SOME ASPECTS OF CLAIMS FOR COMPENSATION IN ENGLAND AND WALES FOR PERSONAL INJURY CAUSED BY NOISE OR BY VIBRATION

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ACTION FOR DAMAGES

(1) GENERAL PRINCIPLES

A person who suffers personal injury, illness or disease as a result of the fault of another has the right to bring an action founded on tort, such as negligence, breach of statutory duty or assult. Very occasionally such an action is founded in breach of contract, for example the failure of a shipping or railway company to carry its passengers safely. The same principles apply whether the action is founded in tort or contract namely that damages should, as far as money can compensate, give the injured party reparation. The basis of such an action in tort is the ability of the plaintiff to show that the defendant owed him a duty, that the defendant has been in breach of that duty, and that as a direct result of that breach of duty, the plaintiff has suffered some injury, loss or damage. I will later refer to two other avenues which are available to some injured persons who may obtain compensation without proof of fault.

It is a well known principle in English Law that damages for personal injuries are not punitive, still less are they a reward. They are simple compensatory (see Lord Goddard in BRITISH TRANSPORT COMMISSION v GOURLAY 1956 A C 185 at 208).

Over the years there have been many wise words from the Bench on this subject but Mr Justice Field in 1879 in PHILLIPS v SOUTH WESTERN RAILWAY COMPANY 4 QBD 406 perhaps put it most succinctly when he said "You cannot put the Plaintiff back again into his original position but you must bring your reasonable common-sense to bear and you must always recollect that this is the only occasion on which compensation can be given. The Plaintiff can never sue again for it. You have, therefore, now to give him compensation once and for all. He has done no wrong; he has suffered wrong at the hands of the Defendants and you must take care to give him full and fair compensation for that which he has suffered".

The principle enunciated in these words remains appropriate today although the Administration of Justice Act 1982 Section 6 inserted into the Supreme Court Act 1981 a new Section, Section 32 A, with effect from the 1st July 1985, providing for the possibility of an award of provisional damages in an action for damages for personal injuries in which there is proved or admitted to be a chance that at some definite or indefinite time in the future the injured person will, as a result of the act or omission which gives rise to the cause of action, develop some serious disease or suffer some serious deterioration in his physical or mental condition.

This provision goes a long way towards clearing what many thought had been an

injustice. It is too soon to see whether the new procedure is working in practice.

Whatever the nature of the injury, whether it is caused by accident or by an incident or caused over a period of time by noise or by vibration, the basic principles remain the same and damages are awarded based upon the pain and suffering and loss of amenities of the plaintiff and based upon his financial losses, past or potential.

(2) SPECIFIC PROBLEMS

(a) Noise

(i) Establishing Liability:
In an action for damages for personal injuries and consequential loss, the burden of proof is upon the plaintiff to establish, on the balance of probabilities, that the defendants were to blame for his injuries because of their negligence and/or breach of statutory duty. In a deafness case this will involve establishing that the noise levels to which the plaintiff was exposed were excessive and that the defendants were negligent in exposing him to them.

It will be plain that the criterion to be applied in 1987 will be different to the criterion applied in 1900. Over the past century the whole industrial climate has changed from basically a manual application of tools to a mechanical system and with this progress there came a considerable increase in noise levels. In the absence of an admission of liability by a defendant the burden of proof remains upon the plaintiff to establish the extent of the noise levels, that they were excessive, that the excessive noise levels caused the plaintiff his condition and that the defendants were negligent in exposing the plaintiff to those noise levels.

For the purpose of this discussion it will be assumed that it has been possible to prove that the noise levels were excessive, namely that they were capable of causing damage to hearing.

(ii) Date of guilty knowledge:
There have been references over many years in professional publications to the connection between noise and deafness. In 1886 Dr Thomas Barr M D, Surgeon to the Glasgow Ear Hospital, wrote a paper for the Royal Society of Medicine in which he began by saying that it was "familiarly known that boilermakers and others who work amid very noisy surroundings are extremely liable to dullness of hearing".

He related that when he experienced the noise he fortunately furnished himself with a couple of india rubber plugs and he warned "that no-one who values his hearing, perform such an experiment without similar precautions".

He carried out a survey of one hundred men who were engaged in the process of boilermaking and his first test indicated that in no single instance was the hearing normal so far as the tick of a watch was concerned, and

the watch was 36 inches from the ear. In about half the number of men, the watch was either heard not at all, or only on pressure or contact. His next test was by whispering at a yard distant. In normal hearing the whisper should be heard at about 22 yards from the ear (according to Dr Barr) but 59 of the 100 men could not hear a whisper in either ear, or heard it very indistinctly at a yard distant from the ear. 13 men did not hear a loud spoken voice at a yard distant so as to understand with either ear and 10 men heard on one side, but not on the other. Perhaps the most interesting aspect of his research was in connection with the steps taken by the 100 men to shut out the sound to protect their ears. 28 of them occasionally stopped up their ears with cotton or some substance, but many of them only used such a preventive measure when they were working in the interior of a boiler when riveters were hammering outside.

The main reasons for neglect of precautions were want of appreciation of the value of hearing, want of forethought, and the conviction that dullness of hearing was an inevitable consequence of this kind of work. Dr Barr tried out some plugs in two engineering works which proved to be fairly satisfactory. He indicated that it would be well if apprentices, when entering this kind of work, were advised by the foreman to use an india rubber plug to protect the ears, for by this means it was probable that the injurious effects produced upon the ears, by the intensely shrill notes, could be materially obviated or the protection which they would afford against the actually painful influences of the terrible din would prove a great comfort to the men.

His conclusions are interesting. No-one engaged in boilermaking for any length of time escapes injury to the hearing and compared with men engaged in other occupations their hearing power is extremely defective. An article presented to the Royal Society of Medicine in 1886 was clearly destined for a fairly confined and specialist audience.

In 1908 the Medical Inspector of Factories in his Annual Report stated "it is generaly known that men employed in certain trades are liable to have their sense of hearing seriously impaired, if not entirely destroyed, in the course of time as a result of long, continuous exposure to loud noises ...". "Other occupations in which deafness - brought on by the conditions of employment - is also prevalent, are the hammering of metal sheets and cylinders, use of pneumatic tools, beetling of cloth, engine driving and firing of guns". Some detailed reference is made in this Report to the protection gained by the plasticine ear plugs, with or without cotton wool, and the Inspector expresses the wish that the wearing of the ear plugs could be done under medical supervision.

That ear protection of some sort has been thought useful in protecting the ear from noise has been well known since the first world war when primitive forms of protection were provided for artillery.

In 1923 the British Medical Journal for the 10th November contained an article by Dan McKenzie, who was Surgeon to the Central London Throat, Nose and Ear Hospital, in which he deals inter alia with the increasing phenomenon of damaged hearing from the ever increasing use of loud machinery "in modern life". Somewhat prophetically he asks whether the

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deafness induced by loud noise progresses after the exposure to noise has come to an end and while stating that his own observations are too limited to form an opinion he does say that he has noticed that "these people" become very deaf when they get old as if the noise deafness led to an unusually severe senile deafness.

There was a series of articles in the British Medical Journal in 1925 dealing with the topic of noise induced hearing loss. "In continuous noises" says the article of the 14th November 1925, "such as riveting and boiler making or loud machinery which gives rise to continuous nerve strain, deafness is not due so much to damage to the sound conducting mechanism as to the structure of the sensitive nerve endings which constitute the sound receiving apparatus.

More severe deafness is produced by intense sounds made up largely of overtones of high pitched and by noises of loud pitch, such are heard in cotton mills etc. etc. Tinnitus is invariable....".

A second article in 1925 states "noise deafness as met with in boilermakers and riveters is essentially a labyrinthine deafness". Further "as to prevention the common means adopted is the supply of cotton wool for use as a plug in the external meatus. This is served out before all gunnery practices in H.M. Ships and although its use is not compulsory there is no doubt that it is commonly used. It has the disadvantage of making the user quite materially deaf. The Mallock Armstrong Meatal Plug is used frequently by officers and has been of considerable value in reducing the shock of detonation".

The 1927 extract from the Annual Report of the Chief Inspector of Factories relates to researches carried out by Dr McKelvie of Salford, but the feeling was that it was not unlikely that if similar examinations of dwellers in large cities were made a high percentage would be found to be suffering from some degree of deafness due to the "din of modern city life".

The Publication "Industrial Maladies" by Sir Thomas Legge, of 1934, describes boilermakers' deafness as the destruction of sensitive nerve endings which constitute the sound-perceiving apparatus of the ear. There is yet again a reference to Dr Barr who was clearly famous even in those days. Reference is made to attempts, "not infrequently made especially by those obliged to work in the interior of a boiler while riveters are hammering outside to avoid the painful sensation by stopping the ears with cotton waste or plugs of india rubber. Probably the reason that more do not do so is the conviction that deafness is inevitable". There is then reference to cotton wool spread with vaseline and plasticine mixed with cotton wool.

The report of the 18th Annual Conference of the Industrial Workers' Society of September 1937 included an article entitled "The Influence of Working Environment on Health and Fitness" by Dr G P Crowden dealing inter alia with vibration and noise.

