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BRIGHTON CSE LABOUR PROCESS GROUP.

A Case Study of Creeds.

Introduction to a dossier.

1. The enclosed dossier contains the results to date of the Brighton's groups study of a firm. We decided to undertake this study as a concrete complement to the more general discussions we were having on the labour process, and as a way hopefully of relating our work to other sections of the labour movement in Brighton, particularly those working for large private capitals. We chose Creeds because it was one of the largest employers in Brighton (2,200) manufacturing teleprinters for the UK market.
2. Our work fell into three phases. In the first we visited the factory, and found immediately that the company was in the middle of major technological change, switching from an electro-mechanical to a semi-electronic product. Both models were being produced side by side: the components downstairs, assembly upstairs. The contrast of the labour processes and the significance of the change was patent: the process of de-skilling, and job reduction on the shop floor, the increase of women in the shop floor labour force, the growth of white collar^{173/k} both technical and clerical ~~work~~ in the overall employment structure of the factory. A summary of this visit is contained in Memo 1.
3. What was not clear was the factors that lay behind these changes. In particular, was the technological change introduced explicitly to break the power of labour in the factory, or was it dictated by the demands of 'time economy' with the deskilling and 'decomposition' of labour as a by-product? We discussed this during the Spring in a wider group including a number of workers directly involved in this re-organisation and restructuring at Creeds (from the shop floor, from production engineering, from one of the clerical departments and from R&D). What became clear was that the weakening of labour was not necessarily a conscious aim of Creeds managers, but was reflected through the techniques of value analysis. This method of developing new products involved a blend of technology and economy, a group considering how various functions could be performed and what each way of performing them would cost. The palpable shift to decomposed labour with the new machine (the A 23) - to women workers, to white collar and clerical workers (who had relatively weak unionisation compared to the AEUW on the shop floor) and most decisively to unskilled component workers who produced the bought in ~~parts~~ electronic parts for the new machine - this process of decomposition went on behind the backs of the technicians but was reflected in the results of ~~the~~ value analysis on which their attention was concentrated. Memo 2 discusses some aspects of deskilling, and Memo 3 treats the general point more explicitly, and draws out its significance for the shifting geographical location of production, and for imperialism (See also Memo 6)
4. The discussion of deskilling related necessarily to the issues of the class character of clerical and technical workers, and their responses. What became clear was that all grades of technical labour at Creeds were being attacked by capital through technical change and deskilling: the automation of processes (in drafting for example or the design of printed circuit boards) the restriction of jobs, their routineisation, and so on. ~~Moreover~~ Moreover, it was also clear that the technical union (TASS) was organising rapidly. ~~and~~ In the clerical side there was also massive deskilling, but a slower response via formal ~~unionisation~~ anti-capital action (via the main union APEX). Rather it appeared that the semi-skilled women (typists etc

responded more in 'an Italian style' - rapid turnover, sudden militant action against the manager, or in support of a strike. These issues are reported in Memo 4.

5. The general impression we arrived at was that Creeds first major strike was not far off. Creeds themselves were being subjected to international competition by the ~~Rx~~ Post Office's insistence on international tendering for teleprinting, and this seemed one of the factors behind the development of the new model. Most grades were being subjected to pressures of deskilling, and many were threatened by redundancy. During the Spring ~~added~~ Creeds suddenly announced lay offs of 146 people, They explained this by a reduction in Post Office orders and the government cuts. The Unions put up ~~some~~ firm resistance against the cuts - but principally it seems to increase the redundancy payments. After some negotiations - shifting the cuts onto weaker sections of labour (notably via 'natural wastage' to the unemployed) - the redundancies were accepted. This ended the second phase of the work.

6. The third phase during the summer consisted of looking at the significance of the factory experience against the background of the electronics industry more generally, and the group of which Creeds was a subsidiary more particularly. This group was none other than ITT. From the factory perspective, Creeds had relatively little integration with ITT. But when we looked at Creeds from the perspective of international capital, it was clear how strong a structure of control was hidden behind the appearances of everyday life. Firstly, talking to ITT ~~union~~ combine officials and shop stewards from other ITT plants, we saw how Creeds ^{was} facing with increasing sharpness the crisis for labour throughout the telecommunications industry: massive deskilling, redundancies and restructuring. We also saw how ITT was carrying this out, with a conscious re-ordering according the law of value: closing factories down ruthlessly (North Woolwich being a particularly flagrant example), moving out to the regions where capital grants and weak labour ~~was~~ were available (Monkstown in Northern Ireland, South Wales, Paignton, two of the Scottish new towns), shifting work from one factory to another in battles with labour. Even more striking, the process was being undertaken consciously at a European level. Cheap labour operations - particularly for some components - had been sited in Spain and Portugal. The new generation of Electronic Switching systems were planned in detail from Brussels, the hardware being manufactured in Europe (notably Germany), the software in Germany and the UK. Indeed this seemed the most striking development; as ~~ITT~~ ITT was becoming more and more successful in imposing its standards on national markets in Europe, and as the ~~private~~ demand for private telephone systems became large enough for mass production (where ITT's standards could be imposed anyway), so we entered into a new phase for ^{central} ~~central~~ organisation, and the imposition of new occupational and geographical divisions of labour. The manufacture of hardware seemed to be running out of the UK. Software remained, concentrated at Harlow, but itself restructured, with the automation of the production of computer programmes, and the massive deskilling of the computer programmers in North London, ~~was~~ Two of the 700 ^{programmers} whom we talked to described themselves as the modern Ford workers, the 'proletarians' of programming, receiving the 'machine tools' of the programmes developed in Harlow, and applying them to the new telephone exchanges being produced on a mass basis (1,000 per annum). The result: very high turnover rates, and a sharp increase in unionisation and solidarity.

7. Here then was ITT imposing the law of value consciously. Its history over the last ten years since it began centralising its European operations in Brussels showed the following features:

a) centralised capital control and mobility. All ITT subsidiaries pay excess profits into a central pool from where it² invested in the ~~strata~~ nodes of highest ^{profitability} accumulation. This financial operation is effected by transfer pricing and ordinary overhead charging (% age of sales etc) on all of which we gathered evidence.

b) a ruthless smothering of labour which threatened the direct imposition of value laws. The freezing of ~~the~~ the ITT Portugese subsidiaires is one example, or the attack on the Spanish workers of ITT. The company operates a policy of dual sourcing, indeed quadruple sourcing in the case of one of its new products, so that they can carry out these rapid re-organisations of geographical production if threatened by labour or by a government. (Thus they produce teleprinters for instance in one of the German subsidiaires as in Creeds; at normal times Creeds is limited to the British market, and the African countries which have UK standards - the Germans are assigned the continental Common Market countries which ITT serves).

c) a ceaseless central monitoring of profitability by monthly meetings in Brussels at which any divisional or subsidiary manager has to defend his performance. Substandard performance may result in sackings of managers or producers and the switch of the sourcing to a more efficient or more docile location.

8. There are two significant points to make out of this. First the role of international firms such as ITT is to impose the law of value. When some ~~complexities about the~~ attack ITT as a monopoly, they are misdirecting their fire. For it should be directed at the law of value: as some of the great Chicagoans have dreamt, here in ITT is the kingdom of perfect information, capital and labour mobility, the conqueror of 'misguided' nation states etc.

9. Secondly, one realises the problem posed to ITT's collective workers. ~~and in fact there are 200,000 workers in the world~~ In the world there are 400,000 workers for ITT, in Europe 200,000, in the UK 35,000. Their labour is centrally organised, as are their payment systems, their pensions, their means of production etc. Objectively they exemplify the collective worker nationally and internationally (ITT is the 19th largest firm in Europe, leaving out all its US operations, the 2nd largest in Spain etc). Yet at the level of organisation, and of consciousness our experience ~~from~~ at Creeds showed how uncollective was labour in the face of consciously collective capital. At each level of organisation ITT's mobility and range gave it advantages. The North Woolwich workers were on a hiding to nothing: a new plant offering some ~~workers~~ in Greenwich, a vapid local council, in spite of all warnings of the impending move. And if we go one level higher, we find already the capability of a militant nationalisation to stop ITT's European restructuring in the interests of ^{capital} ~~workers~~ very much in question. All over the world ITT has been quite prepared to step back from a level of operation (say the running of a telephone system) and reimpose its discipline from a higher level (the selling of knowledge and equipment, ~~fd~~ packages of plant), particularly when it is paid compensation and free its capital to move into areas less subject to the interference of the state.

10. Against this we have two facts. First, ITT is dependent on labour. The power of its technology against labour is itself created by labour -- technical labour, labour which ~~itself~~ is being rapidly made aware of its character of 'collective worker'. Secondly, the organisational form of this is a remarkably rapid development of white collar unionism. ~~ITT has~~ There is now a TASS ITT combine committee which has grown into a nationally effective organisation in three years, and which has already ~~begun to~~ consolidated international links. In this it parallels the internationalisation of white collar workers in the chemical industry involving ASTMS. Here is ~~a~~ striking fact in the organisation of labour: the most rapid internationalisation has taken place among white collar technical workers, partly because its structures are new born, without the inheritance of factory and regional rivalry, and partly because these technical workers have a labour process ~~which~~ in which they are more patently aware of their collective nature, and which allows them access to ~~telexboxes~~ telephones (and teleprinters) in their struggle for organisation.

