despite clement weather at the time. No case of yellowing was found as is seen in psoriatic nails, but one subject had unevenness of the plate.

TABLE VI—*Distribution of Flaking*

No. of nails affected by flaking	0	1	2	3	4	5	6
No. of subjects	53	5	1	1	2	1	1

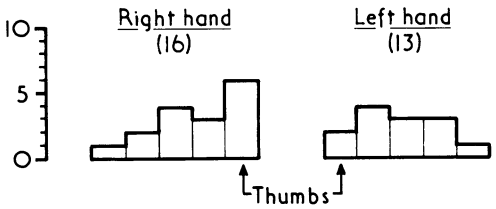

FIG. 5—Digital distribution of flaking in nails of 11 subjects. Numbers of flaked nails are given in parentheses.

Discussion

It is clear that pits, splinter haemorrhages, longitudinal ridging, transverse grooving and flaking are commonly found in healthy subjects. The number of people with pits or splinter haemorrhages might well have been increased if higher magnification had been used or if the subjects had been re-examined. Zaias[9] illustrates a longitudinal section of a pit which measures about 0·14 mm. The magnification used in this survey did not permit certain identification of such small lesions, and no doubt some were missed. Similar difficulties apply to splinter haemorrhages. Both splinter haemorrhages and pits come and go in a matter of weeks so that those with few lesions may have none when re-examined. Patients with gross pitting, whose nails we studied in another project, remarked that the number of pits they had varied greatly over some months.

Any study which does not identify all the lesions it seeks to survey, does not measure them, and does not follow their progress cannot pretend to be more than the briefest of preliminary surveys. Nonetheless, we feel that the conclusions in the summary are valid.

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