Vibration and noise are described as characterising the working

environment of certain occupations such as shipbuilding, boilermaking, steel construction, road breaking and the manufacture of boots and shoes. It goes on to say that "if some of the effective ear stops which were available were systematically used by the workers I have little doubt that the traditional handicap of boilermakers' deafness would cease to exist. Very effective ear stops of cotton wool and wax have been devised by Luxton and these have proved to be of great benefit to workers in a number of noisy trades". Further, "with regard to the reduction of general noise in factories a good deal can be done by using absorbent panels on walls and ceilings and this no doubt lessens fatigue. Where such measures are not possible, then the use of ear stops or ear defenders are advantageous to the workers". Reference is made in "Industrial Physiology" also by Dr G P Crowden to request for information by Messrs Siebe-Gorman & Co., on inter alia ear protectors, from Western Electric Co., for audiometers, from Messrs F C Wren & Son for hearing aids and the General Electric Company on inter alia electric hearing aids.

Dr Constable of the National Physics Laboratory produced a report on the conditions of noise in the Public Health Lecture Theatre. The Western Electric Acoustic Service assessed the conditions of noise in the Lecture Theatre before and after the acoustic treatment with the result that the data showed that the treatment was most effective in eliminating the noise from the room.

Subsequently, it is stated that at the request of the Industrial Health Research Board, an exhibit dealing with the protection of industrial workers against noise by means of ear defenders and stops was sent to Edinburgh for the Third Health and Hygiene Exhibition held in March 1936.

Since the opening of the School in 1929 the Department had taken an active interest in the problem of deafness.

The Journal for the Industrial Welfare Society of January 1938 contains an editorial dealing with noise referring to an article in the Journal by Mr Western. Even then the methods of attack were identified as being reduction of noise at its source, the insulation of the particular working place, and the protection of the individual and, of these the protection of the individual was described "as once the easiest and the most obvious but though in some cases the only practical method but for general purposes unsatisfactory" because it approaches the problem from the wrong angle and results in the man adapting himself to the environment instead of attempting to control it.

Mr Western's article confirms the problem of the fact that prolonged exposure to extremely loud noise, as in boilermaking shops, can lead to occupational deafness. The July 1938 edition of the same publication relates that "a member firm" has for some time been supplying its employees with ear defenders at a nominal charge, but finds that on the whole they are not used to any great degree. It invites comments from other firms who have had experience of ear defenders, particularly if they are able to say if their use has had any effect on reducing fatigue.

The August 1938 edition of the same Journal comments that one firm had

replied that "we have used these (ear defenders) for the past three years in one of our departments where the racket of machinery is not only persistent, but very intense and all the operators wear them quite voluntarily. In fact, they speak very highly of the use of these small aids and considering that they have now been used for over three years, it speaks well for the idea.

Our operators say they would not care to be without them today. There is just one small difficulty, and that is that the makers do not appear to make a pair small enough to fit the operator upon whom nature has bestowed a very tiny orifice.

The Mallock Armstrong Ear Defender Company say that there is a very small percentage of people to whom this type of defender cannot be fitted on account of the extreme narrowness or unusual shape of the aperture. The firm, however, supplies on request, defenders of an extremely small size which are not included in the limited list."

The Publication "Essentials of Industrial Health" by C O Saffington in 1943 deals inter alia with the noise control. It describes the chief effect of exposure to noise, and that noise deafness is traditionally associated with such occupations as boilermakers, riveting and drop forging work. The usual three ways of reducing the effect of or eradicating noise are mentioned, namely elimination at source, reduction of noise by altering the surroundings and personal protection against noise. Personal protection against noise consists "mainly in using ear plugs of some description. These may, however, serve no useful purpose in protecting against bone conductive vibration as is obvious. There are no available efficient types of ear plugs to shut out most of the airborne noise".

Dr David McCoy's article "The Industrial Noise", in the Archives of Otolaringology 1944 deals with the history of the relationship of exposure to intense noise and loss of hearing, and to the fact that between 1882 and 1915 tests were carried out on boilermakers. The First World War raised interest in this subject. It was found that factory machinists, locomotive enginers, tractor drivers, riveters, and steelworkers were suffering a more or less typical loss of hearing. Typical noise levels of typical operations were described and it was stated "that it is well known that the workers' judgement as to whether he needs acoustic protection is unreliable. In many instances the unreliability of a man's judgement is due to the already existent loss of hearing which provides some degree of cushioning". Cotton was described as an "old standby" still leaving the worker exposed to hazardous levels of noise and mention was made of difficulty in persuading the men to wear them for long periods of time. Reference was made to the "beginning of cases of occupational deafness requiring settlement", and it was essential from the point of view of all concerned that the possibility of a noise hazard in any plant be given thorough attention.

The solution of the problem involved not only "a survey of the level of sound, but audiographic examination of exposed workers which procedure would be useless and unfair to Management if executives were not fully

aware of the necessity of taking active measures based upon specific recommendations."

The second volume of British Industrial Medicine 1945 refers to the problem of "Noise in Factories" and the particularly noisy trades of riveting and boilermaking and the need to arrange rest periods at appropriate intervals away from the noise.

"The Times" Review of Industry in February 1947 deals with the general problem of noise in factories and the fact that the subject was becoming a matter of increasing interest in industry. The article was prepared by a member of the Physics Division of the National Physical Laboratory and deals with the need to suppress sound at source where necessary and to ensure that the use of worn or badly cut gears was eliminated. Consideration was also given to the possibility of enclosing a machine in a sound insulated structure lined on the outside with sound absorbing material. Specific reference was made to the noise inside a cotton mill, and in particular a weaving shed and suggestions were made as to how the noise in those premises could be reduced.

Finally, mention was made of the use of ear defenders comprising plasticine or cotton wool or even solid plugs and reference was made to ear defenders of soft rubber which were used by the British Forces during the War which appeared to be the most effective and particularly suitable for use in very noisy occupations.

Air Vice Marshal E D Dickson giving a presidential address to the Royal Society of Medicine Section of Otology on the 7th November 1952 drew attention to noise as an industrial problem and that "deafness can and will result from high levels of industry and elsewhere and that in certain occupations associated with continual exposure to loud noise there is no doubt that deafness results, which with long exposure, is progressive and may be permanent". "A worker's deafness (because of its innocuous origin in the little used high frequency range) neither stimulates executive interest not the interests of the worker himself as a temporary injury such as a broken arm with which the relationship between cause and effect is more evident". Air Vice Marshal Dickson goes on to say that "We do know that levels of 100 decibels and above will produce fatigue and deafness and that levels of 80 to 90 decibels are annoying. We have evidence that continual exposure to noise levels of the order of 80 to 90 decibels for long periods may lead to the acceleration of the normal deterioration in hearing with age.

Noise whatever its origin does damage hearing and, therefore, all persons exposed to intense noise should use some form of protective device such as a helmet or ear warden. The workers will not wear such protective devices because they can be very uncomfortable unless care is taken to the individual fitting". The summary indicates that impairment of hearing can be gradual in development with the high tones being affected first; while the loss is at first reversible, prolonged exposure leads to irreversible changes. Every effort should be made to limit noise by considered distribution of machinery, soundproofing, bedding of equipment and particularly by protection of the ears. Resulting deafness in noisy

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occupations should be termed an occupational hazard and people in such occupations should have their hearing checked periodically.

The British Journal of Industrial Medicine 1953 published an article by Colin M Johnston who had carried out a field study on occupational deafness between June 1948 and May 1949 at three factories in the Birmingham area. The article helpfully reviews the previous literature going back to Fosbroke in 1830/1831. The National Physical Laboratory had carried out the full series of noise level measurements at the three factories.

It was interesting to note that the majority of workmen in the drop forge industry - according to the study - sought less strenuous employment after the age of 40. The staggering results of the hearing tests indicated that 219 workers were examined and that in 28 there was found bilateral ear disease of an infective or degenerative origin not due to acoustic trauma, leaving 191 for consideration. Of these 191 all except one man were found to have hearing losses due to noise which could be demonstrated either by speech or by puretone audiometric tests.

86 of the 191 said that their hearing improved after leaving their work. Some noticed the improvement within half an hour to four hours, but in others the improvement in hearing was less marked and only noticeable over a period of a few days or several months. 71 out of the 191 were conscious of lip-reading during working hours, although in the sample taken at the Screw Factory 56% of the operatives admitted to lip-reading at work since that was a well lit factory. Where the standard of illumination was low the workers could not - by the nature of the work and the machinery - see each other's faces and among chippers, platers and stampers only 20%, namely 26 out of 127, admitted to lip-reading.It was indicated in the study that tinnitus was a common complaint.

Vertigo induced by noise was complained of in only two subjects, both of whom were platers. This occurred while they were inside a small boiler which was being hammered on the outside by four men using heavy sledge hammers. Nausea did not result and the vertigo passed off within a few minutes of emerging from the boiler. Considerable pain was experienced in the ears from the noise - a rare complaint amongst workers in noisy occupations.