11. At the same time this incipient collectivisation is posed the problem of trade union practise, the limits of unionism. To us it seems -- at this stage -- that the experience at ITT points towards the development of what we call in our main paper the 'strategy for socialist accumulation', ~~an~~ ^{in terms of} offensive strategy whose range would match the range of ITT, and ~~against~~ which the political representatives of the labour movement could be continuously called to account. Moreover it would provide a touchstone for the development of a strategy ~~and~~ ^{that a strategy must be developed} ~~for~~ labour at Creeds itself. ~~For here we have a case when ITT's long run strategy involves not only the shifting of hardware production to the continent -- particularly where the new product like the A 23 teleprinter has significant economies of scale -- but also the ultimate obsolescence of the teleprinter in its current function within telecommunications. The knowledge for the alternatives are lodged in ITT's technical workers, just as the knowledge for Litton industries new range of typewriters was lodged in Litton technicians and managers. In the latter case the ~~redundant~~ ^{redundant} workers at Imperial typewriters in Hull and Leicester made redundant by Litton could do nothing collectively, even with the ~~help~~ ^{help} of their national state. At Creeds however there is time. The current redundancies have turned out on analysis to be the direct result of the technical change in the process of the production (the fall in Post Office orders only an excuse). They are a pre-echo of a more major restructuring which ultimately threatens the whole of the Brighton labour force, particularly if they are any less than docile. The forewarning is then a challenge to ~~the~~ the strategy of labour. This dossier ~~contains~~ ^{will we hope} ~~will~~ stimulate a response ~~which~~ ^{which} ~~can~~ ^{can} be written and allow for a more finished document to be offered ~~to the~~ ^{to the} as a contribution to the development of this strategy.~~

Creeds, Brighton.

1. Creeds are the major producers of teleprinters in this country. Teleprinters are the large typewriters/automatic printers that are used in telexing etc. The company started as a small family-type firm in 1923 and sold out to ITT in 1928. They moved from Croydon to Brighton in 1965 when the Croydon lease ran out. The main attraction of Brighton was the availability of a factory on an industrial estate, which had been formerly used by a typewriter firm with some transferable machinery. Creeds now employ 2,200 people. The output is sold almost entirely within the UK, most of it to the Post Office.

2. From the point of view of our discussions, the firm is particularly interesting because a) it combines two types of labour process, batching (the making of components) and assembly (of those components), and b) because it is in the process of a major change of product - a technological innovation - which brings with it a change in labour process in both batching and assembly.

3. The old product is a mechanical teleprinter. It has about 2,000 components, most of them made by Creeds themselves. Its basic principles have been long established (for 30 years or so). In the machine shop the production of batches had not shifted to the group work described by Williamson. Each machine would be set by a skilled setter, and would then be worked by unskilled labour (though they were termed semi-skilled for reasons of pay). A good deal of the labour we saw downstairs (where batching took place) was that of women. The problem of batching was synchronisation. There was some optimum combination of batch production for the 2,000 components, but commonly the whole of the assembly upstairs would be held up for 'want of a nail'. The missing component would then have to be produced - interrupting the batch that had been set.

4. These traditional problems of batching - including that discussed by Williamson of losing track of parts and long cross factory journeys as the components went through its variety of processes - were to some extent minimised by an ITT computer control system. Every part had a number and progress card. At each stage of its manufacture and then assembly this progress card would be punched into a computer monitoring system. Three display panels in the control room would then be able to show all the stages any component had gone through, where it now was, how long it had taken at each stage. If one imagines that there were 240 machines being produced per week, each with 2,000 components, each component often involving half a dozen manufacturing operations, and going through perhaps 20-30 assembly processes, then the value of the ITT control system in offsetting the inefficiency of old style batch production (and decomposed assembly) will be intuitively clear.

5. In batching, the setters held a key position. If they set wrongly not only might the whole assembly operation be held up for want of the part, but it would lead to a waste of materials as well. Theirs was a highly skilled job, one which the managers were mostly incapable of doing. They were thus paid no time bonuses (rather an average based on group performance I think). Their overall wage was said to be among the highest of the manual workers in the factory and higher than some of the supervisory staff. Unskilled workers on the other hand were all paid ~~time~~ time bonuses.

6. The new machine is ~~an~~ electronic rather than mechanical. Hence its parts are either bought in from the main electronic component groups (many of them ITT subsidiaries), ~~or~~ and/or are plastic. In the machine room, therefore, plastic injector moulding machines have replaced the precision instruments, the cutters, lathes, drills, etc of the old mechanical model. The new machines occupied perhaps half the space of the old ones, they employed many fewer workers. The ~~un~~skilled setters were still required (plastic moulders have if anything more to set than metal machines) but the unskilled work had not only diminished but changed to male labour since its main task was filling the machines with plastic crystals and taking away the components rather than simply working a drill, a lathe, a stamper or whatever, as the women did previously. In summary the characteristics of the new batch production:

- increase in technical composition.
- evident decrease in workers directly involved in production
- change in type of unskilled labour from working machines to fetching and removing materials; thus change from women to men.
- skilled setters still required though different type of setting.

7. In the assembly upstairs, the old machine was not put together on a flow line. There were six sub-units for the whole machine and many of these sub-units might be put together by a single worker. Of course many of them might have a third tier, but much of the labour was of the semi-Volvo type. It was noticeable that any jobs of a one addition variety tended to be performed by women, while the more complicated jobs were done by men. We were told that the union had insisted that jobs which had to be inspected should be done by men: that meant the more involved set of assembly. The other area of specialised women's work was soldering and wiring in general where it was claimed they had greater dexterity than the 'banana-handed' men. Women were paid less than men for comparable work. Only in the wiring sections did they have female shop stewards. The union was dominated by men. Our informant, the officer in charge of trainees, told us that women were found to be much more willing to put up with repetitive jobs. That was his rationale rather than the lower pay they got in doing these jobs.

8. The problem of ~~non-flow~~ non-flow line assembly was synchronisation and timing. Most of the jobs were semi-skilled. ~~For~~ For the simpler jobs, two weeks training was needed. Other jobs required more training, and experience. Thus most of the jobs could be done and understood by the managers who could set times, and thus individual bonuses. What struck us all however was the absence of the lash of the line. One man we saw sitting at his desk doing nothing. The manager told us he was probably waiting for parts (which did happen, and supervisors were penalised where such hold ups occurred), but we found that in fact he had reached the upper limit of his bonuswork - it was 4.00 on a Friday afternoon - and wasn't going to do any more. It seems that because the ~~assembly process~~ machine has been so long in production, different parts of the production process have been improved, but the whole has never been satisfactorily synchronised. Thus we see these pockets of 'interruption', and overall level of bonus/time ratio which reflects strong union bargaining when changes have been introduced.

9. The manager explained all this in terms of a desire for 'job enrichment', low labour turnover etc. He said that Creed wages were at one time lower than the neighbouring factory, Gross Cash Registers, and that they had lost a lot of men to there. But the dictates of time economy were more

ruthlessly enforced and many of the workers asked to be taken back at Creeds. Our manager said there had never been a strike in Creeds history, that it still maintained the atmosphere of a family firm etc etc, that it was very different to the IIT factory assembly tape records at Hastings. We shall have to check all this with Creed workers, but we were certainly struck ourselves by the difference between this assembly operation and that of Thorn Electrics making record players in Newhaven.

10. If this is so, the question is why? Answer appears to be the following: Creeds had a technological lead over competitors, and had a monopoly position in the UK, notably over Post Office contracts. Our manager said they could virtually charge what they liked. The post office approved their machines, had testers in a special office in the factory (who were wined and dined consistently by the Company) and had only a few purchasers who could also be wined and dined. The Post Office's transformation to a public corporation, with requirements for public tendering has opened out this monopoly. Yet the manager said they could still have probably kept the contracts and the old machines if it had been only the post office. But there are other markets which are not so easily tied. The Police, individual companies, Japanese and German competition has increased. The Post Office are currently testing equipment from both sources. The law of value has thus begun to be applied to Creeds.

11. The response has been a new product. This can be viewed from a technical perspective. It has less than half the components. Many of the components are electronic and cheap. The whole machine is smaller, lighter and can perform many more operations than the mechanical machine. It can be assembled (let alone manufactured for) in ~~the~~ half the space. It involves perhaps less than half the labour force formerly employed on the old machine. With fewer components there ~~are~~ is less to synchronise, ~~and~~ in production and assembly. Flow - process plastic moulding saves time and interruption against the mechanical operations.

12. But this time economy aspect must be seen in terms of the capital labour relation at the point of production. The company could not synchronise the old process without attacks from labour. The new process is synchronised from the first. It has been able to introduce semi-flow lines. At first the company tried to introduce 2 minute stages in these flow lines (the timing of stages is incidentally a useful measure of the complexity of flow line assembly. Cowley workers I seem to remember have a 7 second operation. The workers have managed to get a 8 minutes work unit. The new labour process involves less skill than even the semi-skilled work of the mechanical teleprinter. There are to be many more women workers accordingly. This in spite of the Equal pay act, which means presumably that rates will be fixed to jobs which only women will take. Accompanying this de-skilling is a re-facing. The atmosphere, and lighting in the new assembly shop is noticeably better than in the old. There is lino on the floor instead of concrete. The intenser exploitation is taking place in a 'modern' conditions.

13. The new product has thus involved a change in the labour process and a sharp increase in labour productivity, & technical composition. Given a larger fixed capital component (part of it, perhaps a lot of it being amortisation of R&D - there are 60 R&D staff at Creeds), the break even point is higher. Thus the company has been forced into a wider market. The new product has been called a system product by the company, and is therefore not confined to a single national market. The Dutch are testing it. Orders have been received from Zambia, and other parts of

Africa. It has been specifically designed to look in keeping with typewriters in a managing directors office. Creeds, a national section of an international company, have thus become international in their perspectives.