It was reported that it was well recognised among foremen that if a workman objected to the noise of the work he would soon change to a quieter job. A high proportion of new hands left such noisy work from this cause, but if the worker could persist at the work for a week or two acclimatization usually took place and the subject was then able to ignore the noise and found it neither irritating nor unpleasant.

It seems that with a few exceptions workers in the boilermakers and stamping trades were aware of the high incidence of occupational deafness but were not apparently perturbed by the prospect. The wearing of protective devices in the ear was observed only in the boilermaking trade and even there, in the noisier section, only 4 out of 40 men habitually wore wool plugs for the express purpose of protection from noise.

Three men inserted plugs to prevent dust getting into their ears and, of the remaining 50 boilermakers, only 6 habitually wore plugs.

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The study continues that the ideal remedy for prevention of occupational deafness would be to eliminate injurious noise at its source and that steps were being taken to improve machine design but it was accepted that reduction of the noise at source had only limited possibilities. The reduction of reflection and reverberation of noise by soundproofing services and erecting walls had, in certain instances, been effective but, again, the scope was limited. The third possibility was to protect the worker by ensuring that he wore a protective device. Cotton wool was described as being in common use, although of little value, but cotton wool impregnated with vaseline or plasticine was said to produce a relatively constant attenuation of 20 decibels for frequencies below 1000 cycles per second and 30 decibels for frequencies above that frequency. One type of rubber ear plug provided an acoustic insulation of 25/30 decibels or more at the high end of the frequency range. Plugs themselves have disadvantages in that the meatal plug, while giving a high degree of protection, was unsuitable in cases of otitis media or otitis externa. Other types were unsuitable in hot occupations.

The conclusions indicated that 26 out of 49 of the men employed in chipping, riveting, stamping, plating and heading, became deafened to speech at more than three feet after 20 years exposure. It was stated that the average workman was notoriously careless in the use of safety devices, and it referred to a survey of 1947 when a group of workmen provided with ear defenders had the record that one third discarded them after issue, one third used them only occasionally, and one third used them regularly. Any form of ear defender worn by a workman whose hearing was susceptible may be inadequate to prevent loss of hearing if he works in very intense noise. Mention was made of the recommendation in 1949 by Grove that every workman engaged in a job where the noise level exceeds 90 decibels should have a pre-employment audiometric examination and be re-tested after one week and subsequently at stated intervals. Any workman who complained of tinnitus after working in a noisy environment should have his hearing re-tested, and if on any of these re-tests it was found that an average loss of 10 decibels at 3000/6000 cycles per second has occurred he should be forced to wear a protective device or be transferred to a less noisy job.

In summary, after 20 or more years exposure to the noise at their work, 9 out of 12 chippers and riveters, 7 out of 11 stampers (drop forgers), 6 out of 12 boiler plate fitters and 4 out of 14 heavy machine operators who were examined were unable to hear speech at more than three feet distance in either ear.

In 1953 there was published a Report of the Committee on Conditions in the Drop Forging Industry by the Ministry of Labour and National Service Factory Department, with the understatement in Paragraph 17 thereof that "an investigation into deafness among the forge workers, particularly the hammermen, would be worthwhile". Clearly that report was made in ignorance of the field study carried out by Colin M. Johnston. The Report goes on to say in the same paragraph that the Committee had insufficient evidence to support the view that in some quarters there is "an amount of deafness in one of these workers in excess of the general population". The report does go on to say that the effect of production noise on hearing and working conditions merits a full investigation.

In this country the Industrial Medical and Safety Offices' "Bible" must surely

be Dr Donald Hunter's book "The Diseases of Occupations". This was first published in 1955 and in that edition six pages were devoted to occupational deafness.

A helpful history of the researches is contained in these pages and the deafness in various occupations is analysed. As a general fact it is interesting that Dr Hunter at P.772 states that the worker is frequently unaware of his deafness until it is severe and it is for this reason clearly that a man can often be exposed for many years to excessive noise before he realises that there is anything wrong with his hearing and by that time the damage is irreparable. Dr Hunter states that vertigo in such cases is rare.

On P.773 Dr Hunter presents a very helpful diagram showing a normal audiogram, an audiogram showing decrease in hearing due to age, and an audiogram showing decrease in hearing due to noise. The diagram also shows the typical audiogram of a person with conductive, as opposed to perceptive, deafness.

On P.774 he states that "the education of the public, both in industrial and ordinary life, to an awareness of noise and methods of noise control, is long overdue. It is accepted that noise produced significant deafness, that it contributes to fatigue and in some cases lowers work output ... heavy forge operators are so universally affected that partial deafness is recognised as some proof of experience in the trade. Methods of noise abatement are no longer technically mysterious nor is there need for so much noise so constantly to be endured".

He then states (remember this is 1955) that pre-employment audiograms should be carried out on all workmen who would be exposed to noise levels of more than 100 decibels, and that this should be repeated after one month's employment, and then after six months. If impairment of perception at frequencies below 3000 cycles per second has increased at either time the individual should be removed to a quieter occupation. He then deals with the question of ear defenders and says that too often the workmen are unwilling to co-operate by wearing them constantly and it is, therefore, desirable to use methods of noise reduction which do not depend on the co-operation of the workmen.

I have discussed in some detail the documents referred to in order to demonstrate that discussion - certainly in medical and probably in industrial circles - was taking place very soom after the turn of the century on the problems of excessive noise, the damage that it caused and the means available to protect those exposed to it from any harm. I now propose to refer to some specific cases to show how the question of legal liability has been decided by judges in different circumstances.

In DOWN v DUDLEY COLES LONG (1969) heard at Devon Assizes, Mr Justice Browne concluded that he was not satisfied, that in the light of the scientific and technical knowledge available in 1966, that those defendants were guilty of any want of reasonable care in failing to appreciate and guard against the risks that the plaintiff's use of a rivet gun might cause injury to his hearing. In that case the plaintiff was exposed to the impulsive noise of about 130 rounds per day fired from a "Tornado" Rivet Gun for some 14 days. The Judge concluded that it was only from the end of 1966 onwards that the dangers of impulsive noise became generally known and that this type of noise was clearly

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distinguishable from continuous or impact noise.

The well known common law test, which has been approved time after time, was that laid down by Mr Justice Swannick in STOKES v GUEST KEEN & NETTLEFOLDS (Bolts and Nuts) LIMITED where he said "The overall test of a reasonably prudent employer taking positive thought for the safety of his workers in the light of what he knows or ought to know, where there is a recognised or general practice which has been followed for a substantial period in similar circumstances without mishap, is that he is entitled to follow it unless, in the light of commonsense and newer knowledge, it is clearly bad; but where there is a developing knowledge he must keep reasonably abreast of it and not be slow to apply it; and where he has, in fact, greater than the average knowledge of the risk he may thereby be obliged to take more than the average or standard precautions ...". "If he is found to have fallen below the standard to be properly expected of a reasonable employer in these respects he is negligent".

In BERRY v STONE MANGANESE MARINE LIMITED which was decided in 1971 by Mr Justice Ashworth, Leading Counsel on behalf of the Defendants effectively admitted that from 1957 the noise was such that the Defendants ought to have known that it would cause damage unless protection were given. The case is interesting from another point of view and I will refer to it later but a full Transcript of the Judgement shows that the Judge accepted that the selection of a suitable ear plug cannot safely be left to the workmen themselves and that some form of supervision is required not necessarily by a doctor, but at least by someone qualified to decide whether the plug is a good fit, for example, the nurse at the first aid station. The defendants in that case stocked only two out of five, or possibly seven, available sizes and they provided no supervision when a workman was selecting a plug.

In McGUINNESS v KIRKSTALL FORGE, although finding that the Plaintiff had failed to establish that his condition was caused by exposure to noise, the Judge also concluded, having heard the evidence, that it was not until 1963 that the defendants should have been aware of the need to provide their employees with protection against the dangers of exposure to excessive noise.

In THOMPSON v SMITHS SHIPREPAIRERS (NORTH SHIELDS) LIMITED, Mr Justice Mustill - as he then was - similarly concluded that 1963 was the effective date of guilty knowledge.

In the case of KELLETT v BRITISH RAIL ENGINEERING LIMITED heard at Chester Crown Court on the 3rd May 1984, and succeeding days, Mr Justice Popplewell gave Judgement in favour of Mr Kellett who had been born on the 25th August 1932. He had started working for the Defendants in September 1946 as an apprentice in the erecting shop. From the 28th April 1947 he worked in the machine shop, from the 14th June 1948 in the brass finishing shop, from the 22nd August 1949 in the erecting shop. From the 11th December 1950 he was in the stay lathe shop and from the 29th June 1951 he was in the signal shop, from the 18th August 1952 he was in the erecting shop, and on the 29th September 1953 he left the Defendants to serve in the Royal Air Force as an Armourer for two years. It was accepted that nothing that happened during those two years contributed in any way to his hearing loss. On the 23rd October 1955 he returned to the erecting shop. At all times he was a fitter/turner. On the 21st March 1966 he was appointed a temporary works inspector and from the 12th February 1968 he had been employed

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as a works inspector.