14. The company claim that in spite of the higher productivity, the number of workers employed will be maintained. This is because output is to increase from 240 of the old machine to 750 a week of the new. Presumably, there will be some structural shift in the type of employment. More people in administration, accounts, marketing, stores, purchasing as against workers on the shop floor. Here is the second aspect of the 'decomposition' of labour. For our manager talked of the sharp differences between the blue and white collar. He described how pleased the apprentices were when they were taken off the 8-5 shift and told to put their suit and ties on next week and report at 9.00 for office work. The level of appearances. The question is what is the office work. Answer: highly hierarchical. We talked to one of the operators of the computer display panels. She was the most junior and given most of the boring jobs. The analysis of the tertiary sector and office work in the spirit of Braverman becomes very important from the perspective of this one factory when we are considering overall changes and the processes of composition, decomposition, re-composition.

15. One's feeling is that the first major strike at Creeds is only some 3 or 4 years off, (the current post office contract for the mechanical model has still 18 months to run and the new model, which is having severe teething troubles, is not to be in full production until year 5). The old monopoly position ~~xxxxxxxxxxxx~~ appears to have allowed a suspension of the law of time economy, or rather its full impact. Japanese and German competition will certainly not diminish. The new model is not the cheapest model now on the market, though it has the most functions for the price range of the machine. But the manager suggested that there were fields where Creeds were if anything somewhat behind. The new Post Office contract is not a foregone conclusion by any means. Creeds are making 'Buy British' pleas. If Even if the next contract does go to Creeds there is no guarantee of future ones doing so, let alone other markets. We would like to know more about Japanese and German labour processes. One suspects that they must have flow line assembly. If this is so, then there will be time economy advantages over Creeds, and Creeds will eventually be forced to tighten up on ~~xxxxxxxxxxxx~~ interruptions of the working and production period. (Currently there are two shifts, of 8 hours and 10 hours respectively on 5 days of the week, in the components shops, and one shift of 8 hours in the assembly). Furthermore it is difficult to see how, in the face of pressure from the world market, Creeds will be able to increase its sales by 200%. There surely must be redundancies. The destruction of skills may also turn the organisation of the unions into a closer of approximation of Fords as against British Leyland in Gambino's terms. The only question is how women will react: if there is an attempt to decrease the shop floor work of men in total, in relation to women, and in relation to white collar workers, then we may expect these men to lead the struggle against capital. A Politics student has recently finished a thesis based on interviews with the 40 or so shop stewards at Creeds. We must talk to him, and other Creed workers about this, as well as the picture painted by management as described above.

16. There are two interesting institutional issues raised by this case: the first is the significance of the state; the second that of the multinational corporation. As far as the state is concerned, the domination of the market by the Post Office has been a major factor in insulating Creeds from the international Law of Value. We must look

into the extent of the extra-Post Office market, in the past and the future. The major factor opening up this market is not it seems the Common Market but the insistence that the Post Office itself should acknowledge value relations. Second, it would be interesting to know how much of Creeds monopoly protection derives from ITT, politically and technologically. The control system is an example of the technical advantage. ITT have also sent over trouble shooters for the development of the new product. It is also noticeable how confined and national Creeds have remained. They are not allowed to compete with other ITT firms who presumably dominate every West European national market. Their product has up to now been a national product. A systems product like the new teleprinter can be sold in most markets, but presumably in a planned way. It will be ferried through other ITT sales organisations abroad, and the UK may expect a royalty or other payment if it does not make the full value of the machine itself. The new product was financed from a central ITT pool which is allocated to subsidiaries for R&D according to the prospects of the claims. Much of the profit will one supposes be paid back to that pool.

17. As far as the current situation is concerned, Creeds are one of the largest employers in Brighton, they are expanding their pay roll, and find no shortage of required labour at the moment. Their workers come from the whole of the Radio Brighton area, from Shoreham to Seaford, and also from mid-Sussex, Burgess Hill etc.

Creeds Labour Process Group/ Memo 2.

Notes from meeting on Feb 24th 1976 at Brighton Labour Club, and issues raised from more general discussion on the labour process as related to Creeds.

1. The meeting began with a statement of the group's general perspectives. In analysing the development of capitalism, political economy had concentrated on value relations (the division of profits and wages; the increase of the value of constant capital - machines, raw materials, buildings - to the value of living labour ; the tendency of the rate of profit to fall; the question of whether or not there was adequate demand in the economy and how this links up with the level of wages; the role of the state in terms of depressing wages, and redistributing value from one sector or class to another). This quantitative approach neglects the fact that there are qualitative/material relations underlying the changes in values. When capital buys labour for a wage, he is buying potential labour time. To realise his ~~profit~~ profit he must try and ensure that potential labour time becomes actual labour time, that he gets out of his workers more than he has paid them for with the wage. The battle between capital and labour is therefore not just a struggle about wages, but how capital attempts to control labour, how it organises it, sets it to work, sets one section of labour against another and so on. These material or qualitative relations between capital and labour (one could call them ~~even~~ the politics of ~~the~~ factory production) are distinct from and lie behind the value or quantitative relations expressed in the ~~direction of~~ ~~profit and wage~~ levels and proportions of profits and wages.

2. A number of questions arise from this approach to political economy:

a) to what extent ~~do~~ employers develop technology to strengthen their political position in the factory rather than being simply concerned with increasing efficiency (i.e. lowering the labour time needed to produce the product). For example, the growing division of head and hand, deskilling work on the shop floor, and concentrating knowledge in the hands of the management, certainly allowed more efficiency through better co-ordination of jobs via synchronised timing, but it also allowed, for a time at least, much greater control of the direct producers by the employers. Some people have argued more recently that the general shift from coal and steel to oil and plastics should be interpreted as a move from sectors where labour has strong position in the politics of production (coal, steel, engineering) to sectors where ~~labour~~ less labour is needed, and where workers themselves are much more divided.

b) ~~to what extent~~ whether the means by which capital has strengthened its position in the politics of production has changed during the past century. Is de-skilling along the lines of the American work study engineer F.W.Taylor and later Henry Ford, still the main line of advance, or is it a question of new process and/or products, or is it one of attempting to discipline workers through their own organisations (capital's encouragement of particular union and shop floor structures, the development of group work, etc).

~~what is behind~~
c) what is behind the movement for 'job enrichment'. Is it any more than a new version of Fordism. Are jobs in any way enriched, or are the de-killed jobs merely packaged in a different, more controlled way. If they are enriched, how does this fit in with the struggle by capital to get more labour out of the labour it has paid for.

d) How do wages fit into this picture. How have the ways of paying workers changed over the past century, and how do the changes in the type of payment

link in with the politics of production: e.g. the politics of piece rates as against measured day work.

e) how has the development of the labour process changed the division of labour and what consequences have these changes had for the organisation of labour. Deskilling in any industry clearly changes the composition of labour and its organisational structure: weakening if not eliminating craft unions, ~~strengthening~~ increasing the number of white collar workers, ~~skilled workers~~ and general organisers of the process of production. But what happens to the white collar workers: do they not have they own struggle with capital. Does the politics of the office not supercede part at least of the politics of the factory floor. See the de-killing and 'Fordisation' of office work.

far

f) how/has the production politics of capital determined their geographical expansion, closing down in strong labour areas, and going to weak. Can the regional grants to industry to set up in declining regions be seen in this way? As well as capital's attempt to draw in workers who are traditionally ~~hardly~~ weak, immigrants, women, for instance. How ~~does~~ far has capital gone overseas for this reason, too, for producing sugar on plantations, or tea and other primary commodities which can be produced in developed countries but are not because of the politics of production. Runaway industries, too, are a more recent phenomenon interpreted often in wage terms (Taiwan textile workers get one ~~twat~~ fourth of US textile workers) but to this should ~~perhaps~~ be added the incentive for the power of capital (many of these new labour havens are in right wing, often Fascist countries, with militant laws against the organisation of unions, and or the freedom of labour to defend itself against capital.) Has there been an internationalisation of production with ~~an~~ consequent ~~g)~~ restructuring of the international division of labour: the more skilled and white collar work increasingly concentrated in the metropolitan countries, (paid by salary, on promotion ladders, encouraged to identify with the interests of capital) while the ~~un~~skilled and semi-skilled ~~is~~ are moved out to Fascist or military peripheries.

g) to what extent is the whole mechanism of crisis in modern capitalism geared to reduce ~~the~~ not so much the wages of labour, but the power of labour in the factory: closures through bankruptcy, rationalisations, increasing unemployment and threats to jobs,

h) how far is town planning (and regional planning) geared to limiting the contact of workers outside factory hours, preventing the development of the culture of mining villages or steel towns. see the early history of Crawley, the ideology of slum clearance and of new council estate planning, the explicit reasons for driving new roads through areas of working class solidarity. A number of Italians have favoured this view of town planning against that which emphasises 'efficiency' in planning, (shortening the time of journeys to work, shopping time, etc).

3. From the perspective of the labour process, both economics and ~~sociology~~ and politics are united in the factory. Most of the debates about the points raised above result from emphasising one side rather than the other. The Italian school see the development of capitalism very much in terms of the development of the politics of the factory. The 'value' school have emphasised the element of 'time economy' - the constant drive by capital for reducing labour time in production. In looking at particular firms, the Labour Process group wants to throw light on this debate, and hopefully contribute to the interpretation of developments in the firms, and the responses that could be developed to them.

4. The meeting continued ^{by} /discussing some of these points as they related to Creeds. TW said that the drive for deskilling was particularly strong. Creeds aim was to take skill off the shop floor. In the machine shop this had very largely happened. One consequence was that most apprentices now would not go out onto the shop floor but into one of the three departments required by the 'head' to administer the 'hand': production engineering, tool making and R&D. In older engineering works in Brighton, for example Kearney and Trecker's, this sharp division between head and hand ~~was~~ was not so fully developed and apprentices still went out into skilled jobs on the shop floor.

5. Another area of deskilling was in testing and quality control. In the past use of micrometer (now mass produced). Development of electronic automation of checking, and of geometric tolerancing (metrication). Now work with tolerance zones, developing specific ~~gages~~ gauges (e.g. functional gauges made like the part into which the thing tested is meant to fit). The testing then becomes semi-skilled or unskilled (the part either fits or it does not), and the skill is concentrated in the making of the gauges.

6. Blow moulding and Fine B~~an~~king (word unclear) major innovations for deskilling, the latter saving the grinding and reaming involved for edges & frayed from conventional press work. Problem, however, in many of these innovations is whether quality is sacrificed in the process. Thus with numerically controlled machine tools, the engineer becomes an engineer/programmer and quality goes down.

7. The technique of value analysis/critical design developed in this light. Look at design right back to the function of the item: then see how by altering x one could use different methods or materials (e.g. plastics) which would involve different labour ~~processes~~ processes. Thus design around the process of production. cf. component rationalisation (screws at errantis).

8. These examples show deskilling continues, but it is not clear to what extent the technology which underlies the changes (new gauges, blow moulding etc) is developed for reasons of time economy (efficiency in production) or ~~not~~ for those of labour discipline and pay. TW and DE both mentioned that all operators keep something up their sleeve. But there were hard and soft jobs, in other words there were jobs which it was harder for management to control and time through their work study teams. For instance everyone earned double time on benching. In Creeds ~~work varies~~ work varies a great deal - there is a lot of fettling of small components, removing burrs, putting on chamfers, straightening, tapping etc. The more that management could break up these jobs, and simplify them, the easier it was to time them. The production engineers were always being asked to take the skill off the floor. It would seem, then, that concern to control labour in production had a lot to do with the technical changes discussed above.

9. The problem for Creeds was however, that they merely removed the struggle to control labour's skill to the next level, i.e. the level of concentrated skill. Workers in production engineering, tool making and R&D were all unionised. TASS was strong. Thus the trend to 'deskill' the skilled jobs. More clerical work now, and break up of jobs. Soon isolate off the clerical jobs and submit those to work study.

10. At an organisational level what was particularly important was the integration of TASS and the AEUW so that both groups of workers could act in unity rather than being set against each other by the employers.

11. We went on to discuss the speed and discipline of work on the shop floor. Norms were established, 80% above HEB hours. 60 B would be equivalent to walking 3 miles in an hour. 80 B would be equivalent to walking 4 miles p.h. i.e. faster than 'normal' as established by British Standards, Work Study. A new worker would be given 8 weeks to reach 80 performance. Whether one gets there depends on a number of things: one's objection to the boredom of the job, dexterity, experience, the norm itself (how successful the work study team have been), etc. If such speed is skill then this work is skilled, but semi-skilled would be a better description: i.e. Creeds could produce this part of the product anywhere in the world.

12. Consequences of this type of process. First with bonus system based on norms, less need for foremen. They have become administrators, making sure work flows, that there are enough materials at hand and so on. Second, quality control is very important: this could be done by the producer of the part, but has to be done by a separate person to ensure control of that producer. ~~There is a~~ Sometimes one can get things passed which haven't been worked on - though the checking goes in waves. There is a sudden stamp down, and nothing gets through, then it gradually eases ~~back up~~ a new complaint from the Post Office ~~about the~~ checkers.

13. Another example of displacement of skills is in maintenance. ~~Unskilled~~ Semi-skilled workers do not look after their machines (lubricating for example) as well as skilled. Maintenance men become particularly important. Attempt to tie them to bonuses - white collar workers setting the job - but often difficult. The maintenance fitter does a lot of overtime. His concentrated skill is reflected in the fact that he is paid the same as a tool maker.

14. The main emphasis of the discussion was, therefore, on the process of production in the machine shop, the problem of controlling and timing labour, the pressure towards de-skilling, and the 'displacement of skills' and the contradictions that arose at the new levels of concentrated skills.

15. We agreed to meet again on Tuesday March 9th at 8.00 p.m. in Room 7 of the Labour Club in Lewes Road.

8.3.76.

14

Creeds Labour Process Group/ Memo 3.

Notes from meeting on Tuesday March 9th at Brighton Labour Club.

1. We continued with the issue raised at the previous meeting of whether new technology was consciously intended to de-skill and weaken organised labour. JP thought definitely not. No thought in the R&D department of developing the A23 in order to reduce the power of labour. Rather the problem as it was seen by R&D was how to transfer from electro-mechanical to semi electronic. Perhaps a decade ago electronic keyboards twice as expensive as electromechanical, then gradually the gap between them lessened. Problem for R&D how to produce an electronic model which was cheaper than the 444. This was where value engineering comes in. In following this through, no assumptions made about labour and the new machine. Only way it comes in directly is comparing the estimated costs of the new machine to the actual costs - given the state of organisation among labour in the works - of the old machine.
2. TW agreed that the same held true for production engineering. PE was the interface between design and the shop floor. It has to develop the form of production, splitting down the functions, (the labour processes) so they can be balanced on a line. They organise the labour process, feeding back to R&D during the design stage if they see difficulties in producing the design as it stands. But these difficulties are thought of more in terms of value engineering rather than how to reduce the power of labour in the new production process.
3. One way of interpreting the R&D function was that the top management were perfectly conscious and clear about reducing the power of labour, and would encourage the R&D dept. in the things which ~~were~~ helped in this reduction. JP explained how members of the R&D dept. would develop an idea upto a certain stage, then either the head of the Dept or top management would judge whether the idea should be given further funds for development. This was where the conscious element might come in.
4. Another way of interpreting the process, is that in the case of production engineering in particular, the very act of breaking down the new process so that each element could be co-ordinated on a line necessarily implied deskilling. With a new process, it was possible to break down and time labour processes without concern for what organised labour would say (there might be some bargaining later about the nature of the line ~~etc.~~ its speed, and so on, but initially there was a clean slate). Hence even though the production engineer was not conscious of breaking the power of labour, his very discipline of 'time economy' and Taylorism; of the 'synchronisation' of labour on the line, led to this result.
5. A third interpretation would see the deskilling of labour hidden behind costs and prices. We have seen one example of this: comparing the new product with new, planned, labour process with the old process in which labour has established defensive positions. Another example is in the costs of bought in components. The changeover to electronics for example has been decisively affected by the production of components in Asia and other low wage countries. The electronic parts of the A23 are all brought in, and we suspected that they would probably be made abroad by cheap labour. We will have to find out whether this is so. In any case the idea illustrates the general point, namely that in designing a new product on the basis of components using cheap labour from the underdeveloped countries, one was effectively deskilling and weakening labour seen from the world level.

6. The last two of these interpretations offered ways of seeing new technology de-skilling labour in a less conspiratorial way than we had at first posed the question.

7. The point of bought in parts also ~~was~~ connected very directly the process of deskilling and weakening labour in metropolitan countries to imperialism. The perspective suggested in the discussion was as follows. Creeds had been taken over by ITT before the war to serve the British market. Given the Post Office Buy British policy after the war, it was necessary to continue here. Foreign investment was a form of tariff jumping. Moreover once the tariff had been jumped there was a heavily protected market, almost a monopoly market one could say. Price was based on mark ups, and pressure did not have to be brought on labour in the same way as happened in an industry open to international competition (cars for example). Once the PO changed to a Corporation and threatened to abandon its Buy British policy, it also threw into question Creeds old method of ~~xxxx~~ relating to labour. It could not, suggested JP, screw down the workers on the 444. Rather it developed its ~~new~~ machine which had become economic, among other reasons because it ~~was~~ made significant use of bought in components made by cheap labour (value added in UK may well go down as a result). At the same time the question is posed as to whether it is worth while continuing to operate in a country which has opened up its teleprinter purchasing to international competition. The discipline of labour as well as comparative wage costs become increasingly important in an industry open to international competition. The longer runs of the new machine further push ITT to rationalised centres of production for many markets.

8. In typewriters the process of geographical concentration of production within multinational firms has already been evident in Britain with the closure of Imperial by Litton last year. Litton had developed a new typewriter which would in time replace the Imperial model. The old model still had a limited market, but Litton decided to centre its production in Germany. Although there was a workers takeover in the Imperial works in Hull, it came far too late, for in order for a British typewriter industry to be able to compete internationally it would have to develop a new typewriter that could rival Litton's new model. This would have taken very large investments, while in addition Litton had perhaps a five years start. We do not know how much of Litton's production has been further decentralised to Portugal or other areas of Southern Europe. But the double process of centralising production geographically ~~and~~ on the one hand while decentralising certain component processes to cheap labour areas is exemplified in this experience. And it is ~~an~~ a case where successful resistance to the trend can only take place with a ~~great~~ long lead time.

9. The discussion last week suggested that there could be elements of the process beginning to operate in Creeds. It would be interesting to compare Gross Cash here. They have ~~not~~ been less tied to the Post Office, and presumably more subject to international competition. They have also been implementing we understand the same type of change from electro-mechanical to electronic machines. Are they concentrating production - in Europe for example. And are they sub contracting work to cheap labour areas. What holds them still to producing in Britain - and Brighton. Their developments could pre-echo those at Creeds. At the same time as looking into this we should also enquire about ITT's developments elsewhere, particularly in their European operations (are teleprinters produced

3.

by national firms in each separate market or has there already been some consolidation. Further, is the A 23 going to be produced by other ITT branches for Europe. Greeds are not being given the European market, but rather those in the ex-commonwealth - Zambia etc.