He was first provided with ear muffs on the 22nd May 1979. In 1976 he first noticed that something was wrong with his hearing, and in 1978 he consulted his Union. It was accepted that the plaintiff had been exposed throughout his employment by the defendants to continuous noise levels in excess of that which was safe, that the deafness from which he was suffering was a direct result of that, and that no precautions of any sort were taken by the defendants to protect the plaintiff until the provision of ear muffs in May 1979, that apart from the normal ageing process there was no other contributory factor to his deafness and that there was no issue at the end of the hearing of the evidence relating to the allegation of contributory negligence or under the Limitation Act.

Mr Justice Popplewell had been referred by the defendants to the decision of Mr Justice Mustill in THOMPSON v SMITHS SHIPREPAIRERS LIMITED 1984 WLR 522.

The defendants urged the Judge to accept that whilst an employer must keep up to date, the court must be slow to blame him for not ploughing a lone furrow. They argued that:

(a) Prior to the publications of "Noise and the Worker" government had apparently taken no interest

(b) there was no legislation specifically about noise

(c) there was no pressure from the Factory Inspectorate

(d) there was no evidence from any other industry blazing a trail

(e) there was an absence of satisfactory ear protection save possibly for one type of plug

(f) the quantity and quality of literature available to the defendants' medical advisers was very limited

(g) employers were likely to be unenthusiastic about using any protection either because there was little known about the danger of deafness or because of the unhygienic nature of the protection

(h) when the Wilson Committee was set up in 1960 it was concerned in relation to noise in the environment primarily and only subsequently to noise in industry

(i) A Code of Practice was not issued until 1972

and

(j) A publication entitled Hearing and Noise in Industry was not published until 1970.

Counsel for the plaintiff urged Mr Justice Popplewell to look at the stream of literature going back to an article in the Lancet in 1931 and to Dr Barr's

article in 1886. The Judge indicated that if the plaintiff's case depended solely on the published literature that he would have been inclined to adopt the view that Mr Justice Mustill in THOMPSON and Mr Justice Hodgson in McGUINNESS v KIRKSTALL FORGE (1978 unreported) that 1963 was about the date when the defendants should be found liable and for the same reasons. In KELLETT, however, the documents prepared by the defendants showed not merely that the defendants from about 1951 had the means of knowledge, but they actually knew of the risk involved. They knew that precautions should be taken and also what protection was available, and yet so far as Mr Kellett was concerned they took no steps at all until 1979. Based upon a study of documents disclosed by the defendants Mr Justice Popplewell concluded that the defendants were, and had been, in breach of their duty to the plaintiff from 1955.

(iii) Apportionment:
It will be plain that where there is a date of knowledge which falls sometime after the commencement of the exposure to excessive noise then some method must be adopted to apportion the damages. In simple terms if a judge assesses that the plaintiff's claim has a value of £5,000, concludes that the plaintiff's hearing loss has been caused by exposure to excessive noise, unprotected between 1950 and 1980, and then concludes that the defendants were not negligent until 1965 how does he assess, in financial terms, the proportion of the total damages which the plaintiff should receive in respect of that part of his hearing loss caused by exposure to excessive noise from 1965 to 1980. In BERRY v STONE MANGANESE the Judge had to perform the apportionment exercise but not in the circumstances referred to above. In that case his symptoms had developed in 1960 and the Judge concluded that he knew then that his hearing loss was caused by noise, but he did nothing about it. His Writ was issued in April 1970 and the Judge concluded that the total value of the plaintiff's claim was £2,500 but he only awarded £1,250 on the basis that the plaintiff was barred from receiving compensation in respect of any negligence up to the date of three years prior to the issue of the Writ.

Looked at on a purely mathematical basis the Judge awarded the plaintiff half the value of the case, although the actual negligent period was the last four of the eleven years exposure.

As will become apparent there are two distinct schools of thought as to when the damage or disability is caused. One says that the majority of damage from exposure to excessive noise occurs in the earlier years of exposure even though the person suffering the damage is not aware that his hearing is being damaged or that any disability is likely to ensue. The second says that even if, in terms of decibels lost, the first theory is correct the real damage is done as each remaining of fewer decibels is lost and, therefore, that the damage in respect of which compensation is based is greater in the later years. Mr Justice Ashworth's approach in BERRY would certainly seem to support the second view.

In THOMPSON v BRITISH SHIPREPAIRERS LIMITED Mr Justice Mustill dealt at length with the question of apportionment, and in particular the National Physical Laboratory Tables based upon the field work carried out by Burns and Robinson whose results were published in 1970 as "Hearing and Noise in Industry". Mr Justice Mustill stressed that the formula was based on a cross-section and not on a serial survey. Most, if not all, of the subjects were tested once only,

the subjects being chosen from people with varying periods of exposure.

He then dealt with the logarithmic nature of the total noise emission such that unless the noise level increased after the initial years the graph of a noise dose, according to the Burns Robinson formulation, would always rise very rapidly in the first year, much less rapidly in the second year, more slowly still in the third year and so until it had slowed right down by the tenth year. The noise dose plays a major part in the formulae giving a prediction of anticipated hearing loss. Once again it was emphasised by Mr Justice Mustill that the tables were designed to apply only to the given statistical distribution of hearing levels in a noisy exposed population and "prediction for the induvidual remains impossible". Having reviewed the evidence Mr Justice Mustill felt that he was unable to reject the National Physical Laboratory Tables since they were the only comprehensive source of data currently available. The Judge concluded that any attempt at apportionment should assume that taking the population as a whole the greater part of the hearing impairment would take place in the earlier years, say the first ten, and that the progression will be slower at the lower frequencies. This later loss may have a disproportionate effect so far as speech comprehension is concerned where a subject has already lost the upper frequencies which otherwise would have enabled the recognition of the consonants.

Mr Justice Mustill accepted retrospection as permissible finding Professor Robinson an extremely impressive witness. The Judge found that there was insufficient material upon which to base any precise finding as to the noise emission levels to which the plaintiffs were subject, but he concluded that no such finding was required since he had rejected the retrospection exercise as a means of arriving at an accurate reconstruction of the plaintiff's hearing losses throughout the years of service. He concluded that what he needed to know was whether the emission levels were as high as the experts contended, and if so the result on the basis of the plaintiff's expert's findings would be to assign the plaintiffs to a very high percentiles of susceptibility and hence enable them to say that a greater proportion of hearing loss would be the case with a median acceptability would have taken place during the later years. Mr Justice Mustill concluded that the evidence made it possible to form a view on this and that the Leq taken as a whole was very substantially below the levels for which the plaintiffs contended. He concluded that the Leq was at such a level as to justify the assumption that the plaintiff's noise impairment curves lay close enough to the median curves as giving a general representation of the kind upon which the hearing loss has progressed over the years.

He rejected the so-called linear approach which apportions disability pro rata to the number of years in each period where the noise environment has shown no unusual features and the noise exposure, in terms of noise level and duration, has been similar in each year over the periods to be considered and went on to distinguish the case of McGEE rejecting the submission that that case demanded a recovery for the full amount of impairment. He further rejected his own view that he had formed in HESLOP v METALOCK that the whole of the damage should be attributed to the period for which the defendants were in breach. He concluded that "it is absolutely plain that (i) for all the plaintiffs the greater part of the damage in the upper frequencies is done before the breach began, (ii) the loss in the lower frequencies at the time was less but still really substantial and (iii) the handicap attributable to the breach was rather greater than the

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hearing loss scales and tables would suggest. He concluded that the breaches began when the plaintiffs were persons whose hearing impairments might, in some cases, have caused some unacknowledged disability with little or no handicap and the plaintiffs would, as the effects of age progressed, have found themselves becoming the subject of patent disability and handicap and that at the time of the breach they were already in a condition where any further exposure to noise would accelerate their progress towards disability or handicap and that the further exposure during the period of breach to have just this effect. He found that the plaintiffs were people who in 1963 were already going to be hard of hearing in later life and that the breach merely accelerated and enhanced the process and damages should, therefore, be directly consigned to this additional detriment. Unfortunately, the Judge made no reference to his full liability value of the injury and loss of amenity suffered by each particular plaintiff finding that 1963 was the appropriate date of knowledge, that the majority of the disability was caused in the earlier years of exposure and that the pre 1963 non-negligent exposure set in motion the process of hearing deterioration which the post 1963 negligent exposure merely served to accelerate.

Most of the plaintiffs had, to the Judge's finding, been exposed to excessive noise for many more years prior to 1963 (that is non negligently) than after 1963 (that is negligently). The plaintiffs between them were awarded between £600 and £1,350.

As a final example under this topic I refer again to the decision of Mr Justice Popplewell in KELLETT v BRITISH RAIL ENGINEERING LIMITED. It will be recalled that the plaintiff in that case had been employed from 1946 and that from 1953 to 1955 he had served in the RAF without noise exposure and that the defendants were liable from 1955.