10. One point of interest against this perspective of international re-organisation taken as inseperable from deskilling and technical change in the original plant, is the extent of the documentation on the new machine. JP says there is very full 'documentation'. R&D has to write very detailed instructions on each part of the process, how it is designed, how it operates etc. , and the same is true at the production engineering level. One consequence is that the new machine could be transferred to many other parts of the world because the knowledge has been objectified onto paper and does not depend on the R&D team which developed the model. This process of decreasing dependence on the individual technicians is also reflected in the extent of committee work, whereby knowledge is shared within the group.

11. But this process of freeing the knowledge from its originators, also has the dimension of deskilling at all levels of the process of technical change and production. For Greeds now are able to telephone their Harlow section of ITT (or more accurately STC) and ~~submit~~ submit their requirements for printed circuit boards. These are then designed by computer system at Harlow, so that that aspect of skill has been isolated off and is now concentrated in the computer programmer in Harlow. This has meant that there are now an excess of mechanical people in the R&D dept. who are now restructured or re-assigned to electronic work, since there are enough designers specialised in electronics, given that they are backed up with the Harlow terminal. (n.b. this computer design system is also developing runs for telephone cables for the Post Office).

12. Further, the detailed documentation in a sense deskills the production engineer, and so it runs right down the line thus:

- Harlow
- R&D
- Prod. Engineer
- Tool Design
- Tool Maker
- Shop floor.

13. The consequences of these changes for R&D are not clear. There is talk of centralising R&D in the STC group in Europe, further developing this division of labour around the new computer systems. 22 people are now to be stationed in Brussels as a kind of R&D headquarters it seems, and there is currently a large department in Stuttgart.

14. Linking this back to th. labour process and imperialism, the deskilling means men and women who could do skilled work are having this type of work taken away from them. When the job (deskilled) is then moved to an underdeveloped country, the workers there are trained only upto that level required by the deskilled job. (cf. education crisis here in this perspective.)

15. We should also look at the effect on the power of labour in the user of the product. Thus in 1965 when the 444 was introduced, the Post Office wanted to set up an integrated system which would re-organise the PO's labour process in this area. Resisted by the Post Office Union.

16. Following Alquati's idea of networks, we need therefore to trace the networks involved in the change to the A23: i.e. trace back to where the new components come from, where the technical know-how comes from (part from Harlow), how many other bought in components there are and ~~where~~ where they come from (within ITT), as well as where the new machines are going and what consequence they have. Alquati developed his idea in an organisational sense: growing consciousness of the internationalisation of capital, amongst workers connected by these networks, possibility of joint action, extent of multinationals and so on. Elements of this: Representatives from Creed unions attend the ITT combine meetings. But we should trace it through as a way of enlightening this overall effect of technical change and how it affects labour's organisation internationally and not merely within Creeds, or even within ITT in the UK.

17. The attack on labour in Creeds often takes more directly organisational form. Thus the management have established briefing groups, through whom information is passed from the top down by word of mouth rather than through notices. For information the other way, consultative committees elected from the various divisions. The management has placed a great deal of emphasis on the elections for these committees: TW thought because they wanted to develop them as rival institutions to the Union. (cf. the Industrial Society and its promotion of this idea of briefing groups: the system in Creeds seems very much a one way channel). Again, there is the pressure on skilled and white collar workers not to join unions. Apprentices are discouraged from joining unions. R&D men they try and get to identify with the firm: granting concessions, BUPA, extra holidays, sickness benefits and cars. (short step to shares) ~~xxxxxxx~~ But within R&D operate a matrix system. Not composed of continuing groups but ~~xxx~~ people drawn together for particular jobs, on very much a one off basis. What is the rationale for this, when it would appear to go against 'group identification' and so on.

The meeting ended at 10.35.

Next meeting: Tuesday March 23rd, Labour Club, Lewes Road, 8.00p.m.

16.3.76.

Creeds Labour Process Group / Memo 4.

Notes from meeting on Tuesday March 23rd at Brighton Labour Club.

1. The meeting was principally concerned with technical and clerical labour (white collar work). RO suggested the following distinctions:

a) men who were paid monthly, on higher pay scales, who were not tied to a rhythm of work, and who related directly with customers.

b) technical staff - production engineers, tool design, draughtsmen, R&D, most of them in TASS.

c) office workers - many in the ^{APEX} ~~APEX~~ - keeping records of spares, etc. ~~Many of them in the Labour Party.~~

d) typists. Young women, aged 16-22. Anti-company, anti-organisation, anti-work. Ambiguous towards the union. Join if they see it furthering their interest, and insist on 100% membership - solidarity here, "why should we get a rise paid for by the union dues of others". But the union in question is APEX, originally a staff association and collaborative with management (v. right wing - bans and proscriptions), and they told the secretaries that not worth pressing their demand. Two weeks later management gave them rise without pressure. Of course, undermines APEX. RO says they are fundamentally militant - e.g. worked to rule during the previous redundancy fight - but volatile, ~~unorganised~~

spares.
possibly under
(post).
not fully
generalisable.

e) loaders and chasers. ^{APEX} ~~APEX~~ (dozen in shop floor) - production control. They have offices on the shop floor - forming the link between production and production engineering. ~~APEX~~ Men, and strong. Leaders of the unions.

f) other services staff - e.g. canteen, where the women over 50 work.

g) punch and operators in a post - unionised / company staff.

2. These categories are based on a number of criteria:

- type of worker: men or women, young or old,
- relations with production: close (loaders and chasers), controlling (some technical and the managerial)
- pay, both levels and period of payment (weekly, monthly etc). We could ~~add~~ add other status provisions (length of holiday, use of staff laboratories, time of starting).
- union.
- labour process (autonomy, rhythm of work, subjection to law of time economy)

We should be clear which is the most important of these in refining our distinctions. For example, in discussing the political attitudes, status consciousness, potential union militancy and so on, one view was that the workers background outside the factory was most important: (women interested in six months money to buy a sofa, cultural individualism). Another was that it is the type of labour process which was determining, and the relationship of the job to the overall production of the firm. Thus a firm with a lot of office work would move to an area where there ~~was a large supply of young women's labour~~ was a large supply of young women's labour: but that whatever the initial individualism of the women, their experience as typists for capital would transform their attitude towards organisation, and would certainly determine pay, status provisions, or the type of union which represented them.

We make the distinctions between typing and managerial jobs not because one had young women and the other career directed men, but because they have a different labour process and different relation towards capital which leads to career directed men and young women being employed in them.

3. In terms of our readings, the main distinctions are between labour process criteria: Braverman attacks the idea of white collar workers, and of many

uses of the word manager (e.g. shop manager) and of professional (e.g. of draftsmen, dentists, medical workers) because they ~~xxxxxx~~ conceal "a genuinely working class situation for those involved". In Braverman's treatment this definition of working class ~~xxx~~ rests particularly on the domination of the labour process by capital, the lack of autonomy, time discipline etc.(also Richta and Mallet).

Against this Gorz says we must approach the issue of white collar work not merely in terms of the relation of the worker to capital, but also in relation to other workers. We must ask, he says, not just about their contributions to increasing productive efficiency (~~xxxxx~~ to the development of the forces of production) but to what extent they are merely modern formen. We must look at "situations where technical workers supervise, organise, control and command groups of production workers, who, whatever their skills, are placed at an inferior ~~x~~ level in the industrial hierarchy and are subordinated to the former~~x~~".

Thirdly Bologna and Ciafoloni (in 'Technicians as Producers and Products') define technicians very ~~xxx~~ broadly as "all specialised workers, whether classified officially as manual or clerical; more generally, all workers to the extent that their production is not the result of simple labour... but insofar as their skill is the result of a particular orientation, of the transmission through teaching of accumulated skills". Whereas Gorz sees skills as predominantly socially unproductive, and a screen to strengthen the supervisory power of technical workers, Bologna & Ciafoloni see them as "a capital, socially produced by labour over a long period of time, whose only possible owner is the whole human collectivity". The skills are real and contribute towards the development of the productive forces.

Whereas Braverman would tend to see the technicians as salaried workers~~xx~~, deskilled and dependent and thus potentially working through unions against capital in the same way as manual workers, and whereas Gorz denies that affinity to the traditional manual working class, ~~Bologna~~ Bologna and Ciafoloni see them as specific members of the general working class, who cannot ~~xxx~~ be reduced to the manual working class, but who can contribute to overall working class struggle through specific struggles. B&C further contrast their position with those who ~~xxx~~ agree with them that technicians are 'distinctly proletarian' (as against Braverman's general proletarian) but who ~~say that~~ conclude that as the result of this distinction, the technical workers will revitalise the old working class (Mallet) or that while not being able to fight within the workplace, will provide a new external vanguard for working class movements in ~~the~~ society as a whole.