He rejected the plaintiff's contention that there should be no apportionment notwithstanding the two enormous difficulties namely the method to be used in making the calculation and the figures which are used in the calculation. He decided that having assessed the total damage to be apportioned between the innocent period and the guilty period the court then has to assess the plaintiff's condition, both in decibel loss and hearing disability at the moment when the innocent becomes the guilty period namely for the purposes of this case 1955, and then to put a value in present day money terms on the plaintiff's claim at that moment against the notional defendant responsible for the innocent period. Having assessed the total damages at £4,000. Damages are awarded for the past, present and future adverse effect on the quality of life. It was necessary for the court to ascertain what was the plaintiff's condition in 1955 in terms of impairment and disability and he rejected the linear method referred to above. By means of the National Physical Laboratory Tables and using the evidence that was available, the Judge concluded that in 1955, at the end of the innocent period, the plaintiff's probable hearing loss was in the order of 15 decibels at the appropriate frequencies and if he had then been provided with ear plugs, as he should have been, the hearing loss would now be in the order of 21 decibels or so.

The Plaintiff's hearing loss at trial was 31.4 decibels. The Judge, therefore, concluded that approximately 50% of the hearing loss, i.e. 15 as opposed to 31.4 decibels, occurred during the innocent period. If the defendants had taken the proper precautions in 1955 the plaintiff's hearing loss, in terms of decibels,

would be about two thirds of what it was at the time of the Judegment. The defendants invited the plaintiff to approach the case on the basis of the decibel loss so that if he were to accept that argument the defendants were responsible for only one third of the plaintiff's present condition. Mr Justice Popplewell referred to the remarks of Mr Justice Ashworth in BERRY that "to make a man already deaf still deafer is to increase his handicap very considerably as .... he has fewer decibels to spare". Mr Justice Popplewell assessed that if the plaintiff had received damages in present money terms for the state of his hearing in 1955 he would have awarded £800, and accordingly the plaintiff was entitled to £3,200 for the damage he had sustained due to the defendants' negligence since 1955.

(iv) Burden of proof of injury, negligence and causation:
The fact that exposure to excessive noise is capable of proof or has ever been admitted does not, of course, entitle a plaintiff to an award of damages.

In HARBACH v GARRINGTONS LIMITED which was decided in 1971, but which was unfortunately unreported, the Judge having heard expert medical evidence and argument was unable to resolve his doubt as to the cause of the plaintiff's deafness and, therefore, held that the plaintiff had failed to prove his case on the balance of probabilities. It was clear that the plaintiff certainly suffered from otosclerosis and had admittedly been exposed to the noise of drop hammers in his employment.

In McINTYRE v DOULTON decided by Mr Justice O'Connor in March 1978, but unreported, the Judge found that Section 29 (1) of the Factories Act 1961 applied and rejected the defence that having regard to the generally quiet nature of their operations it was not reasonable for the defendants to have been aware of the risk of noise induced injury before 1972 after the publication of The Code of Practice. The Judge was prepared to fix them with knowledge from 1963 but the claim failed because the plaintiff failed to establish that his hearing loss was caused by his work rather than by other causes.

In McGUINNESS v KIRKSTALL FORGE once again the plaintiff's claim failed because he was unable to establish, on the balance of probabilities, that his hearing loss was due to exposure to excessive noise.

(v) Tinnitus:
This is frequently an unpleasant condition caused by exposure to excessive noise. In BAILEY v ICI Mr Justice Caulfield, on the 14th May 1979, at Manchester Crown Court, awarded the plaintiff a total of £8,500. The plaintiff's disability consisted of a bilateral high-tone hearing loss which one consultant put at 15 decibels and I will assume, since it is not mentioned in the Judgement, that the average binaural decibel loss over the frequencies of 1, 2 and 3 khz was 15. This basis of assessing a disability is used by various organisations not least of all the DHSS. It does not, however, take into account the fact that as in Bailey's case he was severly disabled at 3 khz and beyond. In addition the plaintiff in that case suffered from tinnitus, and it was that symptom which alerted him to visit a hospital to discover exactly what his disability was. The plaintiff enjoyed stereo music and his disability made it difficult for him because of the high pitched sounds of music which were difficult for him to hear so he was losing some of his enjoyment in his pleasure of listening to the music. When he was in a public house the backgrond noise

made him miss the track of conversation which made him embarrassed and tended to lead him to withdraw from conversation. The tinnitus was forever present and would be a permanent symptom of which the plaintiff was very conscious.

In addition the Judge took into account the possiblity that the plaintiff's hearing would worsen by reason of age. At the time of the trial the plaintiff was 35 and medical evidence clearly indicated the possibility of the deafness worsening by reason of the ageing process. The Judge accepted that when the deafness worsened by reason of age it does not worsen proportionately to the deterioration because the decibels increase fairly rapidly when worsening takes place. The plaintiff had appeared in ordinary conversation entirely normal when there was no competing sounds. The Judge said that if a stranger had come into the court when the plaintiff was giving his evidence he could not have concluded that he was suffering from any degree of deafness. The plaintiff was going to have difficulty in using a telephone and in attending meetings. The Judge again emphasised that damages would have to be awarded for the loss of amenity which certainly dated from the age of about 30 which was a very young age for this type of disability. He awarded extra, although not very much, for the possibility of worsening deafness. For the pain and suffering in the past, loss of amenity in the past and future years, he set damages at £7,000 together with a further £1,500 to represent the plaintiff's disadvantage on the open labour market.

There was considerable surprise at the size of the award in that case although there was no doubt that it was made by an extremely experienced Judge and has been spoken of with approval in the Court of Appeal in subsequent cases. Several consultants would say that an average binaural decibel loss of 15 in the appropriate frequencies is insignificant notwithstanding the reduction which may have occurred in the higher frequencies. The Judge made the point that the tinnitus was forever present and that it would remain for the rest of the plaintiff's life. Part of every day he was conscious of the tinnitus, and very conscious of the tinnitus when he was concentrating in his hearing. When he is concentrating on listening to music he becomes conscious of the buzzing and at other times when he is determined to hear all that should be heard he is very conscious of the tinnitus. The outlook for the tinnitus was bad. The Judge described the plaintiff as a very responsible person who would not be in the category of those who are psychologically or emotionally disturbed and who allow the tinnitus to get the upper hand. He felt that the plaintiff would be able to tolerate his tinnitus.

In ABRAMOWICZ v CARBORUNDUM COMPANY LIMITED, decided in July 1981 at Manchester Crown Court by Mr Justice Forbes, the plaintiff was awarded £15,000 for what the Judge described was "a very, very bad case of deafness and associated tinnitus. This is a case in which the level of aural perception, if that is the right word, is very much worse than anything that is in any of the cases to which I have been referred". One of the consultants described the plaintiff as "only slightly better off than stone deaf". The tinnitus was constant although the consultant did say "generally speaking, the plaintiff has managed to come to terms with it but occasionally, particularly in quiet surroundings, it tends to drive him mad". This was not an unusual reaction to tinnitus in patients.

In O'SHEA v KIMBERLEY CLARK, decided by Mr Justice Boreham in October 1982, the Judge concluded that the plaintiff had virtually normal hearing for a man of his

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age, but that he complained of tinnitus or of a persistent ringing noise which appeared to originate from inside the head. The plaintiff had experienced this from very soon after March 1976 and the plaintiff had likened it to the ring of an anvil which caused him distress and headaches. Hardly a day passed without the plaintiff having a headache in respect of which he took analgesic tablets in order to mitigate or relieve them. He purchased 48 such tablets a week. In addition the noise sometimes delayed the plaintiff's sleep.

If he woke during the night he found it very difficult to get back to sleep, and a side effect was that the plaintiff sometimes felt tired or sleepy during the day as a result of which he became somewhat quick tempered. Away from work and in a quiet situation the ringing noise intruded and caused him stress. To reduce the effects of the noise the plaintiff had worn tinnitus maskers, the purpose of which was to produce another noise – a sort of diversionary noise – to distract him from the constant ringing. The plaintiff's evidence that after about an hour the maskers themselves became tiresome was fully accepted by the Judge. The Learned Judge made an award of £7,000.

(b) VIBRATION

(i) Establishing liability

It will not be necessary to re-state the principles to be considered in assessing a date of guilty knowledge. Damages are only awarded if the person making the claim can show that he has suffered some damage as a result of the defendants' negligence and/or breach of statutory duty. Damages will not be awarded merely if the plaintiff establishes that his condition has been caused by his work. He has to go further to show that the defendants were in breach of a duty to him in that, for example, they failed to take some proper precaution or that they did something which they should not have done as a result of which the plaintiff developed his condition. Very much the same considerations apply to injury caused by exposure to vibration as those which apply to injury caused by exposure to excessive noise, although in the cases which have reached trial a substantially later date of knowledge has been established than in the noise cases and a significant proportion of the cases which have proceeded to trial have failed because the plaintiffs have not satisfied the Judge, on the balance of probabilities, that there was any negligence.

(ii) Date of Guilty knowledge:

In 1862 Maurice Reynaud recognised the severity of the condition which sometimes progressed to gangrene but was also aware of the relatively trivial condition of "dead fingers". This led to the introduction of the term "Reynaud's Phenomenon". In 1934, a Review was published indicating that attacks of Raynaud's Phenomenon were common in those using vibrating tools. In 1945 a survey of engineering works in Manchester, where rotary metal grinding tools were in use, revealed that 32 out of 37 men who were grinding iron castings against a carborundum wheel were affected with the disorder. Further investigations in 1945/46 by Hunter and Agate and Druett revealed that processes generating vibration in excess of 2,000 r/min would probably produce the disease sooner or later.