In one case the labour process is emphasised, in another the more general relation to capital (often very close to labour process perspective), and in the third the relation to other workers. If for the moment we elide the first two, then the main dichotomy is between the technician as producer and the technician as forman~~xx~~ between his or her productive and political functions. Gorz acknowledges both exist, but says the latter increasingly dominate the former. Braverman vice versa. And Bologna and Ciafoloni see them in contradiction: the political function (plus all the trimmings) leading to an identification with the firm; the productive function - the fact of exploitation and lack of autonomy - leading to a solidarity with the manual workers, and a rejection of hierarchy (demands by technicians in Italy for equal pay, no job evaluation for individual work which is in fact part of a social labour process -SNAM Progetti)

4. Can we ~~by~~ develop RO's distinctions ~~in~~ by approaching through the process of production, and in doing so draw the distinction between productive and supportive jobs in a more fundamental way than the colour of collar worn. There are three main types of production:

- preparation of parts or materials (cutting, shaping, punching, kneeding, wuffling, polishing, hammering, sorting, and separating)
- transforming (chemicals, brewing, glass making, food processing, most agriculture and forestry, sugar manufacture, blow moulding)
- combining (sewing clothes together, hammering on a sole to a shoe, nailing, clipping, gluing, knitting, bolting, soldering, screwing, spinning, winding, weaving,

Each of these types of production requires four basic elements: materials, a tool, power, and guidance (skill). To knit a pair of socks, the material is the wool, the tools - a pair of knitting needles, the power and skill are provided by the knitter. When this process is mechanised, the materials remain the same but the tools are now a line of webs, the power is provided by an engine, and the skill has been built into the regular workings of the machine.

These operations have two dimensions: space and time. They all occupy a space (a matron in an armchair or a machine in a factory), and each element must be linked with the others in space. There must be communication. The raw material (existing in one spot) has to be fed into the machine. Power must be transported, as must the tool and the skill. ~~One of the~~ One of the elements may be relatively immobile so that the other elements come to it: the raw material may be land for example, in which case the sower comes with the other raw material (seed), tool (hand) and skill and power (himself) to the spot. The tool may be the point of operations as in most factories. In some cases it is the power which is the focus as with a sailing ship, sometimes the skill (as with the putting out system). Whichever is the still point, even if all elements are contained in a single machine, there must be some communication, some transportation.

All these operations, of communication and production, take time. Capitalism is concerned with constantly lowering the time of production, speeding up the turnover time of capital, limiting the labour time embodied in final products. But the production process is not just a question of saving time. It is also one of timing, of synchronisation of all parts of the process: the feeding in of the raw material, the application of the power, the wielding of the tool, the leading away of the product. Just as the co-ordinate of space raises the issue of communications, so the co-ordinate of time raises the issue of timing. One need only think of those skills which involve timing: delivering a lamb, baking, all music, vacuum drying of sugar. One must not only get the elements to the right place at the right time: one must keep them for the right time, and take them and the product away at the right time.

This synchronisation - given that it is concerned with the elements of production located in space - also involves communication, principally the communication of information. The information may be technical (when to press a button), and it may be political (forcing labour to work in a particular way required for the process of production).

5. In the earliest forms of society, the materials were primarily land and that which grew on or lived off land. Man provided tool (hands), power and skill. Then ~~the~~ tools were developed as means of production: the epochs of the stone age and the iron age. Power, skill, and synchronisation were still embodied in man. Next came the ~~development~~ development of power: through the development of co-operative labour power increased greatly (pyramids). But the industrial revolution and the development of steam again separated power from man, and man from nature (no longer dependent on waterwheels, and wind). This allowed the development of machines: at first aggregates of existing tools (the loom), but then qualitatively different tools which internalised skill into the machine. Skill itself was separated from man, particularly in the fields of transformation and preparation. The consequent increase in the productivity of labour increased the ~~number~~ number of elements entering into the production process, it widened the geographical range of purchases and sales, and it increased the scope for direct synchronisation (as against indirect synchronisation via the market).

6. In the contemporary era, we then have the following types of work:

- those surrounding the mechanical elements of production (including power and mechanical transportation):
 - a) the machine operator
 - b) the maintenance ~~men~~ workers.
 - c) the quality controllers.

- those concerned with physical transportation of goods (inputs, labour, outputs, paper)
 - a) drivers
 - b) loaders and unloaders.

- those concerned with the communication of information
 - a) interpretation of information to be communicated - analysts, programmers?
 - b) coders of the information - mostly language.
 - c) ~~the~~ transportation of the information (letters, telephones, telex, call boys, tanoi, printing, and the reproduction room)

- those concerned with synchronisation, and time saving.
 - a) chasers
 - b) production managers.
 - c) production engineers

- those concerned with the economics of production, with the fact that production takes place under the dictates of the law of value. This includes all those who relate to the market, and those who interpret production and circulation in value terms.
 - a) purchasing department, and stock control.
 - b) sales department - salesmen, spares suppliers, marketing men, market research. (much of this involves information communication)
 - e) finance and accounts.

- those concerned with the politics of production.
 - a) foremen, b) upper management, c) work study men; d) industrial relations depts.

- those concerned with technical change in all elements of the process of production: the mechanical elements, the products, the physical transportation of goods and information, the synchronisation of operations, the interpretation of information about the operations of the firms, and developers of new means for strengthening capital in the politics of production.

some of these functions are specialised in particular firms - e.g. communications techniques, information systems, physical handling. That is to say most firms import these new techniques. But most will have to have a) an R&D dept. for their own production process and product; b) training for the managers in the interpretation of information and the politics of production.

7. In each of these processes, capital will follow the same directions and maxims: control labour, decompose it, deskill it, replace it by machine, standardise the output (whether of goods, services or information), then mass produce it, break up jobs into specialisms. It will be most successful in the technical jobs: production, communication, synchronisation.

We have discussed at previous meetings the changes on the shop floor and the relationship of deskilling of production workers, the attempt to simplify and deskill quality control, and the importance of the maintenance men.

As far as physical transportation is concerned, we have the development of production lines (they both transport and synchronise), of containerisation, of industrial complexes located close to each other to minimise the effects of distance, of mechanical handling,.

As for ~~mechanical~~ synchronisation we have the development of the monitoring system for components (which has been suspended on the A23 because of breakdowns - probably teething troubles), the chasers, etc. and I presume some management information systems for relations between diff't parts of ITT supplying components etc.

We have also discussed changes in R&D as it effects the 7th type of work.

We will come onto information communication below.

Where there is a sharp distinction in the function of labour is between those technical jobs described above, and those jobs which are concerned with the social nature of production: a) with the fact that production is carried out by human labour and that that labour must be disciplined and reduced in any claim to a say in the direction, & conditions, ~~and~~ of production. b) with the fact that inputs must be bought and outputs sold; c) with the general conditions of production and circulation, i.e. with the state. What is striking is that these functions are much more difficult to ~~red~~ deskill, ~~combine~~ standardise, etc. The complications involved in market relations for example are a powerful motive for backward and forward, as well as horizontal integration of businesses. Techniques may be used to improve information - about prices, about patterns of consumption, - but it is difficult to get techniques which reduce the ~~problem~~ fact of relating on the market.

Furthermore the politics of the factory is also not reducible to flow line or mechanised management, and more than is the politics of production at the economy level. These jobs cannot be deskilled, and as a result capital has to yield to these men at the fulcrum, the irreducible fulcrum of the production of value and surplus value, the pay, status and even a share in ownership, which capital would normally reserve to itself.

8. Can we detect a cycle in the course of development of these functions. Thus, as information and synchronisation become important enough to be separated off, we first have skilled individuals, then the division of labour enforced, then Taylorism, then the development of mechanical means of performing the function, with a displacement of skills towards the maintenance of the machine, the checking of the information output, the overall 'minding' of the process and so on. Instead of a product life cycle we have a labour process life cycle for any particular job.

9. Some functions we have called technical may be intentionally linked with political functions: but given the power that workers with political functions have with ~~managers~~ capital, capital will usually be interested in separating the political and the technical functions.

10. For relative decline in technical work's significance in the politics of the factory, cf the demotion of engineers and production men from the boards of management. Now increasingly the main job of the managing director is political, particularly external politics. Also on the board are the marketing men, the finance man (value), and the man in charge of industrial relations, plus technical.

11. The technical function is particularly interesting. This also is something it is difficult to reduce. Much as though capital would like to submit R&D to the usual discipline it is very difficult. ~~Managers~~ Trace attempts to standardise and deskill the process of innovation. As a result of the difficult R&D people have to be allowed to retain their skill of innovation (though their output is immediately rested from them and placed in a form which ensures its general availability to capital or capital's representatives on the management). They also have to be allowed higher pay, and some the privileges of the political management.

12. What we are saying is that top management and capital must not be confused. Capital requires people to ~~organise~~ organise the politics of production at the firm and the economy level, and to relate to other capitals in the market (as well as final consumers). This political power is a skilled job, like running an army. It cannot be standardised and therefore capital has to yield up some of its privileges. Important to maintain this distinction because we then can establish a continuum which goes right down the line of political command in the firm and factory: it partially solves the problems of local managers: they are in a different position because they are very clearly on the political ~~side~~ and commercial rather than technical and productive wing of the firm.

13. The criteria here for distinctions is not the effort required for the job or the colour of collar worn but the extent to which the job can be standardised and deskilled, or at the very least the extent to which the worker can be submitted to the political power of capital in the factory - can be disciplined. There is a close relationship between the technical tasks which can be submitted to these laws and the politico-commercial (i.e. the social) tasks which cannot, because of their lack of predictability. Of course in the conduct of internal or external politics the factory manager will be involved in many activities which can be ~~standardised~~ ^{decomposed} (hence he is surrounded by a retinue of semi- or unskilled workers - a form of business bodyguard: secretaries, typists, telephonists, drivers, research assistants, personal assistants, valets, plus his political satellites, his deputy managers, and line managers). Those nearest him cannot be standardised because they have to fit in with the manager's own unpredictability. There will be a hierarchy of political command within the firm - each with smaller retinues (cf. the cut off point for private secretaries), & each being a cost to capital.

Capital will always be trying to routinise or substitute these political functions, developing machines which automatically discipline, or more clearly reveal 'soldiering'. See the changes in sorting offices for instance. The new automatic sorters have a light showing when the sorter is not at the machine, they can detect the ~~sort~~ source of a wrongly sorted letter, and they allow time rates to be set for sorters. ~~against xxxxxxx~~ (see the Canadian articles on the Post Office Strike). In this case the political functions can be concentrated, and the gap between the shop floor and the political hierarchy becomes much ~~xxxxxxxxxxxxxxxxxxxx~~ more pronounced. In the case of people at the lower end of the political hierarchy there can be some ambiguity: given their proximity to the shop floor and distance from the apex. But this ambiguity is reduced not merely by privileges, but by the discipline from above.

See the distinction between line jobs and general management, and within line jobs between managerial and technical posts. Even within managerial jobs the centralisation of capital has diminished the autonomy of managers: formerly independent firms become branches, and their bosses are submitted to controls, limits to their financial discretion, to standard forms of reporting.

The drive towards group technology is a way of substituting the political functions of capital at the base by the workers own self-discipline. Same with measured day work. Productivity does not necessarily suffer, and more than the overall surplus value appropriated by capital went down after the introduction of the 10 hour bill in the 19th century. Productivity more than cancelled the loss of working hours over 10.

14. Just as the lower end of the political hierarchy may on occasions be ambiguous ~~xxxx~~ in its position, so is the upper end of the technical side. For it is difficult to routinise their work, R&D for instance. Last week we saw that IIT attempted to do this with their printed circuit phone in system to Harlow, their insistence on full documentation on the A23, a division of labour which ~~xxxxxxxxxxxxxxxxxxxx~~ limits the range of skill. Moreover the technicians may be more generally aware of the overall scope and direction of the firm - of Lucas Aerospace challenging the nature of the products they make. They will be aware of the power of their techniques, and ~~xxxx~~ appalled ~~at~~ the uses to which these powers are put. At the same time they will be given privileges because of the unroutinised aspects of their work, and an internal political hierarchy will be developed within the department, with some overlap to the general political hierarchy in the firm. (some firms however have found this internal hierarchy for enforcing labour to work is not necessary because of commitment to the project etc.) Which way the technicians go will depend on the nature of the labour process in the R&D department, the extent to which it has been 'deskilled' or divided, the product produced (?), and to a lesser extent the internal hierarchy - the political practise in the department. Probably no accident that the R&D workers in IBM and the Aerospace workers in France and Britain have been militant because of the nature of the labour process in these firms.

15. Having emphasised distinctions based on ~~skill~~ the potential for deskilling, we nevertheless must look at the change in the physical and mental requirements of jobs, and the cycle of the jobs development.

Back to Creeds:

16. In the pressure for increased time economy distinguish:

- division of labour. people specialise on one part of the job and the group thereby increases its productivity.
- Taylorism and timing. Jobs are broken down and timed and the total work is recomposed in a synthesised collective work with each worker on a bonus in relation to output.
- technical change, where the machine enforces greater intensity of work.

17.

In the spares sales department, mainly a question of information processing. Order comes in and then passes through a set of operations. Perhaps 30 people involved. A paper flow line. Standardised forms. Through rationalisation (of type 1 above?) 5 jobs in one section cut down to $1\frac{1}{2}$. But the intensity has ~~xxxx~~ not been forced since the whole department is to be computerised, and the labour process is thus transformed to that of the computer programmer and punch card operator. The computer will also do away with a major function: filing. Filing is done by married women coming back into wage labour: is this because they did not learn typing when young, that they were pre-the secretarial revolution?

18. Typists. Typing pools reflect the decomposition of the old secretaries job. But such decomposition does not mean that the women ~~xxxx~~ typists should nec. all work in the same room. Why do they? Ease of discipline? Smaller quantity of office space needed? (reduces to a question of rent); ease of distribution of jobs?

19. Pressure for standardisation shown in recent questionnaire to typists about their work (RO has a copy). One result was that a great deal of the work was similar. Hence the development of the standardised letter. (an IBM development which prints out the same letter and one type in the office, e.g. the address). Involves much greater intensity and strain on labour.

20. What do typists do to recompose themselves in their battle against capital. Do they have the anti-work, pro-pay attitude of the Canadian postal workers (more pay for less work). Their main weapon is ~~the~~ shifting firms: cf. turnover rate of typists. What evidence of soldiering, sabotage, strikes etc. Very little, one would suspect. (see the strategies of the 'mass' worker in the Italian case). How much influence does the background have: i.e. young women expecting to get married, often living at home, thus not even the subsistence of 1 to earn. Rather social ~~ix~~ relations which are cut out in the post-school, isolated home period. Married women going back to work for the same reason - social relations outside the home. Given the unskilled nature of the work (typing, like driving is now becoming a general skill like reading and writing) mobility easy: time taken to learn new job in typing pool ~~xxxx~~ zero. Shortage of typing labour means mobility ~~easy~~ further eased.

21. In long term look at supply of this source of labour. Braverman quotes (p 32) men's participation rates falling from 87% to 80% between 1947 and 1971, and women's rising ~~xxxx~~ from 32% to 43% over the same period. The greatest ~~xxxx~~ rise for women in over 45 group. But some limit soon to be reached.

with family structure as it still is. of the figures for Brighton - which has become a major centre for office development in the last few years.

22. What is the meaning of open planned offices and their relation to typing pools. Is the move to open plan a tendency for the higher grades? R&D have open plan because of their informal group discussions. Open plan may be a cover for proletarianisation (pot plants and carpets). Or is it question of control of labour. Certainly difficult to have machines in open plan offices hence the adjacent typing pool. (not true of banks). Group technology and the open plan?

23. A further feature of ~~xxx~~ typists work is a relatively low organic composition of capital at the moment. Most of their work is not time-critical - it does not have to be produced for circulation to the next stage. Hence pressure for work has to be imposed from the outside. Moreover, little night shift work. Look at those machines in the office which are worked at night: computers. Need for turnover of capital. Cannot take the interruptions of the night. See also development of flexitime - though runs into problems of supervision. What shop floor workers have flexitime. Flexitime can lower cost of labour - greater potential supply, lower transport costs.

24. Draughtsmen. In some industries computer aided design (printed circuit boards). See also developments in ship building design. But for most part not much deskilling in the drawing office. Rather pressures for standardisation to ease reading the drawing not only down the line but by other countries in the ~~for~~ ITT network. Thus draughtsmen must now produce letters 5mm high, and lines of a specified thickness. Partly required for reproduction since the drawings are reduced to 35mm film and then blown up again (ease of transportation??).

25. Standardisation. ITT have a committee for standardisation which meets virtually all the time. They attack ~~virtually~~ everything that can be standardised: materials, components, the ~~board~~ circuit boards, and ~~its~~ their process of manufacture, the size of rooms, ventilation, the temperature, the wattage of the lighting. All documentation has to take a standard form. German documents very similar so that one can understand it almost without reading German. (they never have anything from the US). §

Every function that engineers perform ~~must~~ has a standard was of being done. Hence the 3 volumes of the manual for the A23 for Production Engineers (Systems Procedure Instructions). In a previous work to rule the Production Engineers spent all their time merely reading how they were meant to do the job.

26. Time pressures. Direct time pressures rather than ~~market~~ ^{ie. R&D} reflected in market prices. IN R&D projects costed, and these costs ~~basically~~ ^{basically}

reflect work time and office space costs. Hence interest for project leader to speed up work. (One way of doing this is to give someone a large pile of work on his/her desk for then does more ~~is~~ than if only one piece to do). Production engineers have work pressure but of a general kind. Draughtsman's work costed at £3.50 an hour, tool design £2 X £3 an hour, production engineer not costed directly. Tool makers have to achieve targets. Punch card operators have targets on the basis of which they receive a bonus. Sales reps of course get bonuses on sales.

27. One distinction here which we have mentioned before is the relative autonomy of time. How long is the job in hand. For British Leyland line workers 7/8 seconds. upto R&D: shortest a day, often months.

28. Wage systems.

Grading system running from 1 to 47 which is the grade of the MD of ITT in the US. UK manager has a grade of 27 in Creeds. APEX covers the grades 2-7, 4 being the lowest for men. Each grade has a band (i.e. wage rises possible within a grade). The upper grades have much wider bands. Normally 10-15% of the level of the basic grade. Very flexible system. ~~Production~~ Unions concerned only with setting the minimum of the grade and maintaining differentials.

Office workers now lagging behind the shop floor. Grade 5 on the shop floor is £52, whereas in the office it is £40. Tool makers now betting more than many draughtsmen or ~~in~~ the younger production engineers.

There is of course the attempt to re-emphasise division between clerical and white collar jobs and those on the shop floor. Weekly as against monthly payments. But tool makers now have staff status, as do setters. Principally meant using the staff lavatory: but complaints at dirt, hence the lavatory made more exclusive (keys etc).

29. The meeting finished at 10.30 and agreed to meet again on Tuesday April 7th, at 8.00 in the Labour Club to discuss the overall shape of the paper and what further research we should do.