Further studies in 1949 by Agate confirmed that two thirds of workers at an aero engine factory who were engaged in polishing steel castings with a portable

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grinding wheel were affected after almost two years of employment.

There were subsequently Reports of the Industrial Injuries Advisory Council in 1954 and by the Industrial Disease Sub Committee in 1970 recommending that the condition should not be prescribed for the purposes of the National Insurance (Industrial Injuries) Act. The reasons for non-prescription were largely because of the difficulties in distinguishing cases of constitutional origin and the fact that it was often impossible to diagnose the disease objectively and finally because the Council formed no firm opinion on disabilities sufficient to cause change of employment. In FITZSIMMONS v FORD MOTOR COMPANY LIMITED (Aero Engines Ltd), which was heard in the Court of Appeal on the 6th and 22nd February 1946, a claim for workman's compensation by the plaintiff, who had been employed as a rotary fettler, whose work consisted of holding, tightly gripped in the left hand, a hand machine which was electrically operated and vibrated at 2800 r/min. His right hand was pressed against the material to be cut using the weight of his body to increase the pressure.

After about a year the plaintiff found his hand to be without feeling. Medical evidence showed that the condition was known as Raynaud's Disease and that each vibration caused by the rapidly rotating instrument was a tiny blow to the hand and arm, transmitted to the nerves, causing small damage to the tissues. The action was for compensation under the Workman's Compensation Act 1925, the success of which depended upon the plaintiff being able to show that he was suddenly and decisively attacked at his work or to establish that he had suffered an injury by accident. It seems to have been accepted by the Court of Appeal that, from the medical point of view, every time the plaintiff had to do the work the condition deteriorated. The case did not, of course, involve an action for damages, but clearly evidence was brought before and accepted by the court in connection with the relationship between the type of work being carried out by the plaintiff and his physical condition.

The next publicity of any sort in connection with an action appears to have been given in January 1973 when the action brought by Mr Lambert against Vauxhall Motors Limited was settled in the corridors of the court for £1,500.

On the 4th and 5th July 1978 at Winchester Crown Court, Mr Justice Watkins VC in JOSEPH v MINISTRY OF DEFENCE heard the evidence and gave Judgement in London on the 29th September 1978.

Mr Joseph sued the Ministry of Defence for damages in respect of Vibratory White Finger Disease as a result of his occupation over 23 years as a riveter and caulker. During the course of the trial a considerable amount of information was produced in connection with the general topic of Raynaud's Phenomenon, and more particularly to Vibratory White Finger Disease, which is a symptom of Raynaud's Phenomenon caused by contact with vibrating and sometimes rotating equipment.

In his Judgement the Learned Judge reviewed the publications to which he had been referred indicating, that as far as he had been made aware, employers or workmen using hand-held vibratory tools had not undertaken any of the well known activities directed to the discharge of their duties in the field of health and safety of their workmen. In that particular case the evidence was that nothing had been known in naval dockyards until 1971 as to the possibility of Raynaud's

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Phenomenon being amongst the medical conditions which called for the attention of the safety, personnel and medical advisers. Mr Justice Watkins also went on to say that as far as he was aware there were no other cases waiting to be heard, but he was wrong, since several other firms of solicitors had dozens of actions waiting to be heard.

In MUSTO v SAUNDERS SAFETY VALVE COMPANY LIMITED, which was tried at Cardiff Crown Court in May 1979, Mr Justice Eastham gave Judgement for the plaintiff in the sum of £1,250 carefully distinguishing between the cases of JOSEPH and MUSTO. In MUSTO the defendants did not dispute that the plaintiff had developed Vibratory White Finger Disease as a result of using their vibratory tools. The plaintiff contended that his condition would have been prevented or would have been reduced to a minimum if the defendants had taken certain steps and that their failure to do so amounted to negligence. The defendants accepted that they did not take the steps which the plaintiff said that they should have done, but denied strenuously that their omission to do so constituted an act of negligence. The period in question in that particular case was between 1969 and 1971, and the Judge directed himself to the actual knowledge of the defendants of the condition in those years. The Judge referred to the literature and the reports of the Industrial Injuries Advisory Council and to various articles in the British Journal of Industrial Medicine. He also referred to the Summer Edition of the Journal of Industrial Nurses published in 1955 and to the extract therein "... it has long been known that certain men working with vibratory tools develop a condition ...". Mr Justice Eastham was able to conclude that by March 1969 seven facts were known generally in the industry and not merely the medical profession:

1) Operators of vibratory tools who were engaged in grinding were at risk of developing Vibratory White Finger condition.
2) A significant percentage of such workers were likely to develop Vibratory Finger condition to some extent.
3) In spite of a certain view to the contrary, in a great majority of cases Vibratory White Finger would not prevent individuals from continuing with their work and would not involve them in loss of earnings, particularly if the place of work was warm.
4) Vibratory White Finger condition did involve discomfort and likely loss of social amenities, particularly in cold conditions.
5) In a small minority of cases there would be a serious loss of earnings and a serious disability.
6) No effective method was known to prevent such operators using such tools from developing Vibratory White Finger condition.
7) Vibratory White Finger condition was a progressive order so that as soon as it was discovered the operator should be taken off vibratory tools and transferred to another job.

Evidence has been produced and accepted by Mr Justice Watkins in JOSEPH v MINISTRY OF DEFENCE that from 1939, if not before, the defendants' medical officer, from his reading of, for example, the Lancet and the British Journal of Occupational Medicine, was aware that the condition of Vibratory White Finger could be of occupational origin and that it could cause a workman economic loss in addition to social disadvantage. The plaintiff's allegations in the case of MUSTO were reduced to two, namely, firstly that the defendants failed to warn him of the risk that he might develop the condition and/or to warn him to seek

medical advice immediately he noticed any symptoms, in particular a tingling sensation in the fingers and hands after using a particular tool and/or a disturbance of blood supply to the fingers and hands indicated by whitening of the skin; secondly that they failed to institute a system of regular questioning of their workers, including the plaintiff, engaged in work involving frequent and continuous use of such tools in order to discover the development of the symptoms and of the said condition.

The Judge concluded that had the defendants taken those steps the risk of injury to the plaintiff would have been materially reduced. An important issue was whether the steps were ones which a reasonably prudent employer in the position of the defendants should have taken. The oft quoted Judgement of Mr Justice Swannick in STOKES v GKN (NUTS & BOLTS) LIMITED was again referred to by Mr Justics Eastham who, having reviewed the Judgement in Mr Joseph's case, was absolutely satisfied on the evidence before him that there was in 1969 no new vibration-free tool and there was no known method of mechanically rendering the vibratory tools sufficiently vibration-free in order to obviate Vibratory White Finger condition. In Mr Joseph's case it was accepted by the Judge that the defendants consciously took a decision not to warn their workmen of the condition. The Judge came to the conclusion that it would not reasonably be held that the defendants ought to have foreseen that the use of the vibratory tools would bring upon their workmen the condition of Raynaud's Phenomenon and by that means because of a probability which was justified by the evidence, much evidence had been adduced in that case which was different to the evidence adduced in the case of MUSTO. The Judge concluded, in the case of JOSEPH, that the defendants considered the giving of warnings and consciously took the decision not to do so which could have been a wrong, though not necessarily a negligent, decision.

Mr Justice Eastham concluded that where the defendants knew or out to have known that vibratory tools used on grinding work could bring on Vibratory White Finger condition, and that such a condition was a progressive one, and that if it develops the sooner the man concerned is taken off the work the better, then it was their duty to tell any new employee of the risk involved and of the advisability of going to the surgery in the event of any of the symptoms developing unless there appeared to be valid reasons for withholding such information from such an employee. In addition to £1,250 for pain and suffering and loss of amenity, Mr Justice Eastham also awarded Mr Musto £750 in respect of the plaintiff's slight disadvantage on the open labour market.

Mr Joseph appealed against the decision of Mr Justice Watkins VC that Judgement should be given for the defendants on the basis that the defendants either, well before the end of 1971 or at the latest by the end of 1971, knew or ought to have realised that there was or was likely to be found to be substantial instance of VWF among riveters and caulkers at the naval dockyards, and that if they did not know it they ought at least to have been sufficiently aware of it to have caused a survey to be made to find out whether there was or was not such an incidence.

Having found, as they would have found, that there was a very substantial incidence, they should then in addition to certain steps which the defendants in fact put in hand in 1972 or 1973, have arranged to give warning to all riveters and caulkers in the dockyard as to VWF, as to what the symptoms were, and as to

the danger of the progressiveness of the condition. They should have invited or required the employees who used those vibratory tools to report to the Dockyard Medical Centre if the symptoms arose. They could not safely or properly rely upon employees reporting the condition themselves unless they were warned or required or ordered to do so. The appellant argued that the defendant should have arranged that where it was found that VWF existed in any degree the employees affected should be required to report for periodic medical examination, perhaps monthly, and they should have arranged that if after such medical examination the condition of any employee was progressing, the employee in question should be taken off work involving the use of vibratory tools. The Court of Appeal dismissed Mr Joseph's Appeal against the decision of Mr Justice Watkins.

In WHITE v HOLBROOK PRECISION (CASTINGS) LIMITED, Mr Justice Jupp gave Judgement for the defendants. The plaintiff had commenced his employment with them in March 1973 as a labourer but in June 1973 he went on to grinding amongst various other grinders in the defendants' fettling shop. The average number of grinders over the years seems to have been between 14 and 16. The plaintiff's allegations were:

(i) a failure to warn, instruct or educate the plaintiff about VWF
(ii) a failure to remove him from grinding work when he first complained of symptoms
(iii) a failure to heed the fact that almost all the grinders suffered from tingling and numbness of their fingers
(iv) failure to heed the specific complaint of a fellow employee about his fingers made to the safety officer and the nurse in about 1974 or 1975 and
(v) failure by management to institute a system of regular medical checks for grinders so that any suffers from VWF should be taken off the work or at least offered the opportunity to be taken off.

The case was concerned with the period from June 1973, when the plaintiff went on to grinding, to August 1976, when because of his condition he was transferred to employment as an inspector. Throughout that time the Company had a permanent safety officer, shared up until 1974 with a neighbouring factory, and a medical officer. Until July 1974 it was a local GP who was retained to visit the factory usually each Friday, and advise management on anything untoward in health or hygiene. There was also an ambulance room manned at first by a part-time first aid man but later by a full-time nurse. Finally, there was a safety committee attended by management and men which met regularly following its institution in 1973.

Having considered the evidence in the case and all the literature to which he was referred, the Judge concluded that there was nothing in it to make him think that an employer should abandon the recognised and general practice which had been followed for nearly a century in grinding shops. That case also failed on appeal.

There were then a series in two batches of cases against GARRINGTONS LIMITED. In the case of HEAL, decided by Mr Justice Kilner Brown in May 1982, the Judge concluded that by 1945 at the latest in this country it was known to many that the condition frequently developed as the result of prolonged and regular exposure to vibration transmitted from some working surface or tool to the fingers which held the source of vibration. There was one specific tool used by

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Mr Heal and others. From 1955 the plaintiff had used this particular tool, the operation of which gave rise to considerable vibration. The plaintiff and "all these other men" went on year after year doing their work unaware that there was any harm in it and equally unaware, until 1972, that many of them had acquired VWF in the process.

In 1969 the defendants' medical adviser and his various medical assistants had discovered that there was a serious incidence of VWF at their Cwmbran Foundries where pedestal grinding was carried on. After a lengthy and detailed investigation, it was concluded that the probable cause was an excessively hard material on the grinding wheel.

VWF was one of several conditions which received the attention of the defendants' group medical officers. The Judge concluded that he had no hesitation in saying that the defendants were at fault in not identifying the particular tool used at the Broomsgrove premises by the plaintiff at the end of 1975.

The condition has been graded into several stages from zero to four, and the Judge concluded that for Stage 1 he would award £500, Stage 2 - £1,000, Stage 3 - £3,000 and Stage 4 also £3,000. The Judge concluded that the plaintiff had reached Stage 1 and Stage 2 before 1976 which in his judgement was the first year for which liability could be established and he, therefore, awarded £2,000 for pain and suffering and loss of amenity on the basis of Stage 3 of £3,000 less £1,000 for Stage 2. The plaintiff was awarded £100 as compensation for his disadvantage on the open labour market.

The defendants appealed against that decision and the plaintiff cross appealed and the appeals were compromised on the payment by the defendants to the plaintiff of a significantly higher sum than the initial award of £2,100.

Another batch of cases involving the same defendants and the same tools was heard at Birmingham Crown Court, and Mr Justice Hodgson gave damages in the cases known as McFAUL and Others v GARRINGTONS on the 9th November 1984. Having heard very much the same evidence Mr Justice Hodgson concluded that the defendants were liable to the plaintiffs and "making every allowance and being, I think, probably over generous to the defendants, I cannot arrive at a later date than the 1st January 1971 for the beginning of the defendants' liability".

In SHEPHERD and Others v FIRTH BROWN LIMITED at Sheffield Crown Court Mr Justice McCulloch in April 1985 concluded that the literature did not lead him to a conclusion that an employer who carried on the processes which were carried on in the defendant's workshop and was exercising the required standard of care, ought to have realised before the Spring of 1976, that they carried a risk of VWF. Furthermore, he concluded that an employer taking proper care would have solved his problem within three years, namely that within three years he would have devised and brought into operation a means of cutting out virtually all use of the offending carborundum stick. He arrived at the figure of three years by allowing time to explore all the various alternatives, refurbishing the old devices that were there already, seeing whether they were satisfactory, finding they were not, seeing if every shape of wheel required could be brought in, in advance, taking advice, seeing what other employers were doing and so on, and eventually coming to the conclusion that nothing short of spending the money and

altering the machines would do, followed by the time it would take to design, manufacture, fit, prove and bring into effect the modifications, if that was the only way in which the risk could be cut down to negligible proportions. He, therefore, reached the conclusion "rough and ready though it be" that such injury as was caused after the spring of 1979, but not before, was caused by the negligence of the defendants.

The only common thread that can be drawn from the decisions referred to above is that notwithstanding the abundance of medical, industrial and scientific literature going back over decades, if it is intended to fix a defendant with some liability for VWF caused by exposure to vibration prior to the mid to late 1970's it will be necessary to show that the defendant had some specific knowledge of a particular problem in his works to which he negligently or deliberately failed to address his mind.

(iii) Apportionment:
The same considerations apply mutatis mutandis to the considerations referred to in injury caused from exposure to noise. It is reckoned that Stages 1 and 2 are reversible, but once the condition has reached Stage 3 then it is irreversible. Mr Justice Kilner Brown's broad scale of damages from £500 to £3,000 for Stages 1 to 4 of the condition was specifically rejected by Mr Justice Hodgson in McFAUL and Others. The plaintiffs fell into two main categories, the Judge having found that the defendants were liable to each plaintiff for the injury caused to him since the 1st January 1971, but not for any injury caused before that date by the use of the makeshift tool.

There were those who had stopped their employment because of the illness and those who had continued employment despite it.

It had, in fact, been conceded by Counsel for the defendants in McFaul that the awards set out by Mr Justice Kilner Brown were too low. He felt that the top award should be in the region of £9,000. Recovery from Stage 1 with no further exposure to vibration was probable. Recovery was also probable in the same circumstances from Stage 2 depending to a large extent upon the age of the sufferer. If he was under 40 then the chances of recovery were good. At Stage 3 the probability was that there would be no recovery. Awards for the 15 plaintiffs were made, including interest and special damage and future loss, in excess of £200,000. Subsequently the defendants appealed and the appeals were compromised in a total sum in excess of £150,000, still substantially greater than the awards which were made in the appeal case.

(iv) Burden of proof of injury, negligence and causation:
The same general considerations apply as to injury from noise. The condition of Raynaud's Phenomenon is seen most frequently in young women and is a constitutional condition in that form.

In an action for damages it is, therefore, necessary to establish, on the balance of probabilities, not only the exposure to vibration such that there was a foreseeable risk of the condition developing, but also necessary to establish that the condition has actually been caused by the excessive vibration.

SOME ASPECTS OF CLAIMS FOR COMPENSATION IN ENGLAND AND WALES FOR PERSONAL INJURY CAUSED BY NOISE OR BY VIBRATION

NATIONAL INSURANCE INDUSTRIAL INJURIES SCHEME

In England and Wales, if you suffer from one of the Prescribed Industrial Diseases or a condition resulting from one of those diseases, due to your employment after the 4th July 1948, you may be able to get a cash benefit under the Industrial Injuries Scheme whether or not you have paid national insurance contributions. If you are incapable of work because of any illness you may be able to get statutory sick pay known as SSP or sickness or invalidity benefit. If you are too sick to work because of one of the prescribed diseases and you cannot obtain SSP you may be able to get sickness benefit or invalidity benefit even if you have not paid enough contributions to get this benefit under the normal rules. Disablement benefit will not be paid until you have been disabled by the diseases for 15 weeks in general terms, but for occupational deafness, which is Prescribed Disease A10, the rules are different, and benefit can only be paid from the date of the claim.

Two or more adjudicating medical practitioners will decide whether you are suffering from a Prescribed Disease and if so they will say how disabled you are and how long it will last. If they cannot say how long it will last you might be awarded benefit for a period and then need to go for another medical examination near the end of that period so that they can decide whether you are still disabled. The more disabled you are the more benefit you will get. As long as you otherwise qualify there is no need to establish any fault on the part of the employer before becoming entitled to an award of benefit.