Next week's meeting of the Labour Process Group is at 41 Colbourne Road Hove (John Mepham's house), and will discuss papers by Hugo Radice and Kate Soper on more general aspects of the Labour Process.

footnote: 2 Japanese visitors attended the meeting, ~~Tetsuro Nakaoka~~ Sadayoshi Otso of the Dept of Economics, Ryukoku University, Fukakusa, Fushimiku, Kyoto, Japan and Susumu Misaki of the same address. They recommended a book in Japanese: Tetsuro Nakaoka, Philosophy of the Factory, 1967/9 300pp. Nakaoka works at Kobe Gaikokugo Daigaku (Foreign Languages University) in Kobe, Japan. He also recommended Makoto Kumazawa, a labour economist from Konan University, Kobe, Japan, who was working on the labour process in Japan. Sadayoshi promised to try and do a paper on the labour process for the July conference, and said he could ask Kumazawa about the labour process and its development in the factory that was producing teleprinters in Japan.

Creeds Labour Process Group/Memo 5.

At our last meeting on March 23rd we decided that at our next meeting we should take stock of where we had got to, discuss the shape of our paper, and what further work needed doing. These notes are meant as a lead-in to this discussion.

1. Issues discussed.

Looking back at the issues raised in memo 2, we have discussed the following:

- i) the process of technical change and its relationship to weakening the power of organised labour.
- ii) the changing composition/of labour after technical change: move from shop floor work to technical work and office work.
or division
- iii) changes in the geographical division of labour: supplies of components from cheap labour areas overseas, and of technology from Harlow.
- iv) pressures for deskilling, division of labour, and mechanisation of technical and administrative work (production engineering, R&D and clerical)
- v) changing composition, and line of main unions in relation to above changes.
- vi) wage systems and the politics of the factory (including fringe benefits)
- vii) politics of the shop floor: Taylorism and time and motion study; soldiering; quality control; etc.

2. Issues we have only touched on:

- i) extent of the movement towards job design, job enrichment, group technology: to what extent will the new machine produce the conditions which have led other firms to introduce these new methods of organising labour (high turnover, low productivity, etc).
- ii) significance for the organisation of labour against capital of the expansion of production outside the factory (components from abroad, technology from other sections of the ITT group.) Is it so that there is less value added in Creeds as a % of the final product on the A23 compared to the 444?
- iii) Significance of protection of the British market for continuation of production in Britain: is it likely that with the opening up of the market for teleprinters and the development of the EEC, that ITT will eventually centralise their production of teleprinters, probably outside the country. Is there likely to be a closure of Creeds Brighton (and NCR Brighton) just as there was of the Imperial typewriters factories in Hull and Leicester.
- iv) following on from ii) and iii), the significance of this production being organised by an international firm. How do ITT produce and sell teleprinters at the world level. How do they organise the R&D. What are they supplying the US market with, and the European. Where is research for the successor to the A23 being carried out.

similarly, do Creeds use ITT prototypes and advanced communication technology for their machines, and their own organisation.

v) possible long term strategies for labour in the light of all the above tendencies.

3. One possible outline of paper:

1. Brief history and description of Greeds, - including *and the machine doc.*

2. Main issues to be raised.

3. Analysis of the old labour process in:

a) machine shop (for the 444). what it consisted of, diagram of shop and the work, plus flows, problems from point of view of capital, attempted changes by capital, numbers employed, and composition of labour (men and women, degrees of skill), experience of working there.

b) assembly (for the 444): same as for machine shop.

4. Changes from the introduction of the A23:

- in the machine shop (comparative analysis to 3a above)
- in the assembly
- changes in division of labour (increase in clerical work, etc.)

5. Technical change and the politics of the factory.

- background to the introduction of the A23, opening up of the Post Office orders, development of electronic economy.
- how conscious was the introduction of the new technology in relation to weakening labour.
- international aspects: cheap components from low cost ~~sources~~, weak labour sources.

6. Significance in change in the division of labour: the new politics of the factory.

- tendency to displacement of skill from shop floor, but then taylorism, deskilling, division of labour etc, applied to the technical and clerical work (cf. Braverman argument).
- response of labour, both informal (turnover, etc) and formal, (development of the unions, AEUW, TASS, AFEX).
- other strategies of the management: ~~briefing~~ briefing groups, & consultative committees.
fringe benefits,
wage systems.
spatial separation.
design of jobs/job enrichment?

7. The international firm and the internationalisation of the labour process.

ITT's organisation of teleprinter production, research, and sale internationally: long term implications for all these.

8. The strategy for labour in the long term.

30.3.76.

Notes on Creeds.

The Company was founded in 1912 and led in the field of early telecommunications. In 1925 the company became a subsidiary of ITT and in 1965 moved from Croydon to Brighton where they now lease approximately 10 acres of the Hollingbury Industrial Estate.

The Company still owns its wartime 'shadow' factory at Treforest South Wales as additional manufacturing capacity. Other sites include: a service factory at Mitcham and rental offices in South Rd. Brighton, (subsidiary).

Factory space at Hollingbury:

Manufacturing	107,600 sq ft.
Offices	58,600 sq ft
R&D	36,700 sq ft
Other	13,400 sq ft

Activities (1975 Report):

Manufacture and sale of equipment for the telecommunications and data processing industries, Rental and maintenance of this equipment.

Principal customer:	British Post Office
Turnover	£10,966,000
Profit before tax	830,000
Exports	575,000
Dividend	187,500
Balance of unappropriated profit	1,893,220
No of employees	2,439

Current products:

444 teleprinter	largely mechanical
quantity per year	12,450 1975
	9,000 1974

various old models, attachments, spares and data processing equipment - small quantities.

ITT 2300 Teleprinter - electro-mechanical (electro bias)	
quantity per year	3,500 approx. 1976
	(production tooling based on 20,000 a year)

Until around 1974 the company formed part of the Business Systems Group Europe, but since, BSGUK has been formed of which the company is the largest and the only limited company. BSGUK Administration, Finance and Personnel offices are based in the Hollingbury estate.

Also in 1975 the company's shares (held by New York) were transferred to STC and K.G. Corfield, managing director of STC was elected Chairman of the Board of Directors along with the infiltration of other STC and BSG directors.

Changes in organisation and technology.

Such changes are not directly linked with the introduction of a new model, rather a new model gives the opportunity for the introduction of such changes.

The design of a product largely determines the nature of the production process employed, and also the design and the production standards, (both of which have been tightened in recent years), , affect the level of rationalisation and organisation for production.

With divisions among technical personnel, formalised feed-back systems have been introduced between R&D and Industrial Engineering. These take the form of value analysis, project engineering, and design appraisal, all being largely design criticism from Industrial Engineers.

The most obvious differences between the new product and the old manifest themselves in the drawings. Seemingly unimportant examples are:

reversed dating (i.e. 76.5.21 rather than 21.5.76)
reversed descriptions (i.e. pin, spring anchor rather than
spring anchor pin)

and new component numbering system.

These three simple examples of changes are designed to computerise, rationalise, standardise and internationalise company documents. There are of course many other examples.

Metrication and geometric tolerancing are rather more significant examples of changes on drawings. Basically these techniques are designed to internationalise drawings, but more importantly, geometric tolerancing is an attempt to deskill and simplify the ganging labour processes.

It is important to appreciate at this stage that the changes in organisation and technology at this company are not particularly revolutionary or unique. Given a particular complexity of product design and a particular market potential, investment is allocated to be amortised over a given period. Within the confines of the company situation, the organisation and technology could be unique although the processes themselves may not be so.

For example, a special screw of relatively complex design can be produced, given unlimited capital expenditure, on an automatic 'cold heading and rolling' m/c at the rate of 6 per second, whereas within the confines of the company's situation, this part would be produced on one auto turn operation at 3 per minute and may be two further operations at approx. 2 minutes each., with all the documentation and handling associated with the 2 extra operations. What could be particularly unique would be the deletion of one or both second operations by a particularly 'clever' design change and/or production method. Another method of decreasing cost (i.e. reducing labour content) would be to standardise on screws to universal standards, therefore the screws would be made by a screw making company by the cold heading and rolling method.

These cost reductions are the aims of the designers and industrial engineers generally, and this company is no exception. The introduction of the new product has given the opportunity for such cost reductions.

tool design, and planning layouts to work study for values (times) and layouts to manufacturing (layouts went to production control for introduction to manufacturing)

New System.

R&D now remote from manufacturing, in fact in a separate factory, issues drawings to:

- value analysis: formal design criticism for cost reduction by lateral thinking
 - project engineering and design appraisal - more basic design criticism for economic production
- Also within project engineering, standards are issued, designed to record as much technical manufacturing detail of as many processes as possible.

Industrial Engineering - participates in the value analysis, project engineering and design appraisals, and is made up of production engineering, tool design and work study. This amalgamation is designed to create cost consciousness in tool design and planning layouts. The cross fertilisation is within formalised systems.

Work Study: contact with manufacturing is largely unchanged although computed values (values made up of synthetic data) are encouraged.

Methods acceptance is a formalised system for the introduction of planning layouts to manufacturing. The aim being to fix details of methods by formal acceptance by setters.

Work Study Projects. A fairly high level work study department with responsibility for efficiency and cost reduction throughout the company. Particular emphasis on synthetic data.

Other changes in organisation and design include:

- greater computerisation of company records
- higher percentage of purchased out components (approx 25% of cost of the new product)

Also the electronics on the new product inevitably leads to greater reduction in labour, as previously the electronic functions were done mechanically.

The electronics assembly is situated close the semi-flow line of the mechanical assembly where the line is balanced much finer than the old model and therefore skills are not as high. On the assembly floor much of the old manual testing is now done automatically on programmed testing machines.

30.5.76.

Note: there will be a meeting next Tuesday, June 8th, at Brighton Labour Club, Lewes Road, 8.00 p.m. to discuss these notes and the Creeds paper.