1. HEARING LOSS - PRESCRIBED DISEASE A10:

Occupational deafness is deafness caused by working in some noisy jobs over a number of years. Deafness can have more than one cause. Some people can become deaf because of age or illness or accident. To obtain disablement benefit you have to meet certain rules about your work and certain rules about your deafness. If you meet these rules your claim will go to a Medical Board who will decide if you suffer from occupational deafness. If so the Board will say how disabled you are. They will work out your disablement as a percentage (for instance 100% is total deafness). To get disablement benefit your disablement due to occupational deafness must be 20% or more.

If you are incapable of work because of deafness you may be able to get sickness benefit even if you cannot satisfy the normal contribution tests.

The date of your claim is the earliest upon which you can get disablement benefit in respect of occupational deafness. At the Social Security Offices the Adjudication Officer will decide if you are covered by these rules:

(a) You must have actually worked in one or more of the Prescribed occupations for at least ten years:

(b) You must have actually worked in one or more of these jobs during the five years before your claim.

The Prescribed Occupations are:

a) the use of, or work wholly or mainly in the immediate vicinity of,

pneumatic percussive tools or high speed grinding tools, in the cleaning, dressing or finishing of cast metal or of ingots, billets or blooms: or
b) the use of, or work wholly or mainly in the immediate vicinity of, pneumatic percussive tools on metal in the shipbuilding or ship repairing industries: or
c) the use of, or work in the immediate vicinity of, pneumatic percussive tools on metal, or for drilling rock in quarries, or underground, or in mining coal, for at least an average of one hour per working day: or
d) work wholly or mainly in the immediate vicinity of drop-forging plant (including plant for drop stamping or drop hammering) or forging press plant engaged in the shaping of metal: or
e) work wholly or mainly in rooms or sheds where there are machines engaged in weaving man-made or natural (including mineral) fibres or in the bulking up of fibres in textile manufacturing: or
f) the use of, or work wholly or mainly in the immediate vicinity of, machines engaged in cutting, shaping or cleaning metal nails: or
g) the use of, or work wholly or mainly in the immediate vicinity of, plasma spray guns engaged in the deposition of metal: or
h) the use of, or work wholly or mainly in the immediate vicinity of, any of the following machines engaged in the working of wood or material composed partly of wood, that is to say: multi-cutter moulding machines, planing machines, automatic or semi-automitic lathes, multiple cross-cut machines, automatic shaping machines, double-end tenoning machines, vertical spindle moulding machines (including high-speed routing machines), edge banding machines, band sawing machines with a blade width of not less than 75 millimetres and circular sawing machines in the operation of which the blade is moved towards the material being cut: or
i) the use of chain saws in forestry.

Deafness rules:
If you satisfy the rules about work, or if a final decision on this hasn't been made after a certain length of time, you will be examined by an ear specialist. The specialist will see if you have the following kind of deafness:
an average hearing loss of a least 50 dB in both ears due to damage to the inner ear and, in at least one ear this is due to noise at work.

If the ear specialist does not find this kind of deafness, or it is decided you do not satisfy the rules about work, the adjudication officer will turn down your claim.

Medical Board:
If you meet the work rules and the deafness rules your claim will go to a medical board. The board has to decide:
if you are suffering from occupational deafness and if so, how disabled you are by the deafness.

Appeals and Reviews:
You will be told of the decision on your claim as soon as possible. If you don't agree with the decision, you may be able to appeal against it. When you get the decision you will be told how to go about this. If you get disablement benefit and later your deafness appears to get worse, you may be able to apply for a review. The notice awarding you benefit will tell you about this.

SOME ASPECTS OF CLAIMS FOR COMPENSATION IN ENGLAND AND WALES FOR PERSONAL INJURY CAUSED BY NOISE OR BY VIBRATION

Further Claims:
If your claim for disablement benefit is turned down, you can claim again later but only if:
your last claim was turned down because at the time you hadn't worked for 10 years in one or more of the jobs listed above, but now you have, or
your last claim was turned down because you hadn't worked in one or more of those jobs in the five years before the date of your claim, but now you have worked again in one of the jobs, or
your last claim was turned down three or more years ago because then your deafness did not fit the rule, or
your last claim was turned down less than three years ago because your deafness didn't fit the rule, but you have now given up work in the listed jobs. In this case, claim as soon as you can, and not later than five years after you last actually did that job. If you have stopped working in a listed job ask your local social security ofice if you can claim again.

If you claim again, all the work and medical rules set out above will be applied in the same way as if it was your first claim.

2. VIBRATION WHITE FINGER DISEASE - PRESCRIBED DISEASE A11:

Since the 1st April 1985 Prescribed Disease A11 has been added to the list of prescribed diseases in respect of which occupational disablement benefit is payable.

Description:
"Episodic blanching, occurring throughout the year, affecting the middle or proximal phalanges, or in the case of a thumb the proximal phalanx or:(a) in the case of a person with 5 fingers (including thumb) on one hand, any 3 of those fingers, or
(b) in the case of a person with only 4 such fingers, any 2 of those fingers, or(c) in the case of a person with less than 4 such fingers, and one of those fingers or, as the case may be, the one remaining finger".

Nature of occupation
1. the use of hand-held chain saws in forestry, or
2. the use of hand-held rotary tools in grinding, or in the sanding or polishing of metal, or the holding of material being ground, or metal being sanded or polished, by rotary tools, or
3. the use of hand-held percussive metal-working tools, or the holding of metal being worked upon by percussive tools, in riveting, caulking, chipping, hammering, fettling or swaging, or
4. the use of hand-held powered percussive drills or hand-held powered percussive hammers in mining, quarrying, demolition, or on roads or footpaths, including road construction, or
5. the holding of material being worked upon by pounding machines in shoe manufacture.

SOME ASPECTS OF CLAIMS FOR COMPENSATION IN ENGLAND AND WALES FOR PERSONAL INJURY CAUSED BY NOISE OR BY VIBRATION

AGREEMENTS BETWEEN INSURANCE COMPANIES/EMPLOYERS AND VARIOUS TRADES UNIONS

In recent years various insurers and representatives of employers' organisations have concluded agreements with some trades unions under the terms of which claims for damages with regard to occupational deafness and VWF are administered. In the case of industrial deafness as long as the person claiming is a member of one of the unions and as long as the employers are or were at the material time insured by one of the insurers for at last a year between 1963 and 1980, and as long as there is a minimum of ten decibels loss at the frequencies of 1, 2 and 3 kHz the insurers will put forward an offer depending upon the level of hearing loss at those frequencies. Where the loss is under 25 decibels at 1, 2 and 3 kHz and the average binaural loss at 4 kHz is under 20 decibels then no payment is made. Payments vary at the lowest end from £400 to at the highest end of 96 decibels, £6,900 and the scale figures include mild tinnitus but do not include a claim for moderate or severe tinnitus and such a claim would be negotiable.

The benefit to the Claimant of such an Agreement is that he does not have to establish liability and that there is no question of allegations of contributory negligence of pleas or limitation.

The agreements tend to provide that if a union member does not accept the offer which is put forward under the agreement then the union agrees with the insurers that the union will not support that member in any further proceedings.

With regard to VWF the agreements relate to the contraction of the condition as a result of exposure to excessive vibration which is defined as vibration of sufficient intensity to cause VWF and arising from the use by the claimant of vibration inducing tools and machinery for a period of not less than two years in aggregate during the period from the 1st January 1976 to the 31st May 1985 both years inclusive. Payment is only made if in the opinion of the insurance company there is a reasonable risk that legal liability to pay damages will attach to the employer. Once again the offers are made depending upon the stage which the condition has reached as described in the Taylor-Pelmear Scale. Payments under the Agreement vary between £200 for Stage 1 and £1,350 for Stage 4.

SOME ASPECTS OF CLAIMS FOR COMPENSATION IN ENGLAND AND WALES FOR PERSONAL INJURY CAUSED BY NOISE OR BY VIBRATION

Stage	Condition of Digits	Work and Social Interference
0	No blanching of digits	No complaints
0_T	Intermittent tingling	No interference with activities
0_N	Intermittent numbness	No interference with activities
1	Blanching of one or more finger tips with or without tingling and numbness	No interference with acivities
2	Blanching of one or more fingers with numbness Usually confined to winter.	Slight interference with home and social activities. No interference at work.
3	Extensive blanching. Frequent episodes summer as well as winter.	Definite interference at work, at home and with social activities. Restriction of hobbies.
4	Extensive blanching. Most fingers; frequent episodes summer and winter.	Occupation changed to avoid further vibration exposure because of severity of symptoms and signs.

Classification of the Stages of the Vibration Syndrome: (Taylor-Pelmear)

SUMMARY

Summarising, broadly speaking compensation is available to persons who suffer damage from noise or vibration on proof of fault on the part of the employer in an action for damages at common law. Compensation is also available in such a case if the claimant satisfies the fairly strict requirements of the Industrial Injuries legislation and this benefit is received without proof of fault.

This benefit may also be received even if the claimant pursues an action at common law. It would not be possible for a claimant to receive compensation under an agreement between his union and his insurers and at the same time bring a common law action in respect of the hearing loss caused by that employment but nothing will prevent him from applying, if he otherwise qualifies, for benefits under the National Insurance Industrial Injuries Scheme even if he accepts compensation under an agreement between his union and the insurers.